Global Workshop on Low Carbon Power Sector Development

Mexico

CRE

March, 2011

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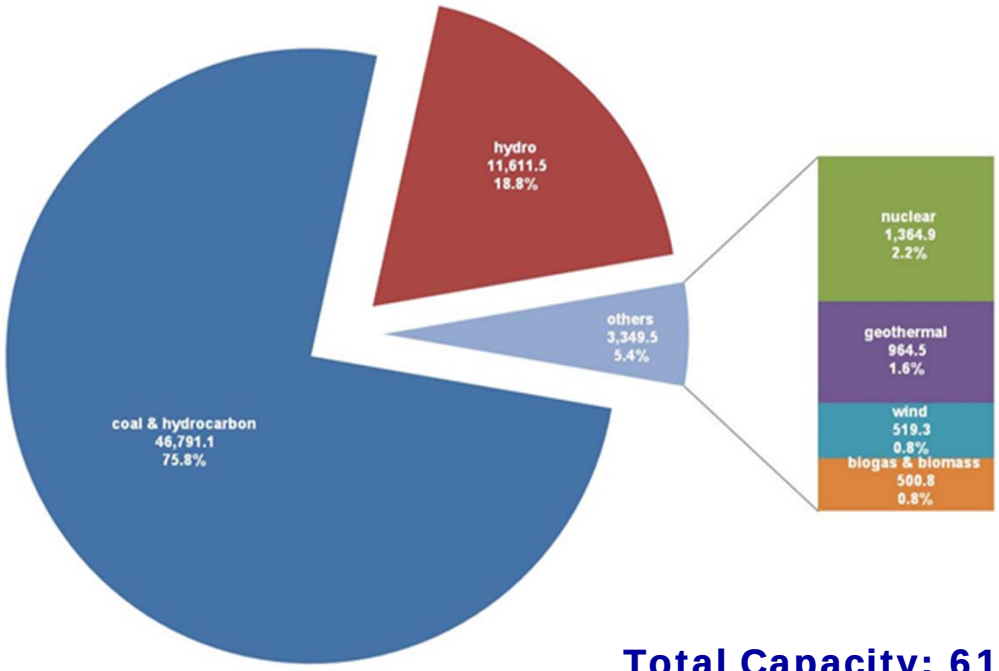
1. Overview

- The Mexican legal framework allows for private participation in the generation of electricity but transmission, transformation and distribution are reserved activities that are exclusive to the state.
- Mexican power sector presents important investment opportunities through generation projects in six modalities allowed by Law: Self-supply, cogeneration, Independent Power Producer, Small Production, Exports & Imports for self-supply.
- Mexican Government Utility provides wheeling and back up services as well as purchasing of excess electricity from permit holders.
- Law for the Use of Renewable Energy and the Financing of the Energy Transition: Promote the use of the renewable energy sources and clean technologies
- Law for the Sustainable Use of Energy: Promote sustainable use of energy and energy efficient processes and activities.

2. Renewable Energy Efforts

Effective Capacity [MW]



- The National Energy Strategy, a document issued by the Ministry of Energy, aims at increasing the participation of Clean Energy (Renewable Energy and Nuclear) generating capacity from about 24.2% in 2010 to 35% in 2024.
- At present, the country's generation mix relies, mostly on hydrocarbon and coal-fired power plants

Total Capacity: 61,752.1 [MW]

Source: CFE & CRE, december 31st, 2010

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2. Renewable Energy Efforts

- In Mexico, starting in 2006, pioneered the development of several wind farms under a project called Open Season.
- Through the Open Season, agreed the construction of infrastructure and reinforcement transmission to interconnect 2473 MW of public and private wind projects in Oaxaca between 2009 and 2012.
- The Open Season was divided in three stages, according to the transmission infrastructure used for interconnection projects.
- Additonally, there are five wind projects in the Federal Electricity Commission (CFE) program, that will come into operation between 2011 and 2012, which represents 507 MW of install capacity.

