

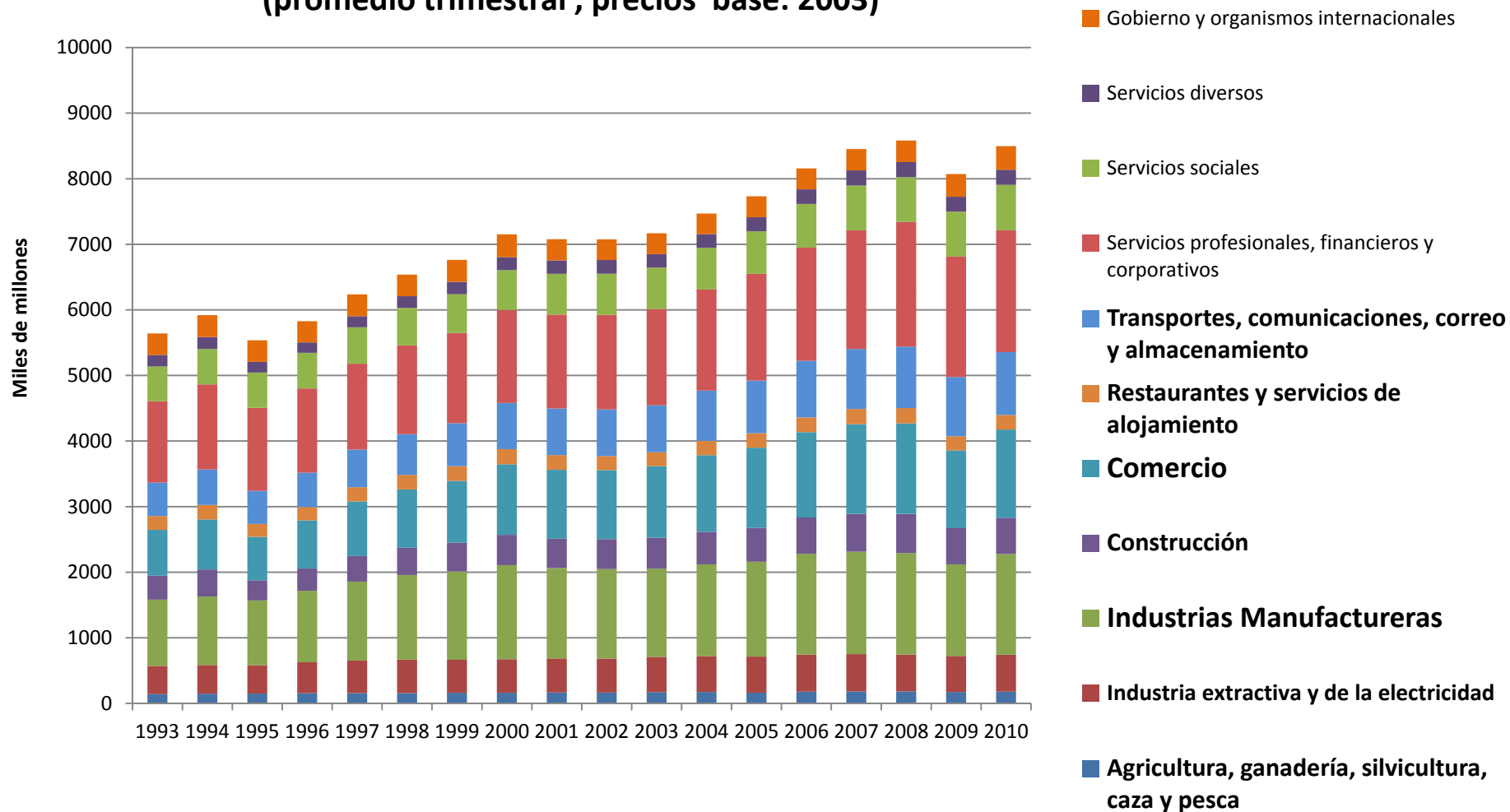
**Good intentions with
(environmentally) perverse effects:
Subsidies that slow technological
change in developing countries.**

Carlos Muñoz Piña

World Bank. Green Growth
Knowledge Platform
México 2012

Mexico's Growth

Producto Interno Bruto (promedio trimestral , precios base: 2003)



Fuente: INEGI

Observaciones:

•En la gráfica se encuentran los sectores agregados según la ENOE

Green Growth: Operational Definition

- To achieve its *Green Growth* potential, Mexico must seize **opportunities** in the new environmental technology industries (high tech, low tech), while managing the **transition** for the rest of the economic sectors, including its **distributive** and employment effects.
- New technology adoption and new consumption patterns for households, firms and government will come from having correct **price** signals, smart **regulation** and strategic **support**.

