

The Case for Mexico to Improve Vehicle Fuel Efficiency

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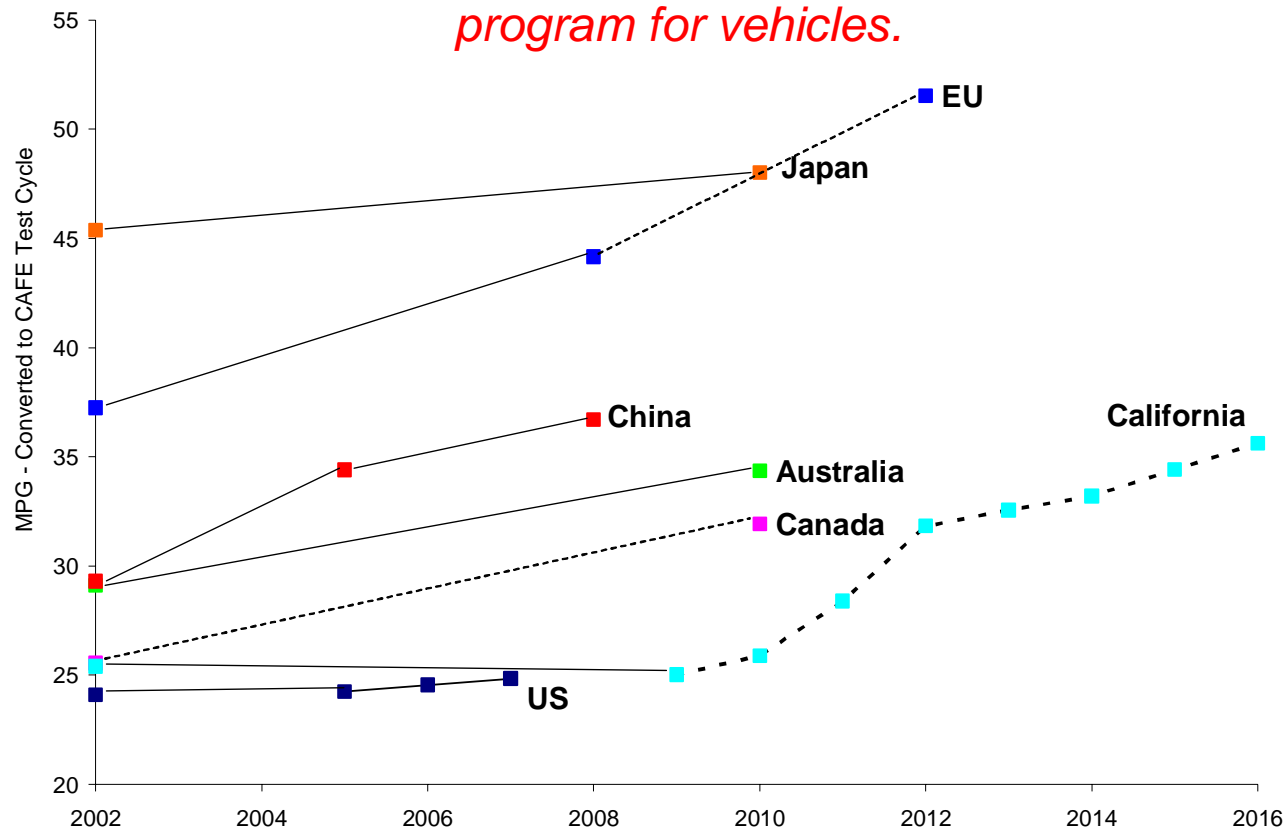
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Outline

- Global Trends in Vehicle FE Standards
- Why Mexico Needs to Improve Vehicle Fuel Efficiency
- Fuel Economy Characterization of Light-Duty Vehicles In Mexico
- Modeling of Mexico Vehicle Stock and Transportation Oil Use
- Scenario of Oil Production vs. Demand
- Conclusions

Global trends for fuel economy and GHG emission standards

At-least nine countries and regions have established or proposed motor vehicle fuel efficiency or GHG emission policies. *Of the 30 OECD countries, only Mexico and Iceland do not currently have some form of fuel economy or GHG emission program for vehicles.*



Source: Comparison of Passenger Vehicle Fuel Economy and GHG Emission Standards around the World, by Feng An and Amanda Sauer, Report for *the Pew Center on Global Climate Change*

Benefits of Improving Vehicle Fuel Economy

Currently relevant to Mexico:

