# Mexico's Climate Policy Implementation Challenges: Mitigation and Adaptation

INE

2009

- Introduction
- Abatement opportunities and potential
- Barriers and Challenges by sector
  - Power
  - Transport
  - Waste
  - Buildings
  - Oil and Gas (Industry)
- Summary of opportunities

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- Two of the biggest challenges that Mexico and other countries will face in implementing a large number of low-carbon interventions are:
  - financing the often higher upfront costs of low-carbon interventions, and
  - Integrating environmental and climate policies across the board of cabinet Ministries
- Many of the emission reduction alternatives for Mexico face a variety market and non-market barriers, such as:
  - lack of political will
  - Lack of institutional mandate
  - limited institutional capacity to execute and enforce,
  - inadequate legal framework,
  - private sector participation (constraints, lack of incentives, high uncertainty)
  - Institutional inertia, conflict of interest, corruption

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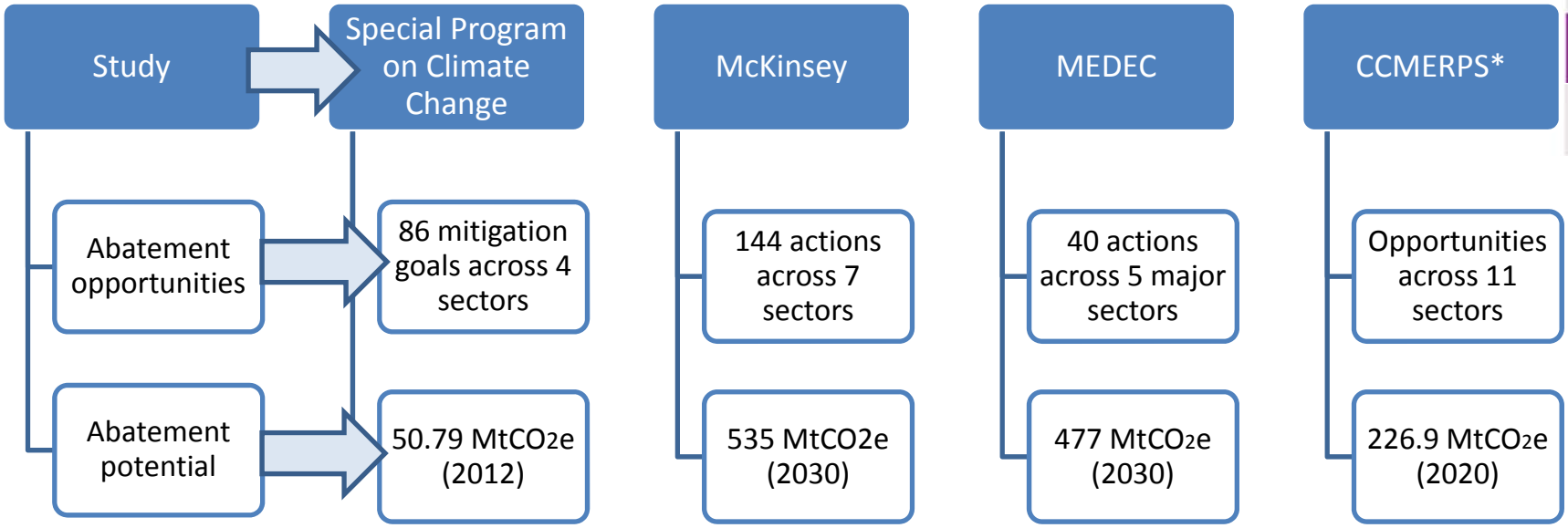
# Abatement opportunities and potential




However, the abatement potential presented in each study relies heavily in the capacity to capture the full benefits over time of each opportunity. Barriers to implementation and capture could decrease the benefits obtained.

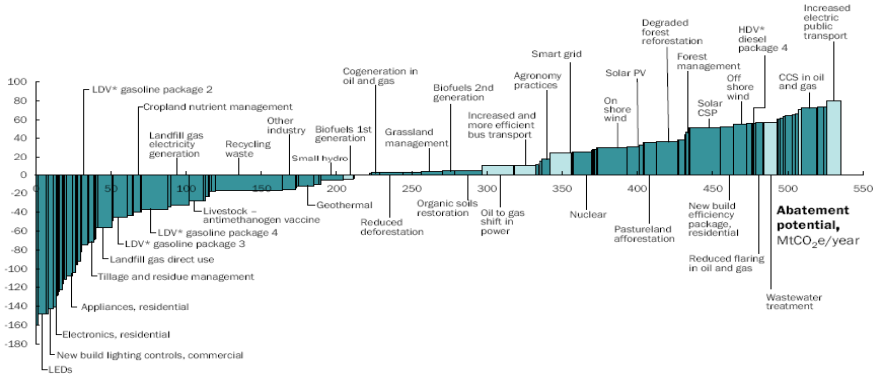
# Abatement opportunities and potential

- Several studies present cost curves to rank mitigation options.
- Options organized by cost per $CO_2e$ ton abated, and the estimated feasibility.
- A feasibility matrix should be able to capture political and social barriers to implementation (Source: McKinsey)