SUBSIDIES vs. MARKETS

- Subsidies interfere with market signals, precluding them from sending the real messages about natural resource scarcity.
- In the case of energy and water, these distorted signals slow the voluntary adoption of the more efficient, input saving technologies . The latter become artificially less profitable.
- The “support programs” given to agricultural and cattle ranching activities can make the expansion of these activities over forested areas artificially profitable, increasing deforestation, or increase the use of technologies with higher environmental impact.

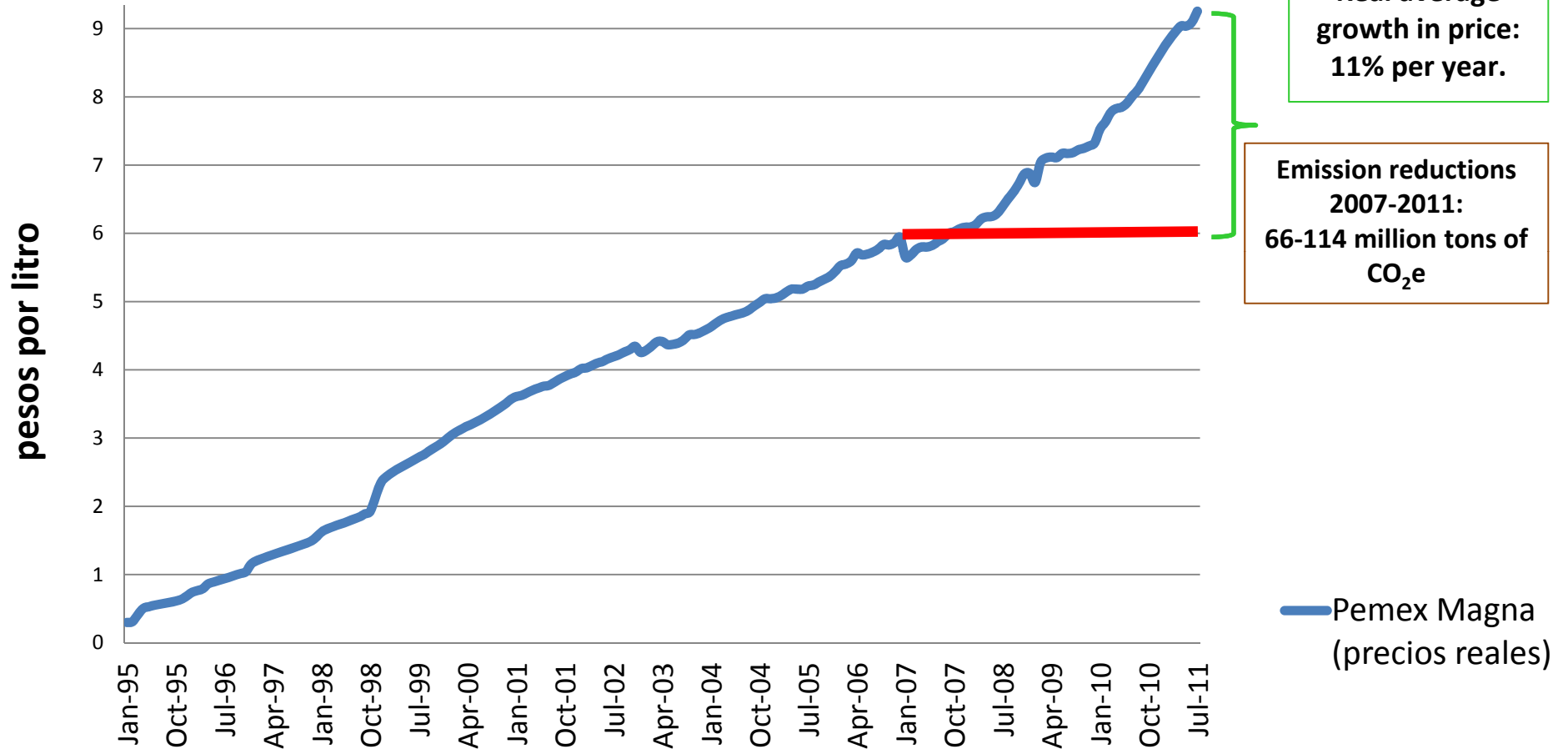
FOSSIL FUELS

- Petroleum rich countries have the temptation (vulnerability) to use lower fuel prices as a political variable.
- Sterner (2005): Fuel prices have institutional inertia, interest groups form around status quo.
- In Mexico:
 - Gasoline
 - Diesel. Including differentiation by sector: fishers, farmers.

Keeping a steadily increasing price moved Mexico towards a greener economy.