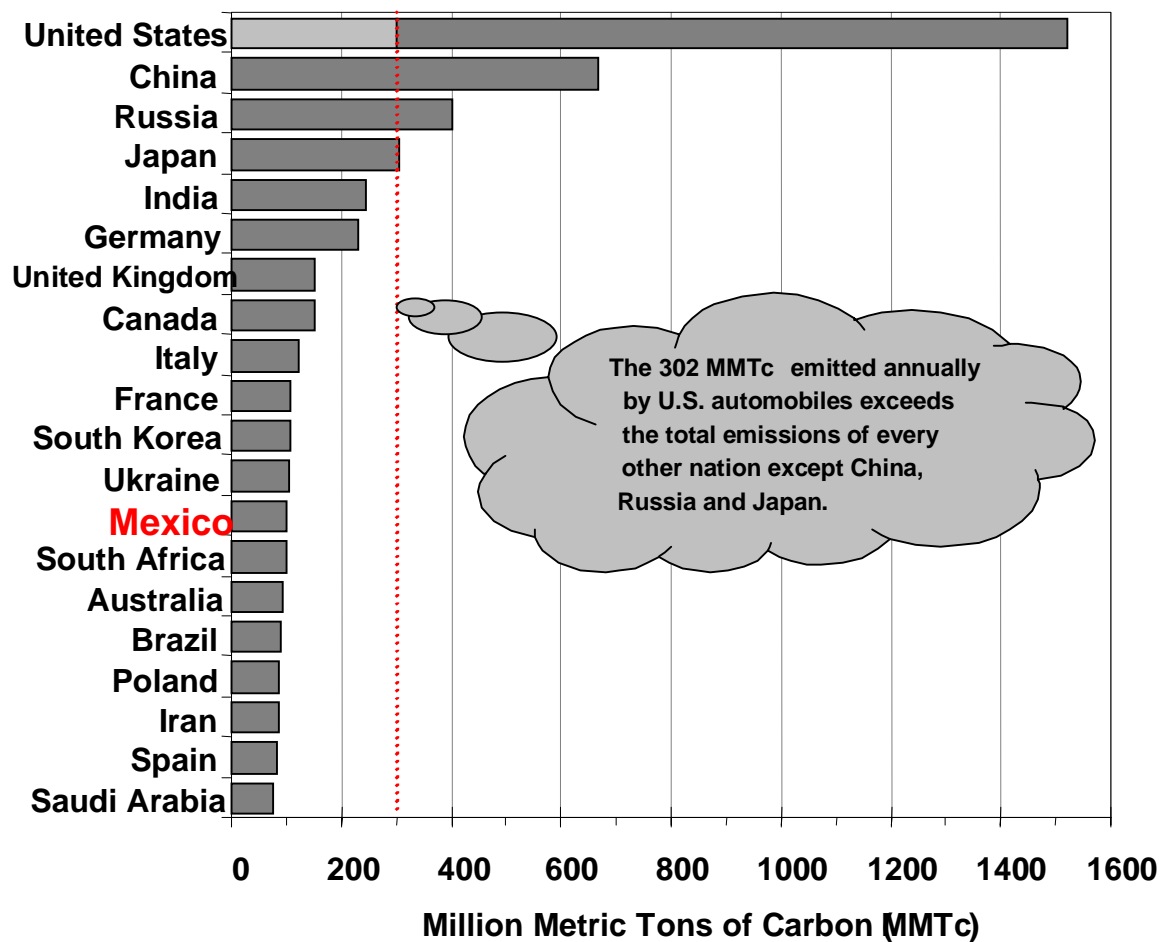
- Reducing Energy Consumption
- Reducing GHG Emissions
- Improving Air Quality
- Improving Trade Balance
- Promoting Energy Efficient Technologies
- Increasing Competitiveness of Auto Industry
- Synchronizing with International Standards

Future relevance to Mexico?

- Reducing Dependence of Imported Oil
- Improving Energy Security

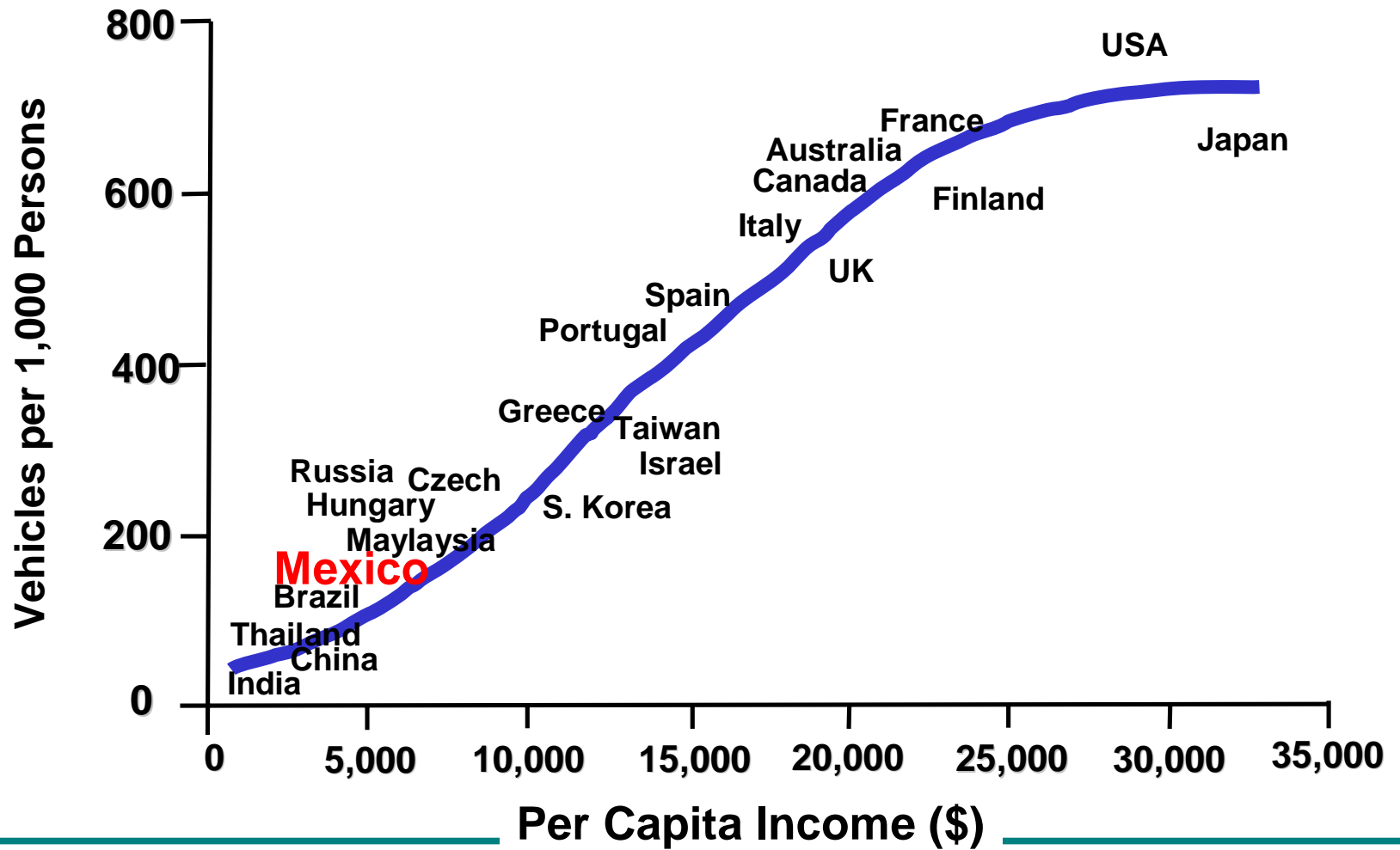
Carbon Emissions of the 20 Highest Emitting Nations

