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Energy Efficiency Efforts in Mexico

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Director General

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National Commission for Energy Conservation

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Global Energy Supply & Demand

WORLD OVERVIEW: ENERGY CONSUMPTION

Approximately 80% of the world energy consumption is based on fossil fuels. This trend will remain dominant trough 2030

- Oil
- Natural Gas
- Coal
- Nuclear
- Renewable

Renewable Energy share in primary energy offer

México, Argentina, Tailandia, Indonesia, Italia, Venezuela, Reino Unido, Rusia, España, Chile, Estados Unidos, Corea del Sur, Japón, Alemania, Canadá, Taiwán, Francia, Brasil, India, Polonia, China, Sudáfrica

Source: CONAE, with data from the Energy Information Administration (EIA)

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Global Energy Supply & Demand

CHALLENGES: LOW ENERGY EFFICIENCY

Mexican economy is particularly dependant on oil and natural gas with a low energy intensity in the global context

Energy Intensity in Hydrocarbons usage

kBTU/US$

Indonesia, Venezuela, Canadá, China, India, México, Estados Unidos, Chile, Brasil, España, Francia, Reino Unido, Japón, Alemania

Source: CONAE with data from the Energy Information Administration (EUA)

CHALLENGES: MINIMIZE RISKS FUEL PRICES

Fossil Fuels Price Evolution in the international markets

Natural Gas / Oil

US$/MMBTU — US$/barril

*Natural Gas: precio a boca de pozo en EUA. Oil: precio internacional ponderado
Source: Energy Information Administration (EUA)*

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Mexican Context

ENERGY SUPPLY

En 2006, renewable energies represented 10.6% of the domestic energy consumption

Total Primary Energy Supply: 6,649 PJ

- Natural Gas: 36.2%
- Coal: 5.7%
- Nuclear: 1.8%
- **Timber and sugar cane bagasse: 5.3%**
- Others: 5.3%
- Oil: 45.7%

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Energy Demand

Total Energy Consumption (Petajoules, PJ), 2005

Use = 4,083 PJ = Sources

Industrial

Residencial, Comercial y Público
- 20.6%
- 30.7%
- 3.0%
- 45.7%
- Agropecuario
- Transporte

Fuente: Balance Nacional de Energía, 2005

Combustibles Sólidos
- Electricidad
- Gas Seco
- 13.0%
- 15.0%
- 10.8%
- 61.3%
- Petrolíferos

Fuente: Balance Nacional de Energía, 2005

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Mexican Energy Sector

Ministry of Energy

CRE - Energy Regulatory Commission

CNSNS - National Nuclear Safety Commission

CONAE - National Commission for Energy Saving → **Transversal work throughout all energy sector**

PEMEX Mexican Petroleum Company

CFE Federal Electricity Commission

LyFC Light and Power Company for the Center

ININ National Nuclear Research Institute

IMP Mexican Petroleum Institute

IIE Electric Research Institute

FIDE - Trust for Electric Energy Saving

Private (consumers, associations) and social sectors (consumers, NGOs, associations)

What is CONAE?

The Public Federal Entity under the umbrella of the Ministry of Energy with administrative, financial and technical autonomy in charge of promoting energy efficiency and renewable energies

Scope

- Design and operate programs, develop standards, promote and disseminate best practices and technologies
- Technical assistance, and capacity building for public, private and social sectors
- Promote investment and innovative financing mechanisms

CONAE´s Energy Efficiency Strategy

Assistance

Standardization

Promotion

- Conserving energy resources
- Diversifying energy matrix
- Protecting the environment
- Benefiting household income
- Efficient use of renewable and non-renewable energies
- Increasing private sector competitiveness

+ Working Groups

CONAE´s Programs Impacts

Average energy intensity reduction

Potential Savings :~20% national energy usage

We have achieved 2% reduction of the national energy usage.
During the past administration, for every USD dollar invested in energy efficient initiatives aproximtely 34 USD were saved.

National Strategy for Climate Change

Power Generation and Energy Use
Mitigation Opportunities for Greenhouse Gas Emissions
Target: 106.8 MtCO$_2$/year, 2007-2014

Activity	Estimated Reduction MtCO$_2$/year
Energy Efficiency	27.9
Pemex	14.7
Power Generation & Distribution	27.7
Industry Sector	25.0
Renewable Energy Sources	8.0
Transportation	3.5
Total	106.8

Conae´s direct participation

Conae´s indirect participation

Conae´s Commitment

26%

Norms and Standards Mexico's Benchmark

1995

- **3** NOM-ENER active
- **1** Testing laboratory certified
- **1** Entity credited for certification
- **Achieved Energy Savings:**
  - **442 GWh** (Energy)
  - **99 MW** (Capacity)

2007

- **19** NOM-ENER active
- **54** Testing laboratories certified
- **2** Entities credited for certification
- **183** Body's inspectors
- **Achieved Energy Savings:**
  - **17,963 GWh** (Energy)
  - **3,299 MW** (Capacity)