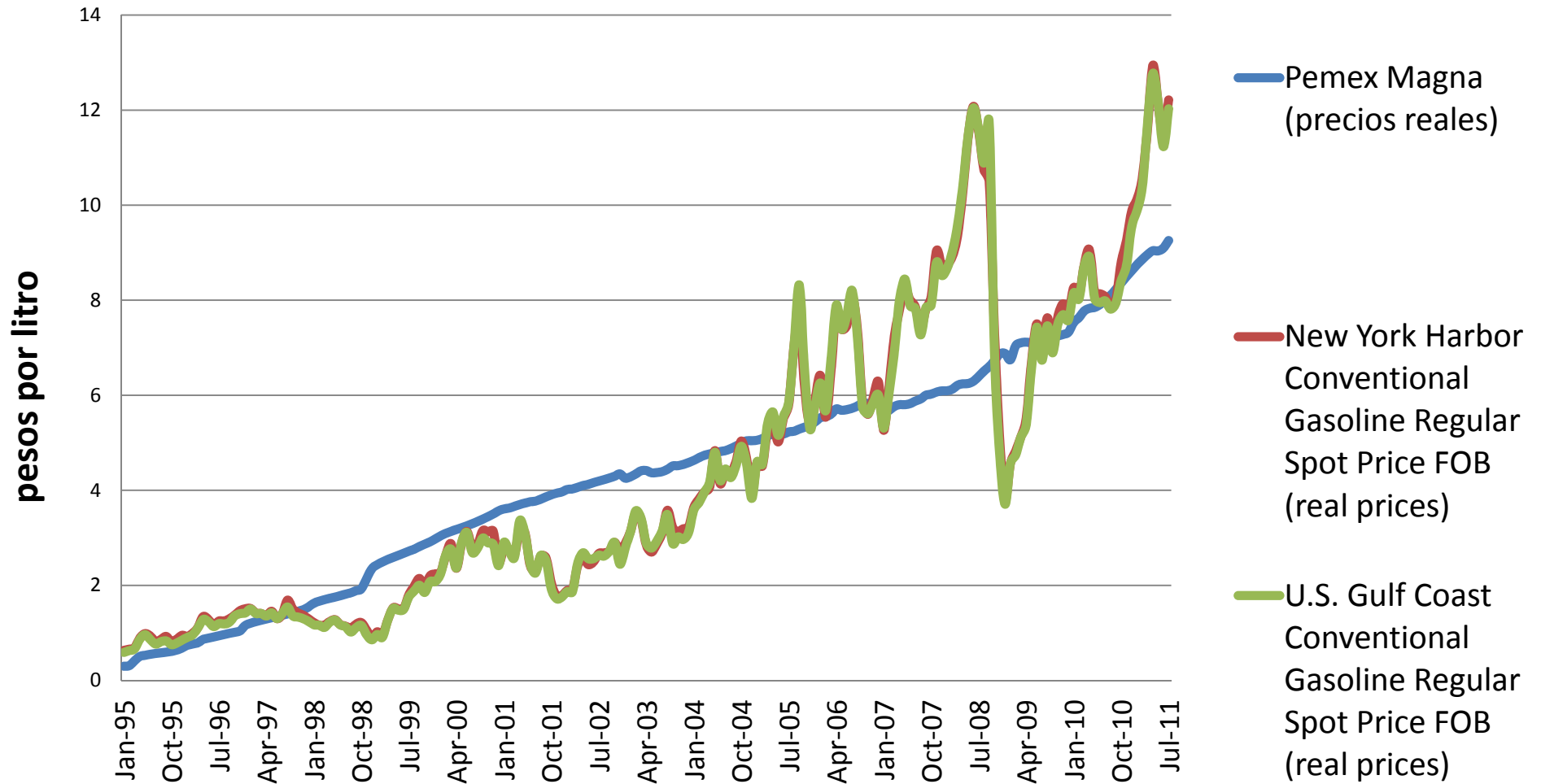


Lower consumption than base case, between 66 and 114 million tons of CO₂e



However, international prices kept growing (Intntl Gasoline prices 1995-2011)