– Mexico ranks 13th

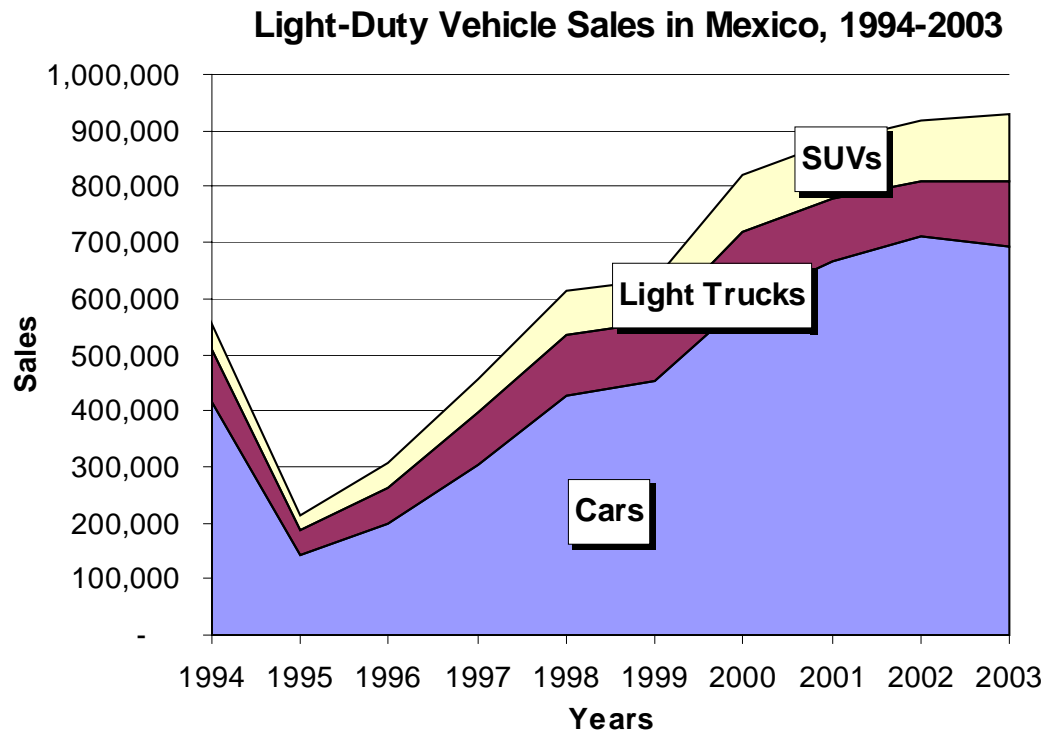


Relationship of Vehicles Sales to Per Capita Income

– Large growth potential for Mexico



Light-Duty Vehicle Sales in Mexico surged since 1995



LDV sales have grown rapidly since 1995, following a major market contraction in 1994.

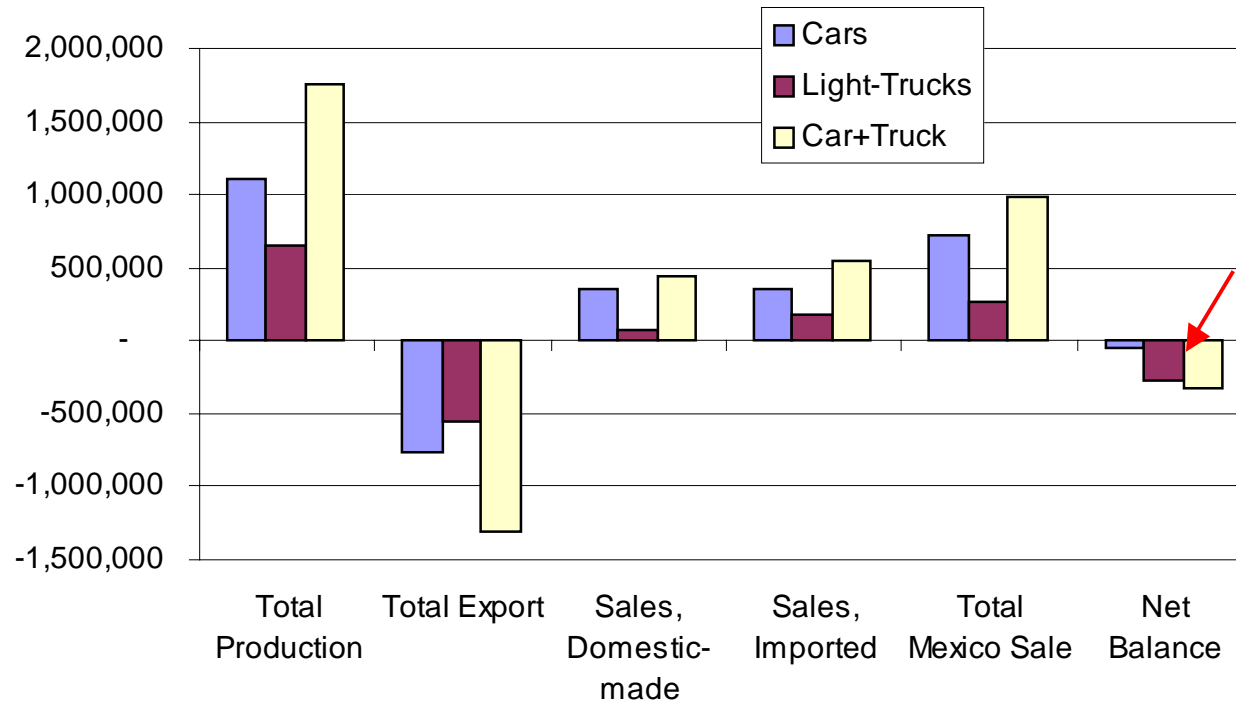
Since 1995, the annual growth rates averaged
~ 23% for cars
~ 18% for trucks
~ 22% for cars & trucks combined.

