

# Impact of used vehicles on Policy Alternatives for incorporating Cleaner and Renewable Energies in the Transport Sector

## The Case of Mexico

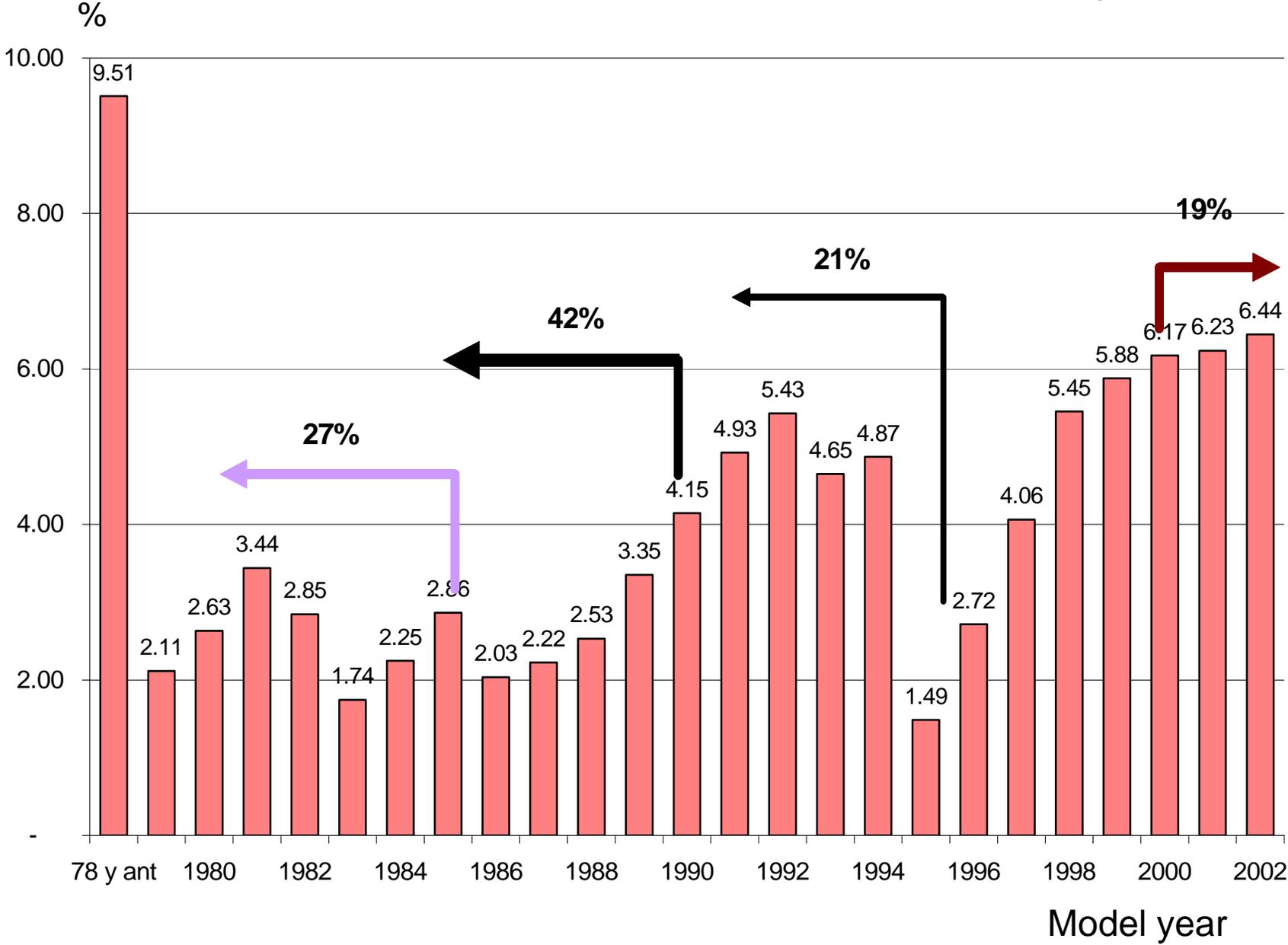
**Elizabeth Mar Juárez**

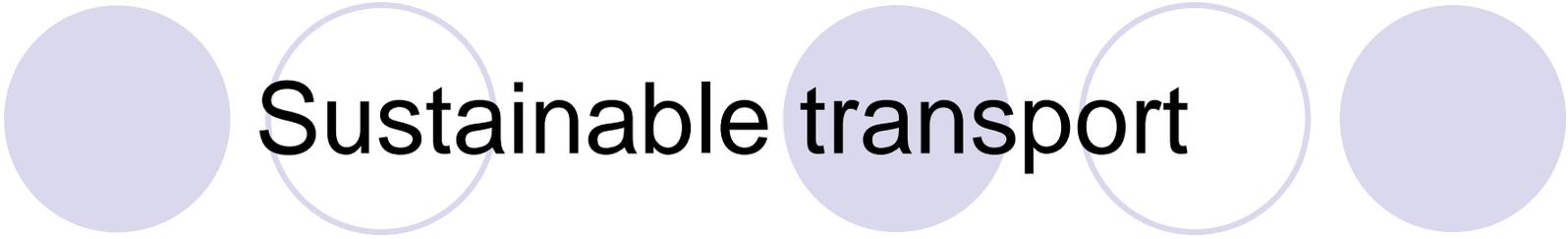


# Transport: Key Sustainability Issue

- Growth of the transport sector in developing countries will become a major sustainability issue in 10-20 years
  - As the population's income grows more energy is used in transport related activities
  - Used vehicles have long lives in Mexico (probably the same in most developing countries)
  - The technological impact of new vehicle sales is "diluted" as they are simply added to the existing fleet
  - One radical example: the average "age" of the Mexican cargo truck fleet is 17 YEARS! A truck bought in 1987 is probably still working and hauling trailers

# Mexico's Car Fleet Composition by Model Year



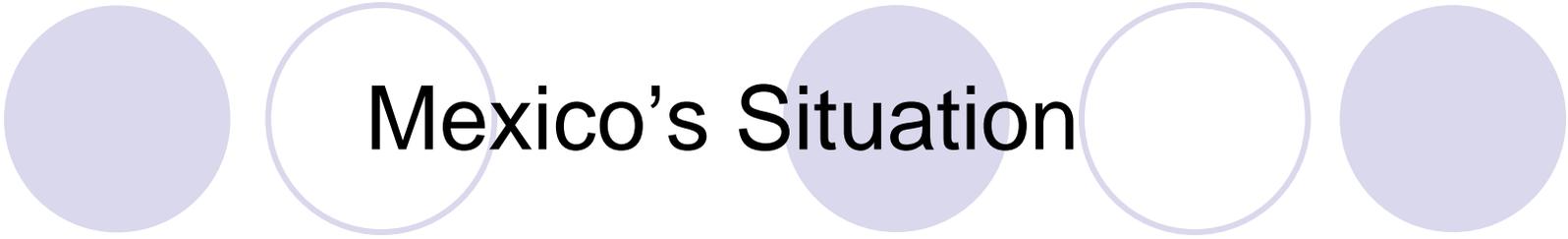


# Sustainable transport

- Definition of “sustainable” transport is still an ongoing debate
  - Usually linked to the use of Cleaner and Renewable Energies (CRE) such as Hydrogen, Electricity, Biofuels
  - Real options for petroleum producing countries? Oil byproducts
  - Governments in developing countries have to enforce fuel efficiency in new vehicles and Inspection/Maintenance Programs
  - Also, use of CRE for transport will have to be supported and ENFORCED by governments in developing countries

# Scenario Development to evaluate Sustainable Transport Policies in Mexico

- Programmed in LEAP, Long Range Energy Alternatives Planning Model from Stockholm Energy Institute – Boston
- Characteristics of LEAP:
  - Accounting Model using activity coefficients based on the National Energy Balance
  - Allows backward calculation of fixed energy goals and incorporation of particular considerations as input to recalculate the projection
  - High degree of flexibility regarding the data needed, not data intensive



## Mexico's Situation

- Introduction of technological changes, cleaner fuels and renewable energies will be a slow and gradual process
- Oil byproducts are a more suitable fuel substitution for gasoline: diesel, LPG, CNG
- Used Cars should be considered; another example, 73% of new cars sold in 1983 are still in circulation