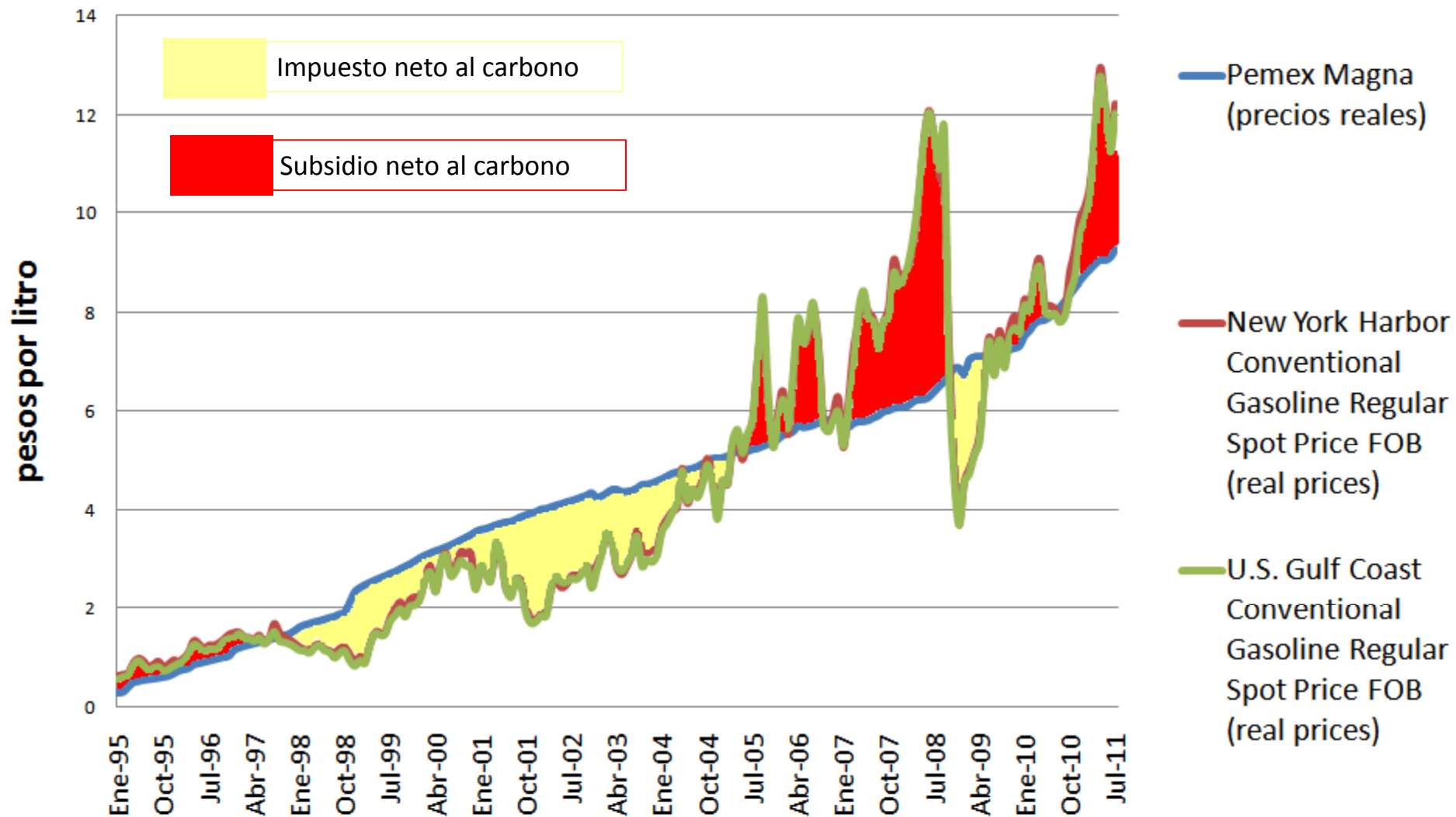
MEXICO



GASOLINA:

Precios de combustible: subsidios e impuestos implícitos (1995-2011)