The combined annual growth rate is still ~14% with the market contraction of 1994 included.

Mexico is basically a “net” light truck exporter

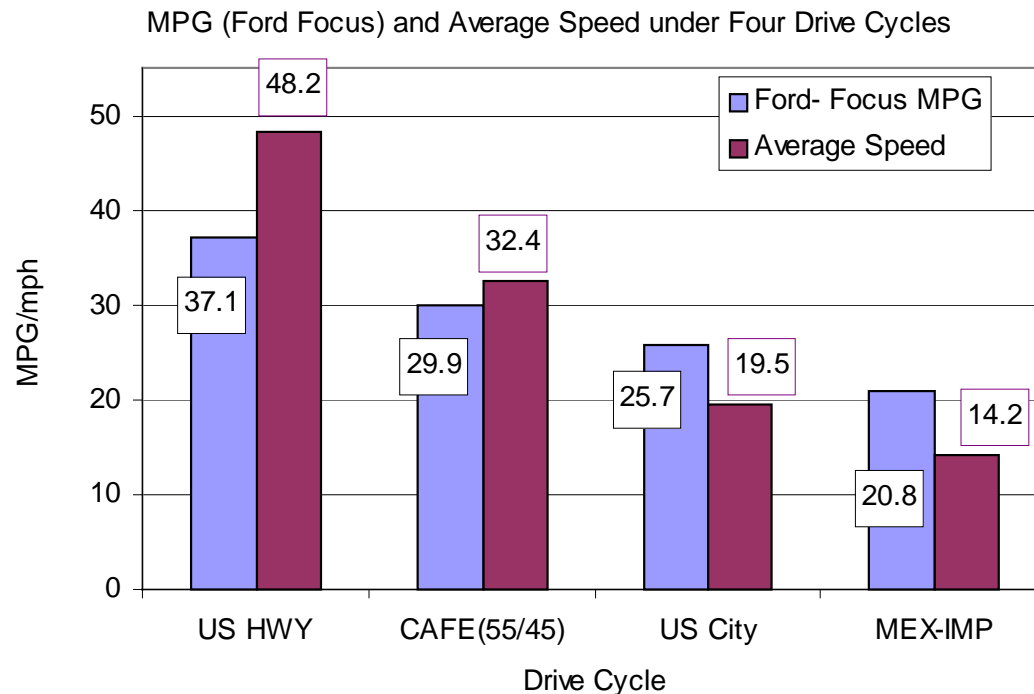
Mexico auto market is very dynamic in the sense that it *produces, sells, exports, and imports* large volumes of vehicles at the same time. About half of the new-sale vehicles are made domestically, half are imported. Three quarters of produced vehicles in Mexico are exported. But in general, Mexico is a “net” auto exporter – it exports more vehicles than it imports and sells domestically

Accounting of Mexico LDVs in 2002



Mexico Driving Pattern is very different from the US ones

- Mexico Cycle vs. US City, Highway and CAFE Cycles

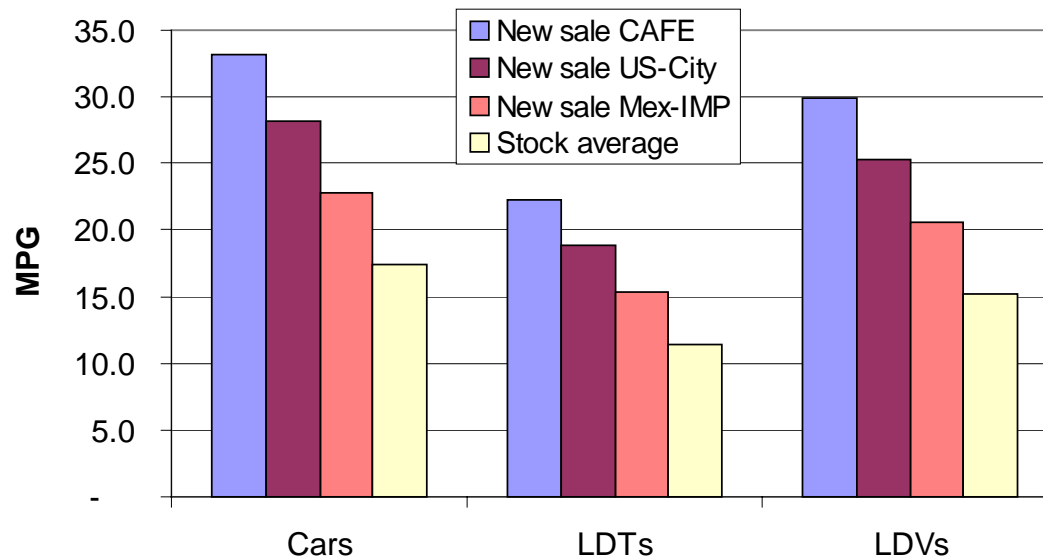


The average speed of MEX-IMP cycle is only about 14 mph. In comparison, the US-City average speed is about 20 mph, HWY cycle about 48 mph, and combine City/HWY CAFÉ cycle about 32 mph. MPG rating declines with the cycle-average speed

New Vehicle “Certified” FE vs. Stock-wide Average “Real-world” FE Estimation

2002				"Gap"
MPG	Cars	LDTs	LDVs	
New sale CAFE	33.2	22.3	29.9	
New sale US-City	28.1	18.9	25.3	18%
New sale Mex-IMP	22.8	15.3	20.5	46%
Stock average	17.5	11.5	15.3	96%

