

# Mexico effort in favor of the Intelligent Use of Energy



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# Introduction:

## Energy:

Balance between supply and demand.

## Opportunity areas:

Not all energy spend is used

Systems and equipments of poor efficiency

Growing environmental impacts

Low share of clean and renewable energy sources

# Challenges:

- Notwithstanding the fact that Mexico has a big potential to produce more energy, there are still many opportunities to save it, if it is used in a more intelligent way
- Mexico needs to increase the production of energy, through clean and renewable sources
- There is no right to produce energy with no renewable sources, that is not to be used.

# Intelligent Use of Energy:

- **Avoid waste:**

To do not spend energy that is not used; reduce waste

- **Increase efficiency:**

Same service with lower consumption; efficient equipment and generation

- **Promotes the use of clean and renewable energy**

Mini-hydro, wind, biogas, solar, geo-thermal, etc.

# Renewable sources in México

| Source      | World Capacity MW | Mexico Capacity MW | % Mexico vs. World |
|-------------|-------------------|--------------------|--------------------|
| Geo-thermal | 8,365             | 838                | 10                 |
| Solar       | 532               | 14                 | 2.6                |
| Mini-Hydro  | 27,950            | 40                 | 1.4                |
| Biogas      | 35,000            | 17                 | 0.05               |
| Wind        | 30,400            | 2                  | 0.005              |

# Actions:

## Supply increase:

(Reforms and new legislation for both, renewable and no-renewable energy)

## Demand reduction:

(Energy saving campaign)

# National Campaign:

| <b>Reforms:</b>                                      | <b>Campaign:</b>                              |
|--|---|
| Legislative action                                   | Executive action                              |
| Difficult consensus                                  | Easy consensus                                |
| Long term results                                    | Short term results                            |
| High financial cost                                  | Low financial cost                            |
| Increase fossil fuels consumption                    | Decrease fossil fuels consumption             |
| Increase pollution and CO2                           | Decrease pollution and CO2                    |
| Lack of involvement by local governments and society | Local governments and society can participate |

# Objective of the campaign:

To promote the Intelligent Use of Energy, through actions that:

- A) Avoids waste
- B) Increases efficiency
- C) Promotes clean and renewable sources



# Benefits:

## ■ **Economic:**

- Lower costs for all
- Reduction of energy imports
- Investments deferment
- Jobs creation

## ■ **Increase Reserves**

- Decrease the use of fossil fuels

## ■ **Environmental Protection**

- Reduction of local pollution and GHG emissions (CO<sub>2</sub>)

# Indicators:

## 1. Energy Consumption Statistics

In energy units

## 2. Renewable Energy Generation

Growth in the share of renewable primary sources of energy

# Restrictions:

## 1. Same service, lower consumption:

The Intelligent Use of Energy shall not affect:

1. Safety
2. Well being and comfort
3. Economic growth
4. Environmental protection
5. Quality
6. Productivity

## 2. Disposal of inefficient equipment :

Replaced equipment should be put out of service

Disposal or recycling must be mandatory

There should be financial support for the disposal effort

# Main campaign agents:

- 1) Federal Government
- 2) States and Municipalities
- 3) Industries and Commerce
- 4) Homes and buildings
- 5) Transport

# National Energy Consumption Matrix

(% consumption; 2006 projection)

| National Consumption | Federal Government | States & Municipalities | Industries & Commerce | Homes & Buildings | Transport |       |
|----------------------|--------------------|-------------------------|-----------------------|-------------------|-----------|-------|
| Electricity          | 7.7                | 99.7                    | 27.2                  | 19.9              | 0.3       |       |
|                      | 23.7               | 3.3                     | 53.3                  | 19.2              | 0.6       | 100.0 |
| Natural Gas          | 56.3               | 0.0                     | 32.0                  | 3.5               | 0.0       |       |
|                      | 72.3               | 0.0                     | 26.2                  | 1.4               | 0.0       | 100.0 |
| LPG                  | 0.3                | 0.2                     | 8.0                   | 40.1              | 3.4       |       |
|                      | 1.3                | 0.0                     | 25.0                  | 61.7              | 12.0      | 100.0 |
| Gasoline and Diesel  | 2.6                | 0.1                     | 7.9                   | 0.0               | 89.4      |       |
|                      | 3.5                | 0.0                     | 6.9                   | 0.0               | 89.5      | 100.0 |
| Other fuels          | 33.2               | 0.0                     | 25.0                  | 36.4              | 7.0       |       |
|                      | 50.6               | 0.0                     | 24.3                  | 17.4              | 7.7       | 100.0 |
|                      | 100.0              | 100.0                   | 100.0                 | 100.0             | 100.0     |       |