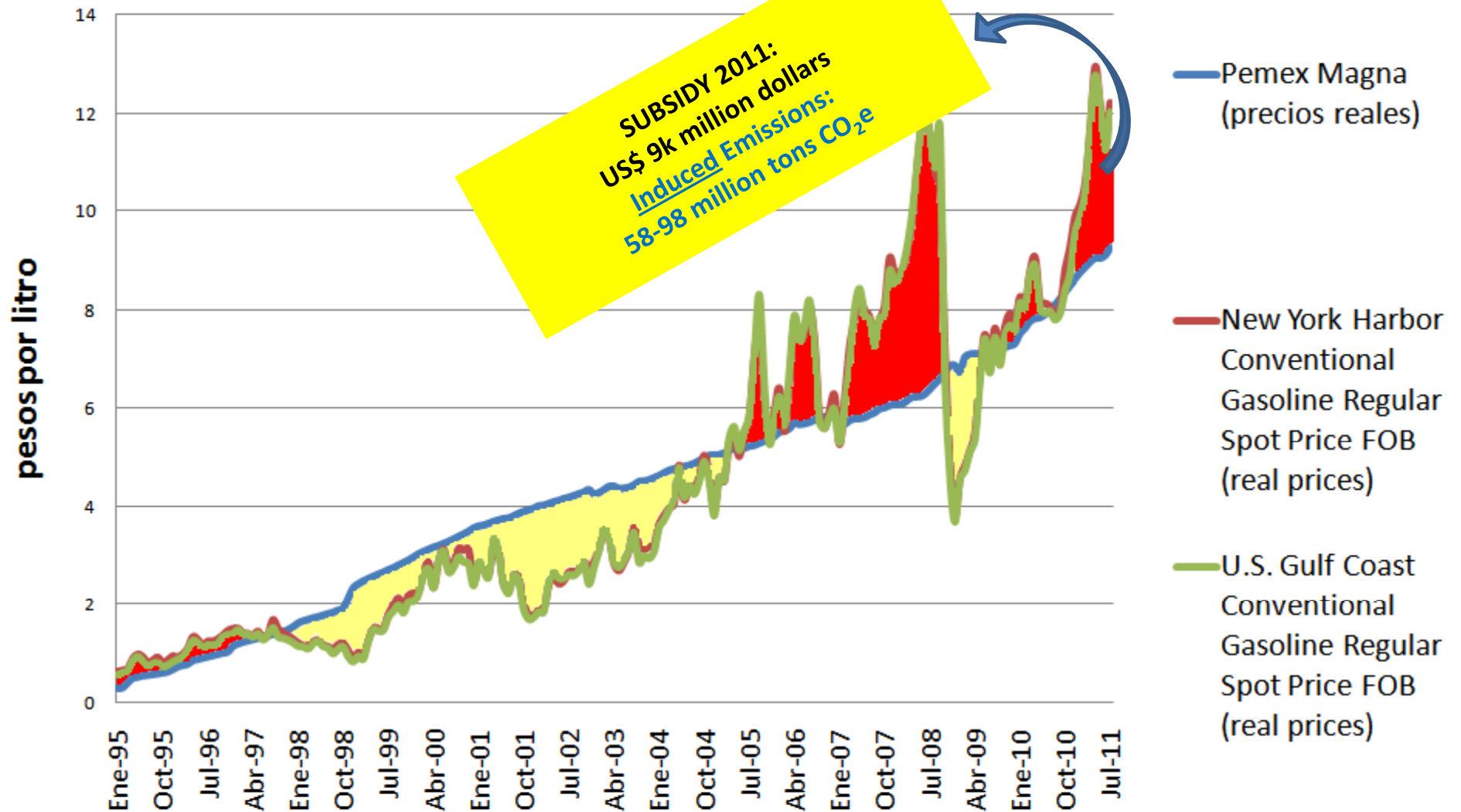
MEXICO



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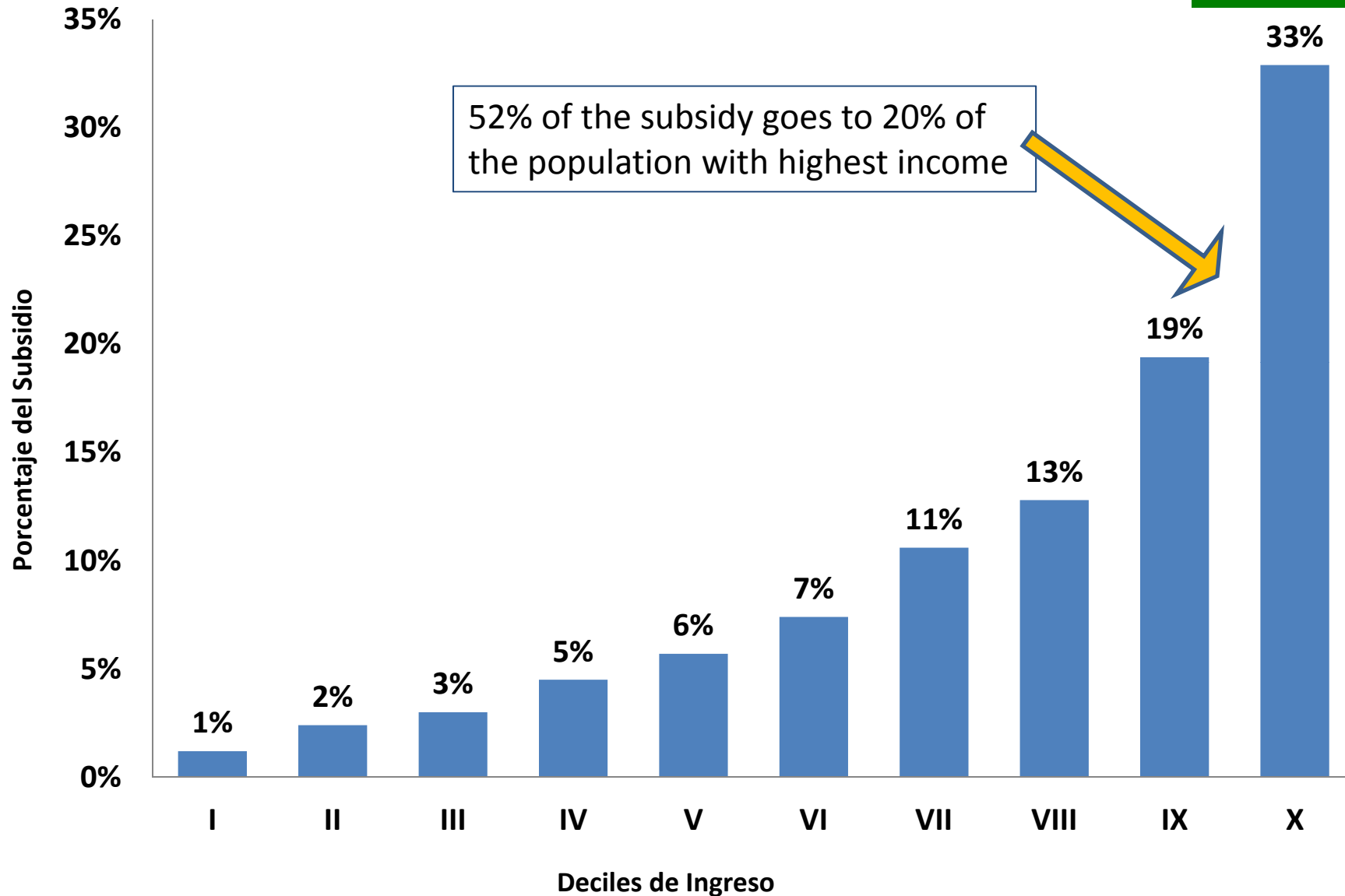