Fuel economy of motor vehicles in Mexico



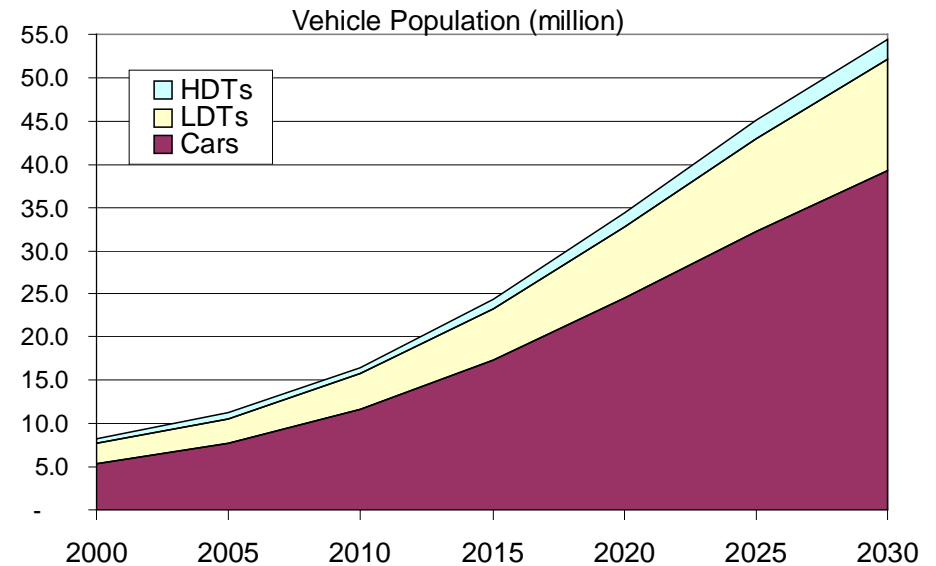
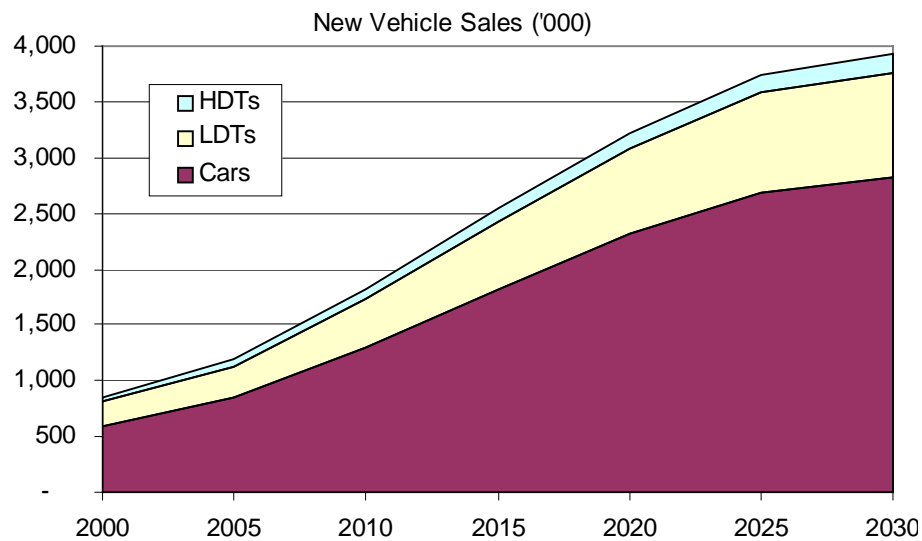
Stock average “real-world” fuel economy figures are much lower than the certified fuel economy ratings for new vehicles measured based on standardized US-City cycle

Modeling of New Vehicle Sales and Vehicle Population in Mexico

- to reach 4 million units for new sales, and 55 million population by 2030

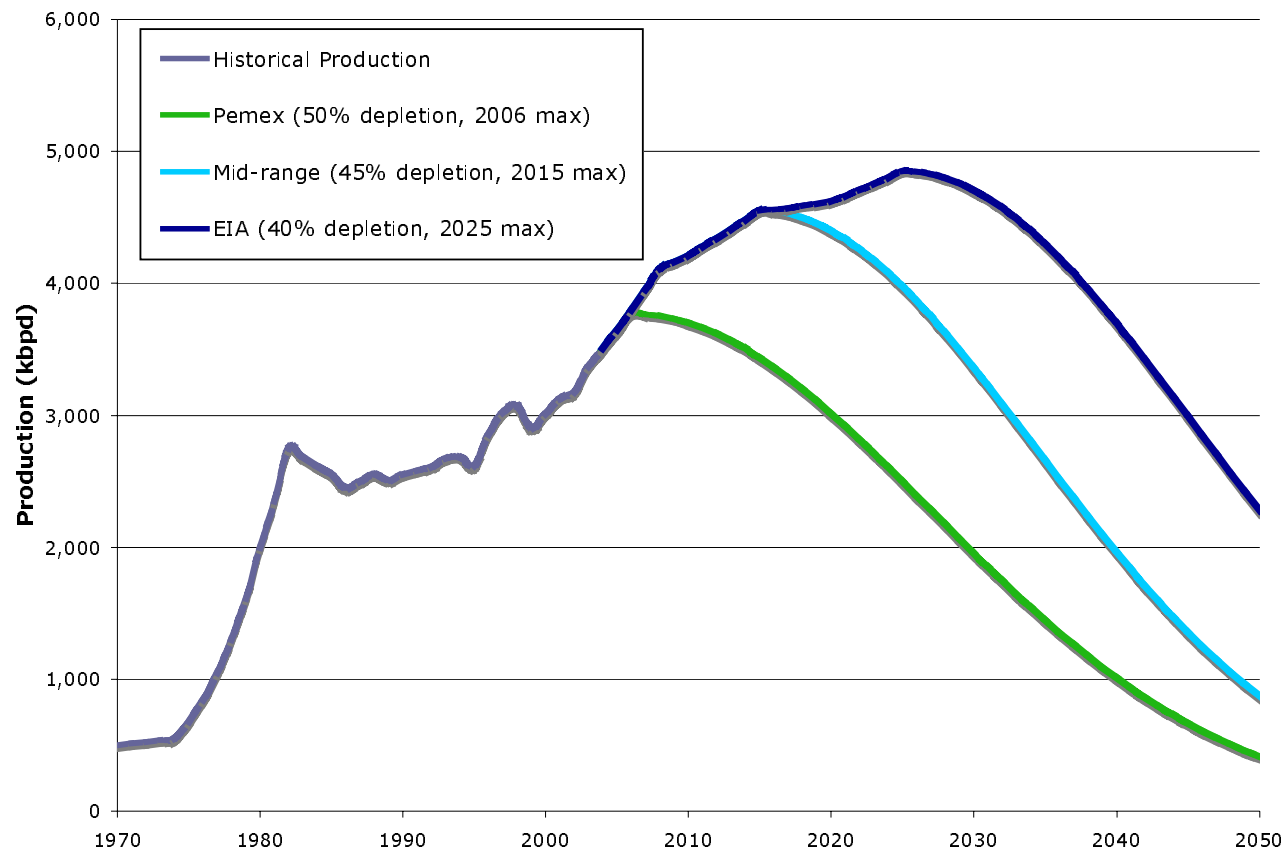
New sale ('000)	Cars	LDTs	LDVs	HDTs	Total
2000	593	225	818	35	854
2005	843	286	1,129	59	1,188
2010	1,296	436	1,732	86	1,817
2015	1,817	607	2,424	114	2,538
2020	2,318	770	3,088	141	3,229
2025	2,687	890	3,577	159	3,736
2030	2,823	935	3,758	167	3,924