3. Natural Gas and Clean Coal

- In Mexico's case, 75.8% of installed capacity belongs to technologies using fossil fuels such as natural gas, fuel oil, coal and diesel, while 24.2% corresponds to alternative sources, of which 18.8% of the total installed is from hydroelectric.

- Electric plants which use natural gas (combined cycle gas turbine) provided 50.6% of this energy. This had the impact of increased use of natural gas in electricity generation, specifically in regard to combined cycle technology, from 8.6% in 1999 to 48.4% of total generation of public service in 2009.

- In 2010 the CRE has granted 21 permits for independent power production (IPP) for combined cycle plants, with a permitted capacity of 12,653 MW. All IPP's permits authorized to operate combined cycle technology using natural gas, are designed exclusively for selling the energy produced to the CFE.

3. Natural Gas and Clean Coal

- Mexico has a coal-fired power project of 678 MW "Carboeléctrica del Pacífico", currently under construction in central Petacalco by the CFE, 4 supercritical coal-fired power plants 700 MW each, 2 in Lázaro Cárdenas, Michoacán and 2 in the region of Sabinas, Coahuila. Such projects will be reviewed in future programs after 2020, to incorporate equipment for CO2 capture and sequestration.

- Based on the energy policy guidelines formulated by the Ministry of Energy for the power generation, Mexico will have limited dependence on natural gas in the electricity sector. Additional generation capacity for future competition could be met by incorporating equipment for coal plants capture and sequester CO2, combined cycle (using natural gas, liquefied natural gas, coal gasification).

- According to the POISE 2010-2024 (Program of Works and Infrastructure in the Electric Sector) coal-fired plants go from 5% to 11% of total installed capacity and natural gas based projects from 39% to 41%, while other thermoelectric from 30% to 6%.

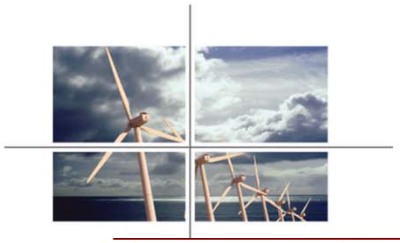
4. Nuclear

- The National Commission on Nuclear Safety and Safeguards is the agency responsible for nuclear, radiological and safeguards areas.
- There is one nuclear power plant in operation in Mexico, with two Boiling Water Reactors (BWR) of 650 MW each. Laguna Verde Unit 1 has been in operation since 1990 and Unit 2 since 1995. In 1999 a 5% power up-rate for each reactor was put into place to increase their capacity. An additional 15% power up-rate for each reactor is in progress to date.
- These installed capacity represents 2.2% of the total capacity in the country.
- It's contribution to installed capacity, according to POISE will go from 2.2% to 2% because even though they're a possibility for clean technology, it's not really taken into account at the moment.

5. Energy Efficiency

- The National Commission for the Efficient Use of Energy is the agency responsible to promote energy efficiency in the field of sustainable use of energy.