Precios de combustible: subsidios e impuestos implícitos (1995-2011)

MEXICO



And this subsidy is unequal and regressive.

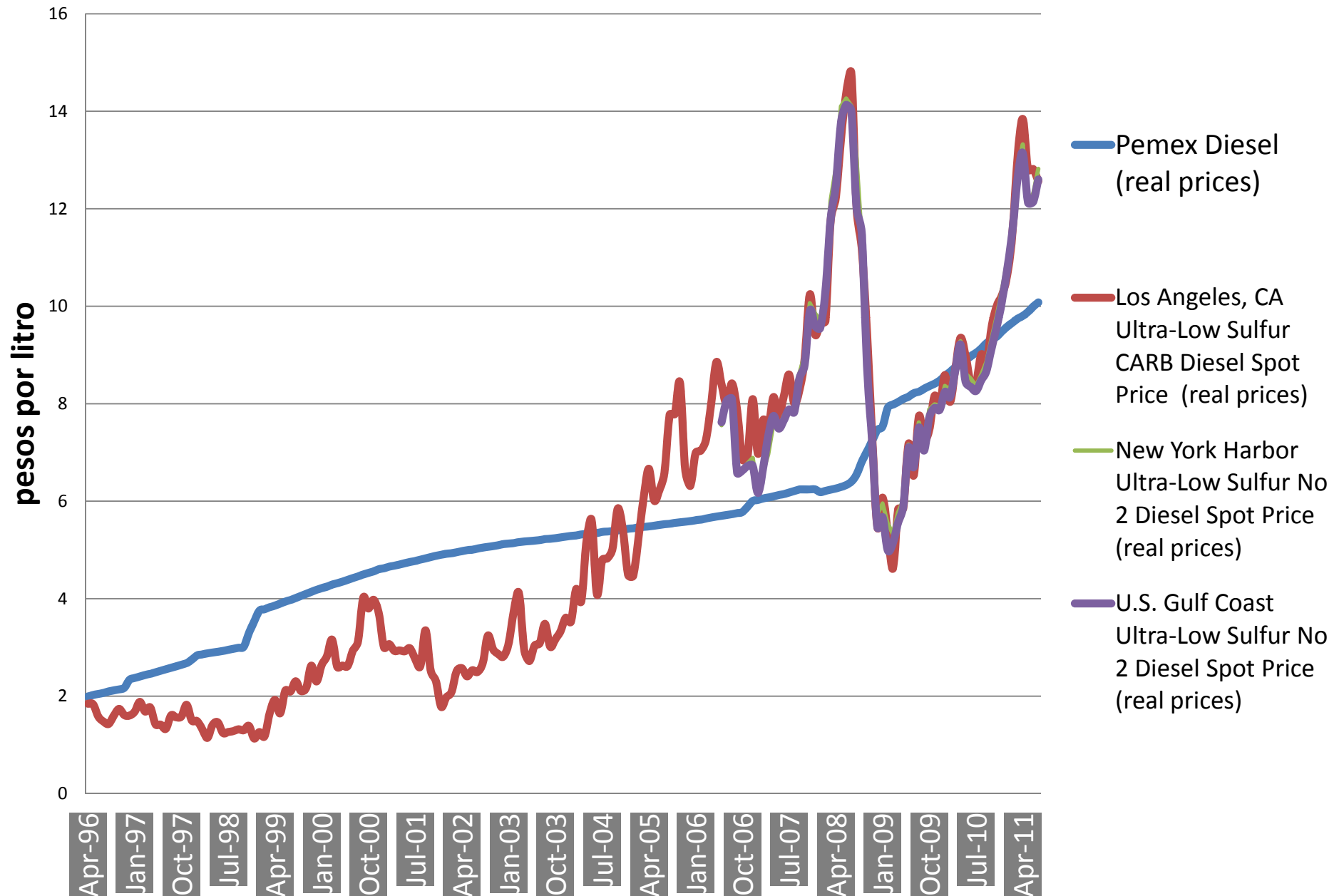
(gasolinas & diesel)