# Policy Alternatives

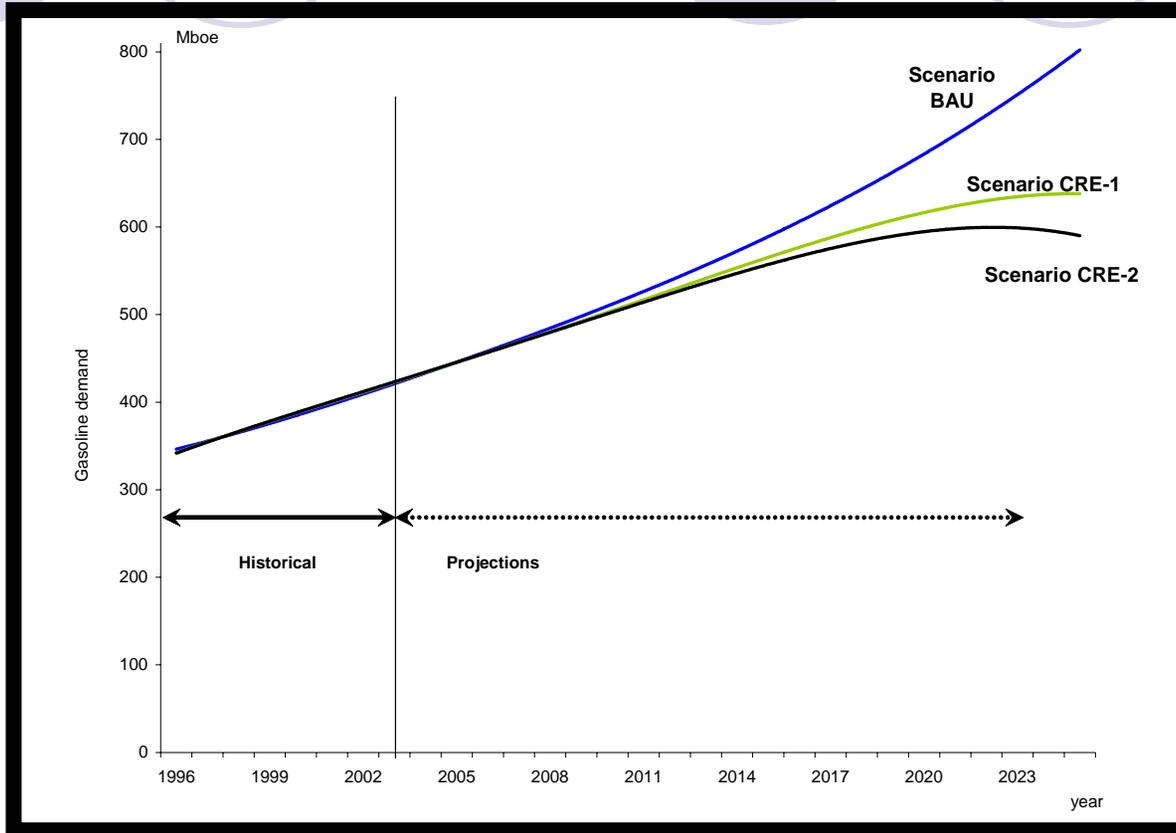
- Introduction of Cleaner and Renewable Energies:
  - **Companies must sell new cars with alternative fuels to gasoline with defined growth targets**
    - **By 2025: 40% of new cars sold use gasoline, 25% use diesel, 15% are hybrid-electric, 8% use LPG, 7% use CNG and 5% use ethanol**
- New-car fuel efficiency policy:
  - **Gasoline new cars have a higher gain in fuel efficiency than the historical trend of 2%**
- Inspection and Maintenance Programs
- Fuel improvement: Gasoline reformulation

# Scenario Development

**Business-as-Usual: all new cars sold are gasoline based**

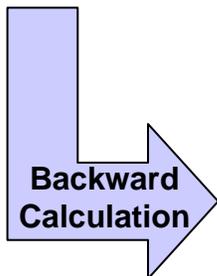
**CRE1: 2025 Policy Overall Goal of 25% Avoided Gasoline Consumption**

**CRE2: 2025 Policy Overall Goal of 30% Avoided Gasoline Consumption**



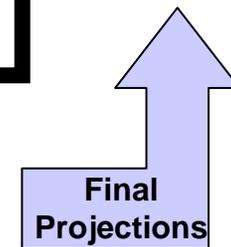
**CRE1: 21.2% Avoided Gasoline Consumption**

**CRE2: 27.3% Avoided Gasoline Consumption**



**CRE1: New Car efficiency needs to grow 3.4% (28 km/l in 2025), mild governmental intervention in I/M programs, gasoline reformulation not a general practice**

**CRE2: New Car efficiency needs to grow 6% (32 km/l in 2025), strong governmental intervention in I/M programs, widespread gasoline reformulation efforts**





# Findings

- Even though alternative-cleaner fuel cars account for half the new car sales in 2025, only 21.2% of gasoline is avoided (CRE1)
- Governmental attitude makes a difference: a gain in almost 6% of avoided gasoline consumption between CRE1 and CRE2
- There is a “used car syndrome” that restrains the benefits obtained. All things the same, in 2025 most of cars sold today will be in circulation.
- Old car replacement is as important as the introduction of alternative-cleaner fuels in the implementation of a Sustainable Transport Policy.

Thank You!  
¡Gracias!

IMP - Grupo de Prospectiva