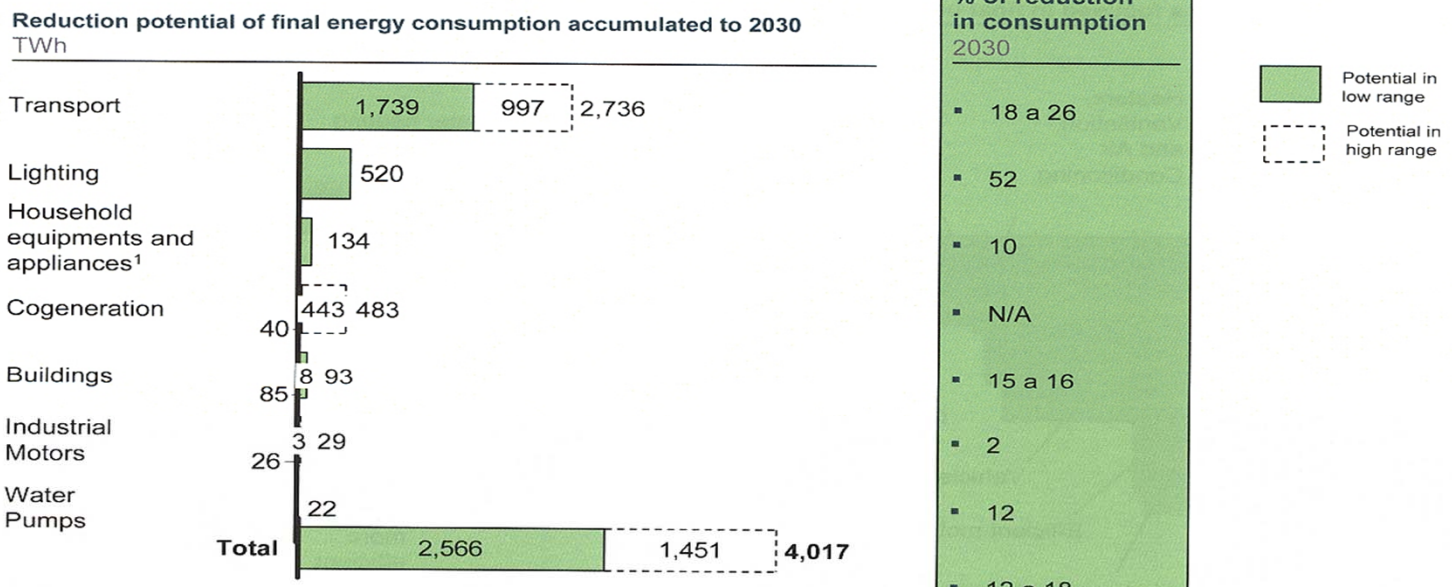
- In November 2008 and 2009, Law for the Sustainable Use of Energy and the National Programme for Sustainable Use of Energy 2009-2012 were approved. These established strategies, objectives, actions and targets to the optimum use of energy, focusing on the end uses of energy. Such as:
  - Efficient transport
  - Efficient lighting (300 million incandescent bulbs to fluorescent)
  - Household equipment and efficient buildings (500 thousand new refrigerators)
  - Efficient cogeneration actions (methodology by CRE)
  - Efficient industries
  - Energy consumption for agricultural and municipal pumping



5. Energy Efficiency

2. Current Situations of Promotion & Activity on Energy Conservation (EC) in Mexico

The abatement potential is mainly focused on lighting and transport



1 Refrigerators, water heaters, air conditioners room and central type.

Notes:
- Lighting: Consider a standard that comes in 2012 to reduce the sale of incandescent bulbs and low efficiency fluorescent tubes,
- Transport: We have a wide range on the potential depending on effectiveness to limit the energy consumption of imported used cars
- Household equipments and appliances: Includes the implementation of a standard to limit the sale of low efficiency refrigerators and heaters.
- Cogeneration: PEMEX is considered to be self-sufficient of energy by 2012 and, if changes occur in legislation could be considered a potential additional of capture
- Buildings: Consider greater use of insulation in new residential buildings in warm zones
- Industrial motors: Consider a program for replacement and encourage the purchase of equipment more efficiently
- Water Pumps: Consider a rehabilitation program for agricultural and municipal wells for 60% of these be efficient in 2030

6. Incentives & Policies

- Accelerated Depreciation
  - For infrastructure projects that use renewable sources of energy (Ley del ISR, art. 40-XII)
- Interconnection contracts for renewable sources of power and efficient cogeneration (CRE)
  - Capacity credit and “Energy Bank” (self supply & cogeneration modalities)
  - Postage-stamp wheeling costs
  - Long-term contracts
  - Net-metering for projects up to 500kW
  - Grid code
  - Dispatch rules

¡Thanks!

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