Pop (millions)	Cars	LDTs	LDVs	HDTs	Total
2000	5.5	2.2	7.6	0.6	8.2
2005	7.8	2.9	10.6	0.7	11.3
2010	11.6	4.1	15.7	0.9	16.6
2015	17.4	5.9	23.3	1.2	24.5
2020	24.5	8.2	32.8	1.6	34.3
2025	32.3	10.8	43.1	2.0	45.1
2030	39.2	13.0	52.2	2.4	54.5



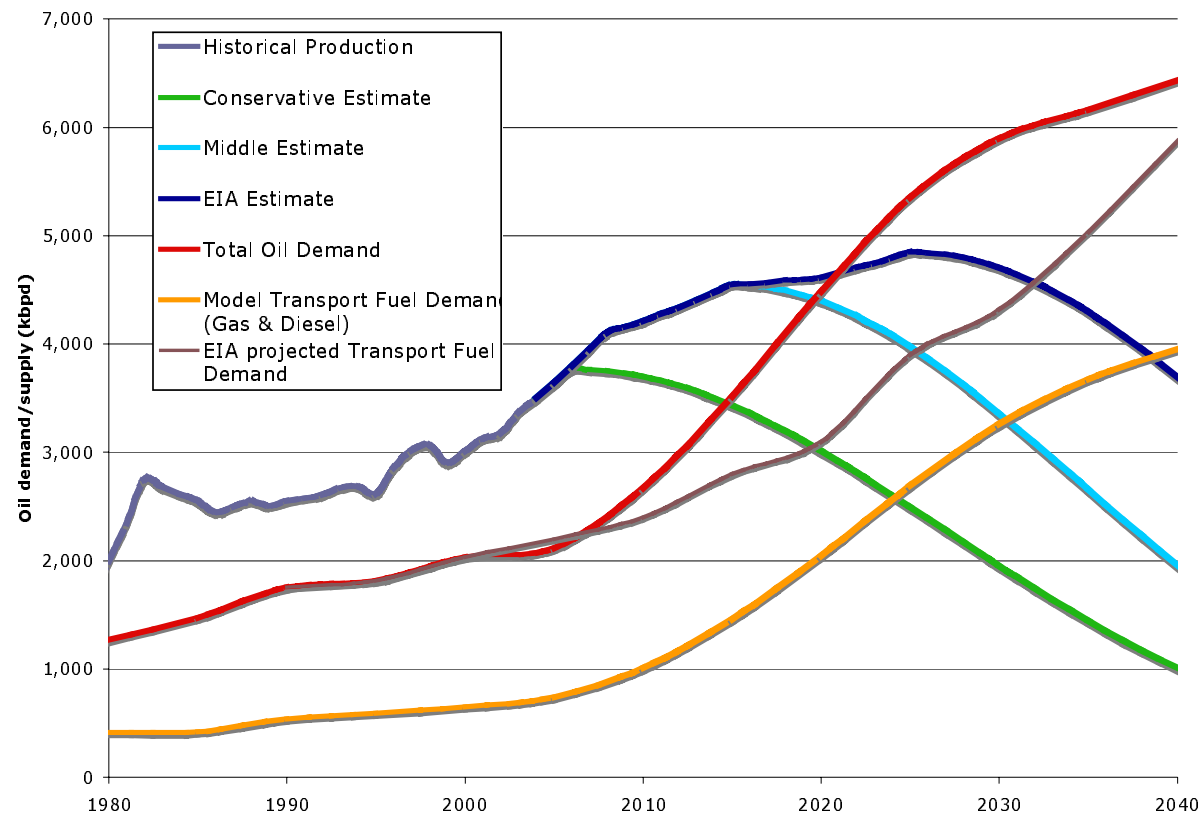
PEMEX oil production will begin to decline

Reserves are around 50% depletion now,
PEMEX predicts that decline will begin after 2006 unless
significant new reserves are discovered.