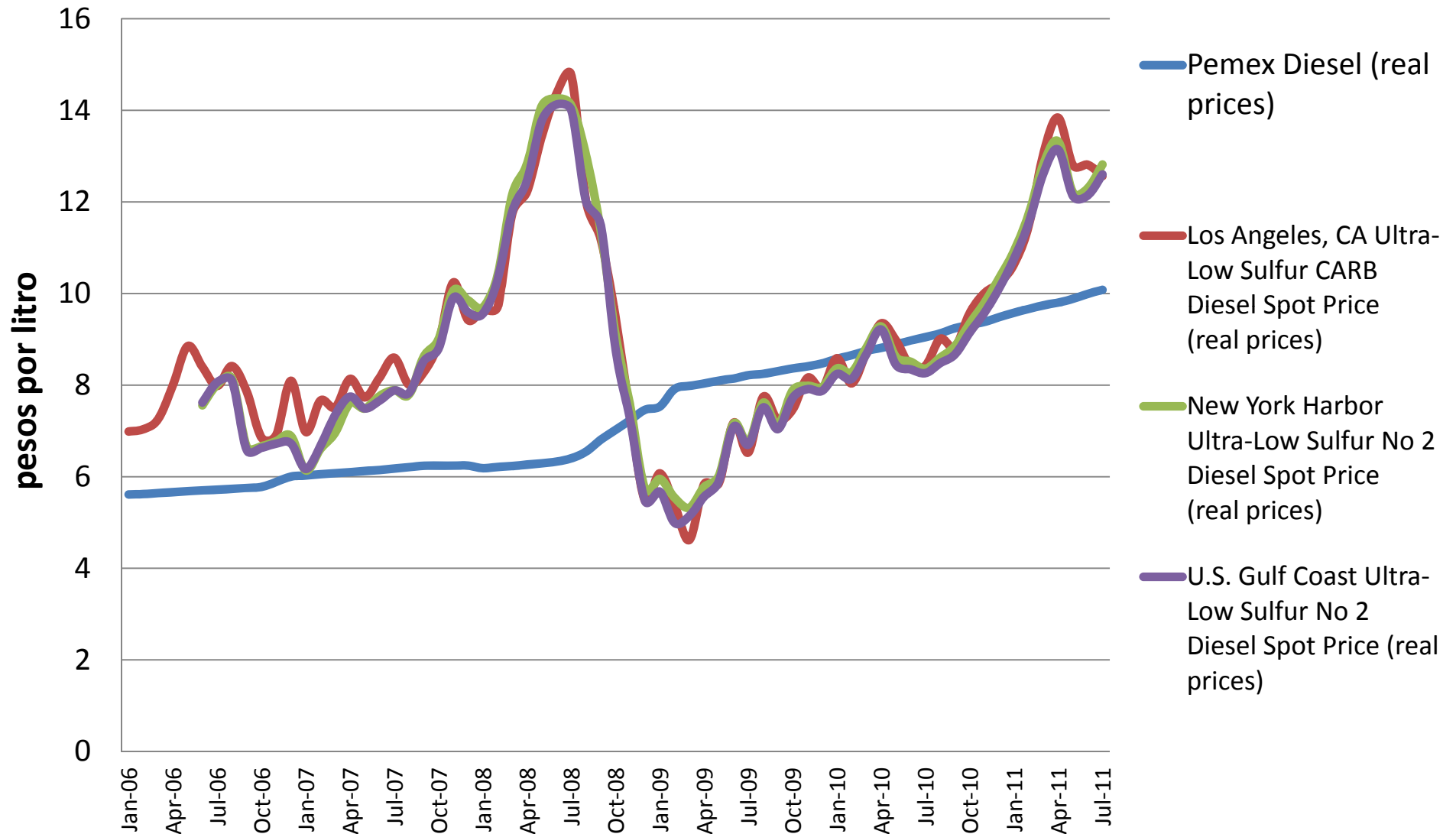
Fuente: INEGI (ENIGH)