Four projects in progress: 1) shadow glass coefficient, 2) Machinery for tortilla production, 3) Insulation for residential buildings

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Energy Efficiency in Public Buildings

Mandatory Program since 1999
- 1,425 office's buildings, 4.97 Millions square meters, 149 energy efficiency committees
- Cumulative savings for more than 1,800 million pesos in the electricity bill

Electric energy consumption index (ICEE)

Year	Million of $	GWh	MW	Buildings
1999	17	24	4	374
2000	73	104	18	869
2001	73	104	18	867
2002	306	175	31	874
2003	312	178	32	1473
2004	338	193	36	1447
2005	354	202	37	1455
2006	371	212	39	1425
TOTAL	**1,844**	**1,192**	**215**	**1425**

Program's Impacts / Savings

Federal Agencies pay, since 2002, 2.5 times the cost of energy.

2

Energy Efficiency in Public Buildings

The current program is being reinforced and strengthen, in 2008 it will be presented by the President with its new overall objective, including besides federal buildings:

- ✓ vehicle fleets
- ✓ operational facilities (Pemex, CFE and LFC)

It will compel federal agencies to develop comprehensive energy diagnostics in their facilities.

It will allow CONAE to establish goals of energy savings in short and medium terms.

It will establish mechanisms for private sector participation through performance contracts (ESCOs).

Federal Public Administration Program

Economic Benefits 2008 - 2012

Concepts	Investment (10x3 of pesos)	Savings		Profit-Cost ratio
		Energy	10x3 pesos (includes operational savings and maintenance)	
Building Projects				
73 Electricity: Lighting	47,734	89,573,148 kWh	89,970	1.9
44 Electricity: Air conditioner	63,398	34,905,447 kWh	37,300	0.6
Total of 121 vehicle fleets in APF Agencies				
Gasoline	325,892	148,360,000 Liters	1,225,346	3.8
Facilities (CFE, LFC, PEMEX)				
CFE	1,200,000	7,949,000 bpce	3,556,900	2.9
PEMEX	1,553,830	28,842,000 bpce	19,113,330	12.3
TOTAL	3,190,854	---	24,022,846	7.53

Solar Water Heaters Program

Objective: To develop an appropriate framework for the solar water heaters technologies market

Target: 1 800 000 m^2 installed by the end of this administration (2012)

Benefits: 372,000 tons of eq CO_2 emissions per year, and the saving of 249 millions liters of LPG per year.

Main activities:

- Regulation and certification
- Economic incentives for end users and manufacturers
- Market enhancement
- Development and assessment indicators, statistics and data
- Program synergies between agencies

Participants: Sener, Conae, Conavi, Infonavit, ANES, Housing developers, INE, Semarnat, Academia, NGOs, local governments, manufacturers, and installators.

Transportation Sector

- **Transportation in Mexico accounts for 42.4 % of the total energy consumption, (64% gasoline and 26.3% diesel). Data: 2006**

- **Conae's scope of work :**
  - Technical workshops, training programs, and publications on preventive maintenance, fuel management practices, and better informed modal choice

Road 91%
Air 6%
Maritime 2%
Rail 1%
Electric 0.2%

Conae's Transportation Program

- **Conae's scope of work in transportation:**
  - Technical workshops, training programs, and publications on preventive maintenance, fuel management practices, and better informed modal choice

Currently we are promoting measures with other Government Entities, focusing mostly on:

- Clean fuels and vehicles
- Voluntary energy efficiency labelling in vehicles
- Using transport modes that use energy more efficiently, such as walking or cycling and public transport
- Improving transport choice by increasing the quality of public transport
- Using telecommunications to reduce or replace physical travel
- Planning the layout of our cities to bring people and their needs closer together
- Transport management
- Developing policies that allow and promote these options.

Institutional Areas to be Strengthen

- Develop National Programs: **Energy Efficiency and Renewable Energy**
- Establish **synergies** with other governmental entities
- Identify **barriers** and provide solutions to the Energy Ministry
- Find and develop new financing mechanisms for **Local, Commercial and Development Banks**
- Carry out and follow up standardization activities, and set up **new energy efficiency standards**
- Update energy official **statistics and database**

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The present administration is currently working on:

- Enforcing norms and standards to incorporate the criteria for sustainable energy usage;
- Defining criteria to promote sustainable building programs and establishing a certification system;
- Promoting sustainable energy investment by increasing the awareness and engagement, and building capacity of local banks.
- Encouraging local Governments to consider reviews on laws, norms, practices, strategies, etc.
- Creating synergies with stakeholders, to promote a framework that allows the implementation of energy efficiency measures;
- Identifying possible tax incentives for energy-efficient technologies, in order to make these affordable and accelerate the growth of market demand
- Promote the use of RE and Cogeneration technologies
- Intensify awareness and education campaigns of EE/RE benefits and contribution to sustainable development.

Efficiency of Energy Production and Consumption

Thank you!

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National Commission for Energy Conservation