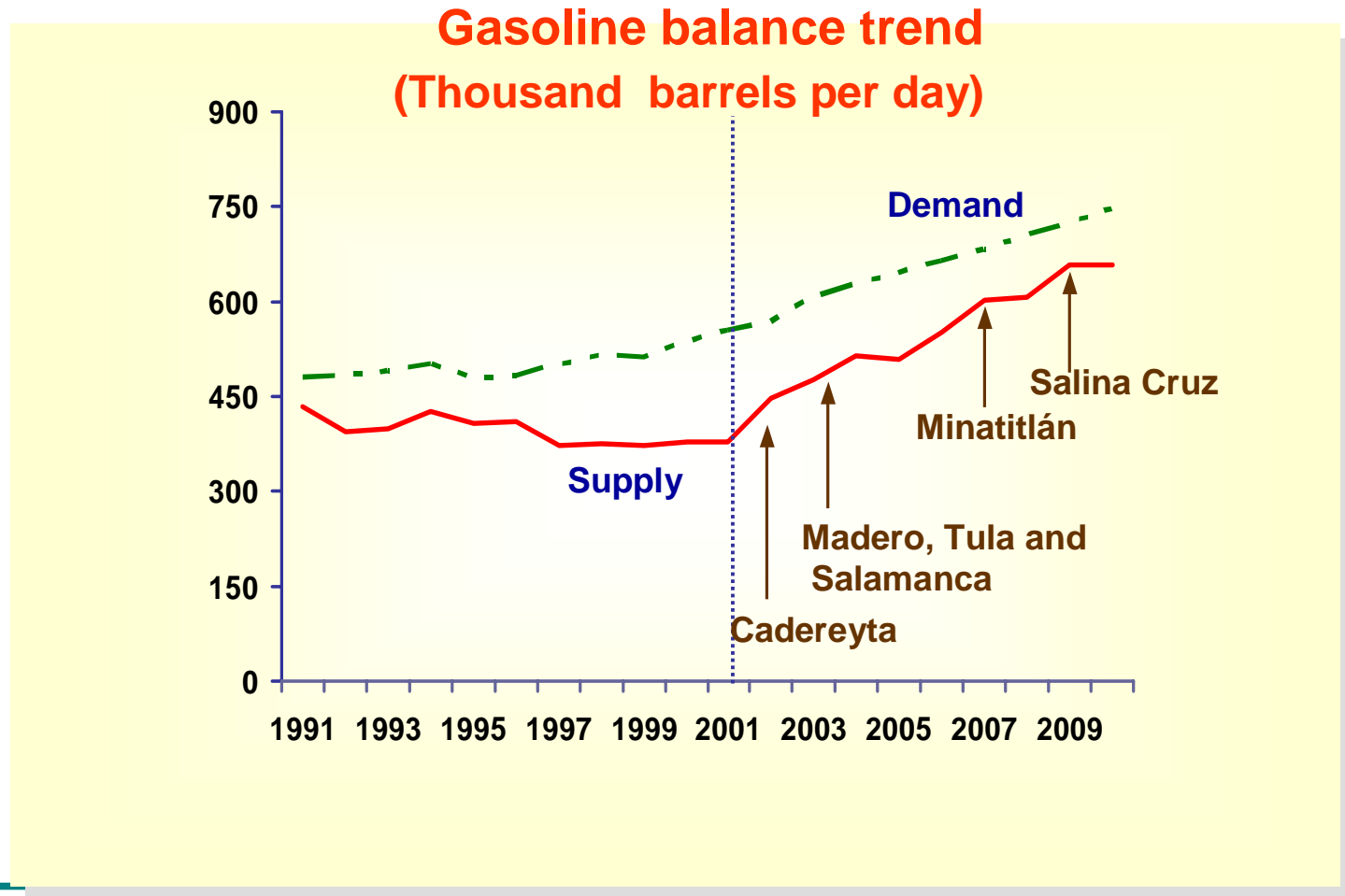
Under BAU, oil demand will outstrip crude supply between 2015 and 2035

Demand for road transport alone will outstrip total crude supply between 2024 and 2039



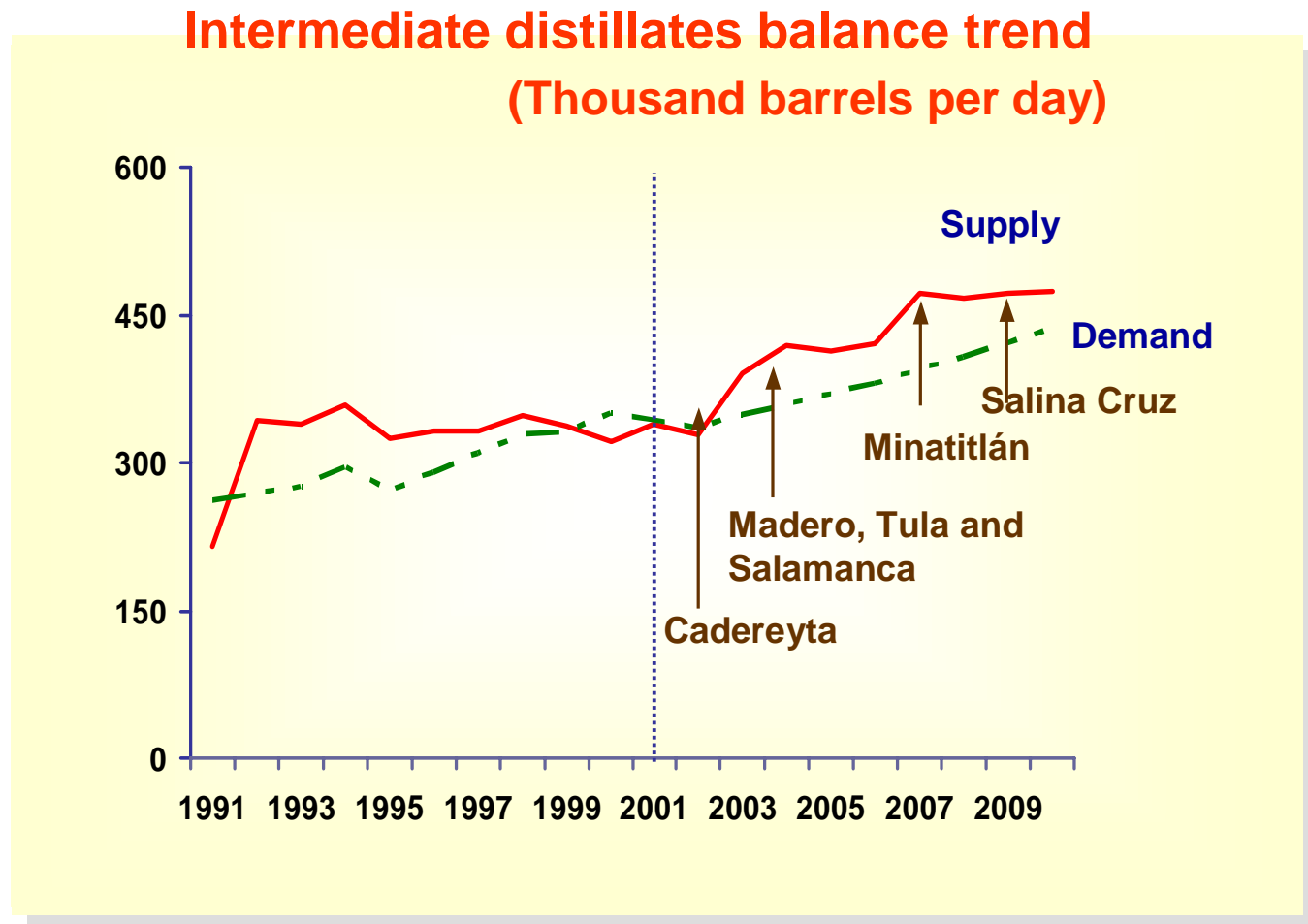
Gaps between Gasoline Demand and Refinery Capability are large