**Exhibit ii. National carbon abatement cost curve for Mexico**

GHG abatement cost curve for Mexico in 2030

Cost, US$/t$CO_2e$




* LDVs = light duty vehicles; HDVs = heavy duty vehicles

Note: The cost estimate for the light-colored bars is approximate

Source: McKinsey GHG abatement cost curve v2.0; McKinsey analysis

**Exhibit 20. Three horizons for implementation**

| Cost today | Ease of capture (in near-term): Readily achievable | More challenging | Difficult |
|---|---|---|---|
| Negative | • Appliances and electronics energy efficiency<br>• New build lighting controls<br>• Cropland nutrient mgmt<br>• Energy efficiency, oil & gas<br>• Methane leakage prevention, oil & gas<br>• Fuel shift, industry<br>35 | • Geothermal, small hydro<br>• Engine efficiency, LDVs[1]<br>• Energy efficiency packages, commercial new build<br>• Retrofit lighting controls<br>• Solid waste (excl. landfill gas flaring)<br>• Cogeneration, other industries<br>145 | • LED lighting<br>• Tillage and residue mgmt<br>• Chemical process optimization<br>17 |
| Modest | • Landfill gas flaring<br>• Increased bus transport<br>• Reduced flaring, oil & gas<br>• Cogeneration, oil & gas<br>• Biofuels – 1st gen. imported<br>• Solar water heaters<br>36 | • Solar & wind[2]; smart grids<br>• Oil to gas shift, power<br>• Energy efficiency packages, residential new build<br>• Reduced deforestation<br>• Energy efficiency, other industries<br>• Agronomy practices, grassland management<br>• Soil restoration<br>191 | • Nuclear<br>• Biofuels – 2nd gen. domestic<br>21 |
| High | • Afforestation/reforestation, forest mgmt<br>27 | • Increased subway transport<br>• Wastewater treatment<br>• Engine efficiency, HDVs[1]<br>23 | • Carbon capture and storage<br>• Livestock feed supplements and vaccines<br>41 |

X Abatement potential, Mt $CO_2e$ (total 535)

1 'Do it now, no regrets'

2 'Start slow, then accelerate'

3 'Develop now, capture over time'

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# Barriers to Climate Policy Implementation

- Considering the following 5 major sectors
  - Power
  - Transport
  - Waste
  - Buildings
  - Industry (Oil and Gas)
- A synthesis of the most common barriers for all actions or strategies in each sector follows:

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# Power Sector

Some of the emissions reduction alternatives considered in the studies mentioned above are:

- Renewable energy (wind, solar, small hydro, geothermal and biomass)
- Fuel shift-Oil to Gas
- Nuclear energy
- Smart grid power
- Carbon Capture Storage (CCS)

# Barriers in the Power Sector

**Common Barriers:**

- Financial Resources
- Regulation requires supplying the least costly source of energy
- Power sector planning seeks least cost technology
- High uncertainty of water availability once the plant is in operation
- Secure supply of natural gas
- Ups and downs in gas prices
- Public opposition
- Immature technology
- Lack of regulatory framework for smart meters and variable rates

**Renewable Energy:**

- Difficulties in obtaining local and federal licenses
- Power sector designed to operate with there current conventional technologies
- Intermittency of supply
- High uncertainty of water availability

**Fuel Shift Oil to Gas**

- Mexico will need to import natural gas to generate electricity with this technology
- Find new use for fuel oil

**Nuclear Energy**

- Public opposition (mainly environmental groups)
- Managing disposal of radioactive waste
- High upfront investment cost

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# Transport Sector

- Emissions reduction actions on the transport sector
  - Engine efficiency packages
  - Biofuels
  - Increase use of bus public transport
  - Increase use of electric public transport

# Barriers in the Transport Sector

## Light Duty Vehicles Barriers

- Uncertainty about future fuel efficiency standards and norms
- Potential impacts on domestic auto industry
- Imports of old cars
- Lack of verification programs nationwide and enforcement resources
- Cost of new vehicles

## Public Transport Barriers

- High capital investments required for public transport
- Fares not sufficient to recover investments costs or may take too long
- Lack of transport suppliers (as organized sophisticated companies)

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# Waste sector

Emissions reduction strategies in the waste sector:

- Landfill management
- Recycling
- Composting
- Wastewater treatment

# Barriers in the Waste Sector

- Lack of waste management programs in all states and municipalities
- Capital investment required for action as recycling or gas capture is high.
- Lack of markets for waste management (or underdeveloped markets)
- Institutional enforcement for waste regulation

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# Building Sector

- Retrofit energy efficiency in existing buildings (efficiency design, improved isolation, solar water heaters)
- New build energy efficiency (aggregated new build efficiency packages)
- Switch incandescent bulbs to CFLs or LEDs
- Electronics and appliances

# Barriers in the Building Sector

- Electricity subsidies for middle and high-income residential consumers discourage many energy efficiency investments in appliances and lighting
- Delay in the adoption of energy efficiency norms
- High upfront costs

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# Industry Sector

- CCS in the oil and gas industry (PEMEX), as well as in the iron and steel sector
- Methane leakage in natural gas industry
- Cogeneration and energy efficiency in refineries
- Reduced gas flaring

# Barriers in the Industry Sector

- Investments in cogeneration plants and emission abatement projects are less attractive than petroleum exploration and development
- In the case of cogeneration, there are unfavorable conditions for the sale of surplus electricity to the grid
- Lack of clear mandate to reduce methane leakage or flaring
- Higher returns of other investment projects are more attractive than investing in emissions abatement projects

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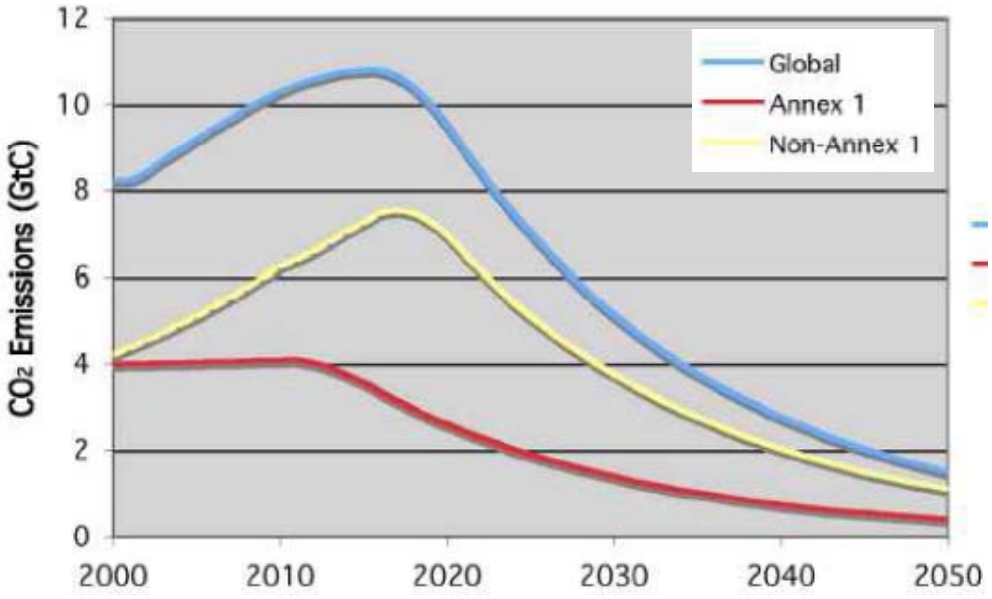
# Summary of opportunities

- Capturing available opportunities to increase energy efficiency in a cost-effective way, in order to reduce the energy demand.
- De-carbonizing energy sources, in particular the electric power and oil and gas sectors.
- Accelerating the development and deployment of new low-carbon technologies.
- Changing the behaviors of businesses and customers, educating them towards a “green behavior”.
- Preserving and expanding carbon sinks, most notably our forests.

# Fair shares to meet the climate challenge




The blue line below shows the global emission path needed to keep the global temperature rise within 2ºC. This requires global emissions to peak by 2015 and fall by at least 80% below current levels by 2050.

Even this has a 20-35% risk of going above the 2ºC threshold.

The critical question is how this carbon budget is shared. Even if industrialized countries (Annex 1) cut emissions to 90% below 1990 levels by 2050 (red line), the remaining space for developing countries (non-Annex 1) to increase emissions is limited. The yellow line simply shows what is left of the global carbon budget for developing countries.

It peaks before 2020 and then falls at 6% a year.

This shows the dilemma of climate change: letting emissions rise above the blue line spells disaster, while limiting emissions of developing countries could perpetuate poverty.

Neither path is acceptable.

This dilemma can only be solved by North and South working together.

Source: Action for a Global Climate Community. Why we need Copenhagen Plus. www.climatecommunity.org

# Diversification of funding sources to achieve “optimal participation”