# National Energy Consumption Matrix

(Petajoules; 2006 projection)

| National Consumption | Federal Government             | States & Municipalities    | Industries & Commerce          | Homes & Buildings            | Transport                      | Total                           |
|----------------------|--------------------------------|----------------------------|--------------------------------|------------------------------|--------------------------------|---------------------------------|
| Electricity          | 186.1                          | 26.1                       | 418.8                          | 150.7                        | 4.4                            | 786.1                           |
| Natural Gas          | 1,360.3                        | 0.0                        | 492.5                          | 26.7                         | 0.7                            | 1,880.2                         |
| LPG                  | 6.5                            | 0.1                        | 122.8                          | 303.1                        | 58.8                           | 491.2                           |
| Gasoline and Diesel  | 62.1                           | 0.0                        | 121.1                          | 0.0                          | 1,567.1                        | 1,750.3                         |
| Other fuels          | 802.9                          | 0.0                        | 386.0                          | 275.3                        | 121.9                          | 1,586.1                         |
| <b>Total</b>         | <b>2,417.9</b><br><b>37.2%</b> | <b>26.2</b><br><b>0.4%</b> | <b>1,541.2</b><br><b>23.7%</b> | <b>755.8</b><br><b>11.6%</b> | <b>1,752.9</b><br><b>27.0%</b> | <b>6,493.9</b><br><b>100.0%</b> |

# Potential:

- Several sources estimate that the national energy savings potential in Mexico is in the long term in the range of

**20%**

## National goal proposed

**5%**

Saving of the overall energy consumption of the country by December 2006



# National Goal 2006

**Electricity: 10,918 GWh**

Total generation of six new power plants that started operation in August 2004

Generation of the Laguna Verde Nuclear Power Plant

**Natural Gas : 257 MMcfd**

Three times the total production of the Poza Rica Process Center

70% of Pemex Petrochemical's consumption

**LPG : 18 Mbd**

25% of the Cangrejera processing plant's production

8% of total residential consumption

**Gasoline and Diesel: 46 Mbd**

10% of the national supply and demand

22% of gasoline imports

# Impact on imports of NG:

## Natural Gas :

20% imports reduction

## Electricity (NG imports):

30% imports reduction

## Total Impact in NG imports :

**50% imports reduction**

# Direct Benefits:

| Source:                      | Save                 | Price              | Benefit                      |
|------------------------------|----------------------|--------------------|------------------------------|
| Electricity                  | 11,000<br>GWh/yr     | 0.90<br>\$/kWh     | <b>9,900</b><br>MM Pesos/yr  |
| Natural Gas                  | 94,000<br>MMcf/yr    | 65<br>\$/Mcf       | <b>6,110</b><br>MM Pesos/yr  |
| LP Gas                       | 6,500<br>Mbarrel/yr  | 1,170<br>\$/barrel | <b>7,605</b><br>MM Pesos/yr  |
| Diesel & Gasoline            | 17,000<br>Mbarrel/yr | 965<br>\$/barrel   | <b>16,405</b><br>MM Pesos/yr |
| <b>Total Direct<br/>Save</b> |                      |                    | <b>40,020</b><br>MM Pesos/yr |

## Next steps:

- **Step 1: November**

President Fox calls to the “INTELLIGENT USE OF ENERGY NATIONAL CAMPAIGN” and declares the subject as a NATIONAL PRIORITY

- **Step 2: December**

All elements of the “INTELLIGENT USE OF ENERGY NATIONAL CAMPAIGN” are presented to their respective public

- **Step 3: January**

National media campaign starts

# Conclusions:

- The generation of power in Mexico from renewable sources is still very low; additional efforts have to be made to overcome this problem
- Notwithstanding the fact that energy law reforms in Mexico are needed to increase our production, the potential to save energy in the country is very big; actions should be taken in the short time to avoid waste and increase efficiency



**Thank you**