~ 30% of Gasoline in 2001 was imported

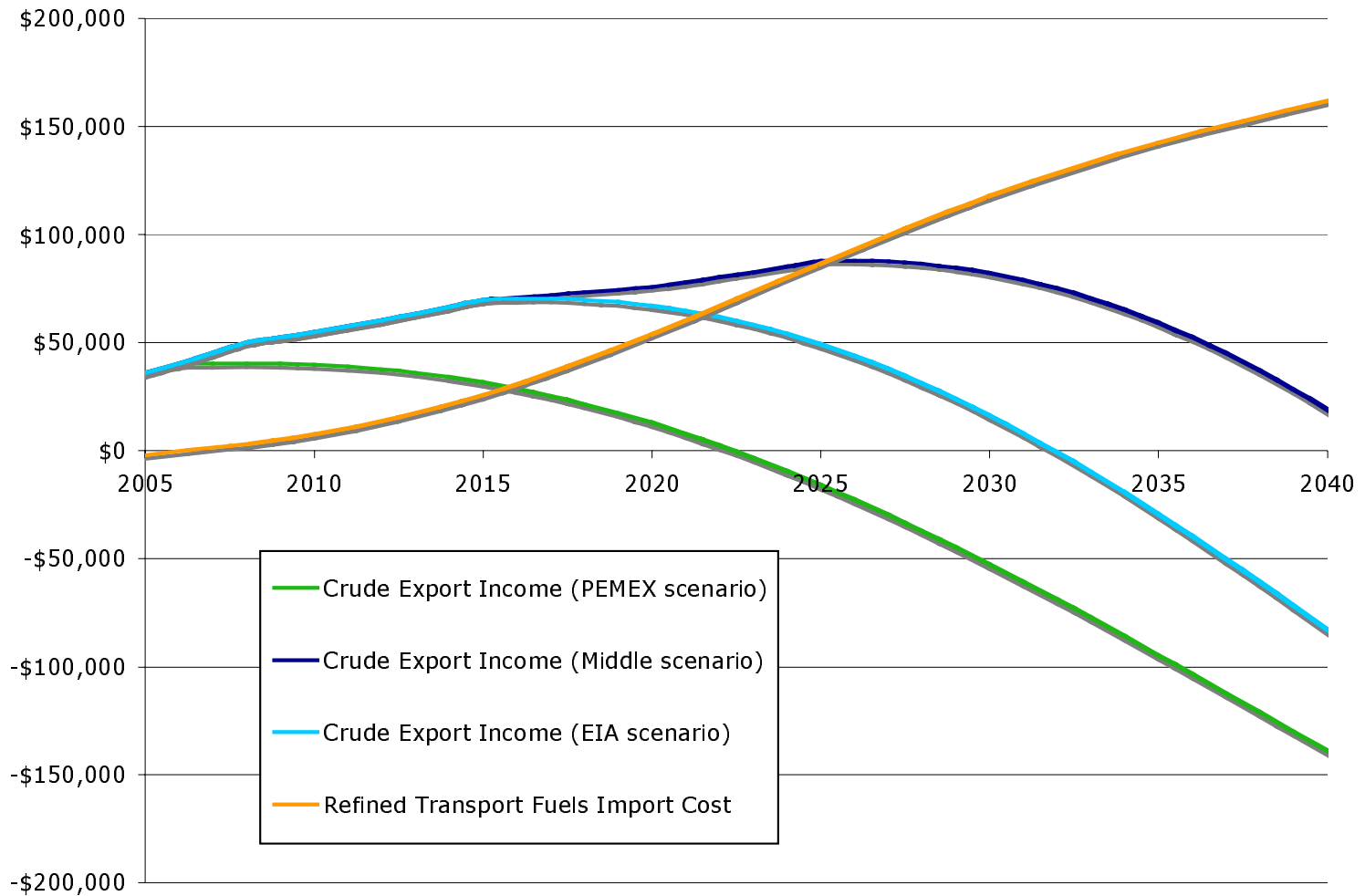


Source: Martha Hernandez, PEMEX

However, Mexico has over-supply of Diesel fuel



Import costs for road fuels could be higher than crude export income by 2016



Conclusions

- There is tremendous growth potential for vehicle ownership and fuel demand.
- Unless large reserves are found in the near future and/or demand growth is curbed, Mexico could become a net oil importer in 10 years.
- There are multiple benefits to improved vehicle fuel economy:
 - Reducing CO₂ emissions and improving air quality
 - Improving trade balance and putting off dependence on foreign oil
 - Increasing competitiveness of the auto industry