DIESEL: Prices and implicit taxes or subsidies (1996-2011)

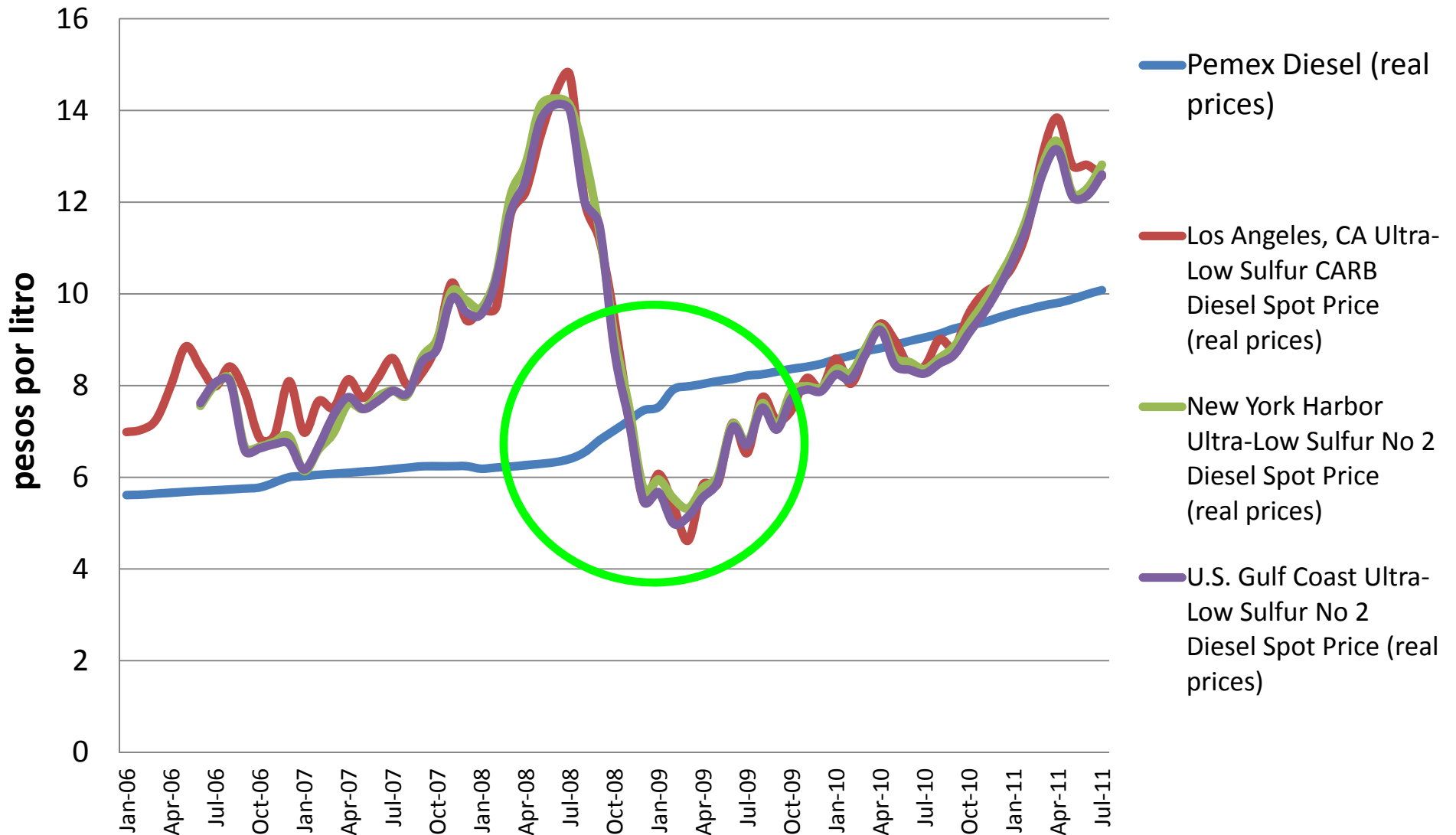
MEXICO



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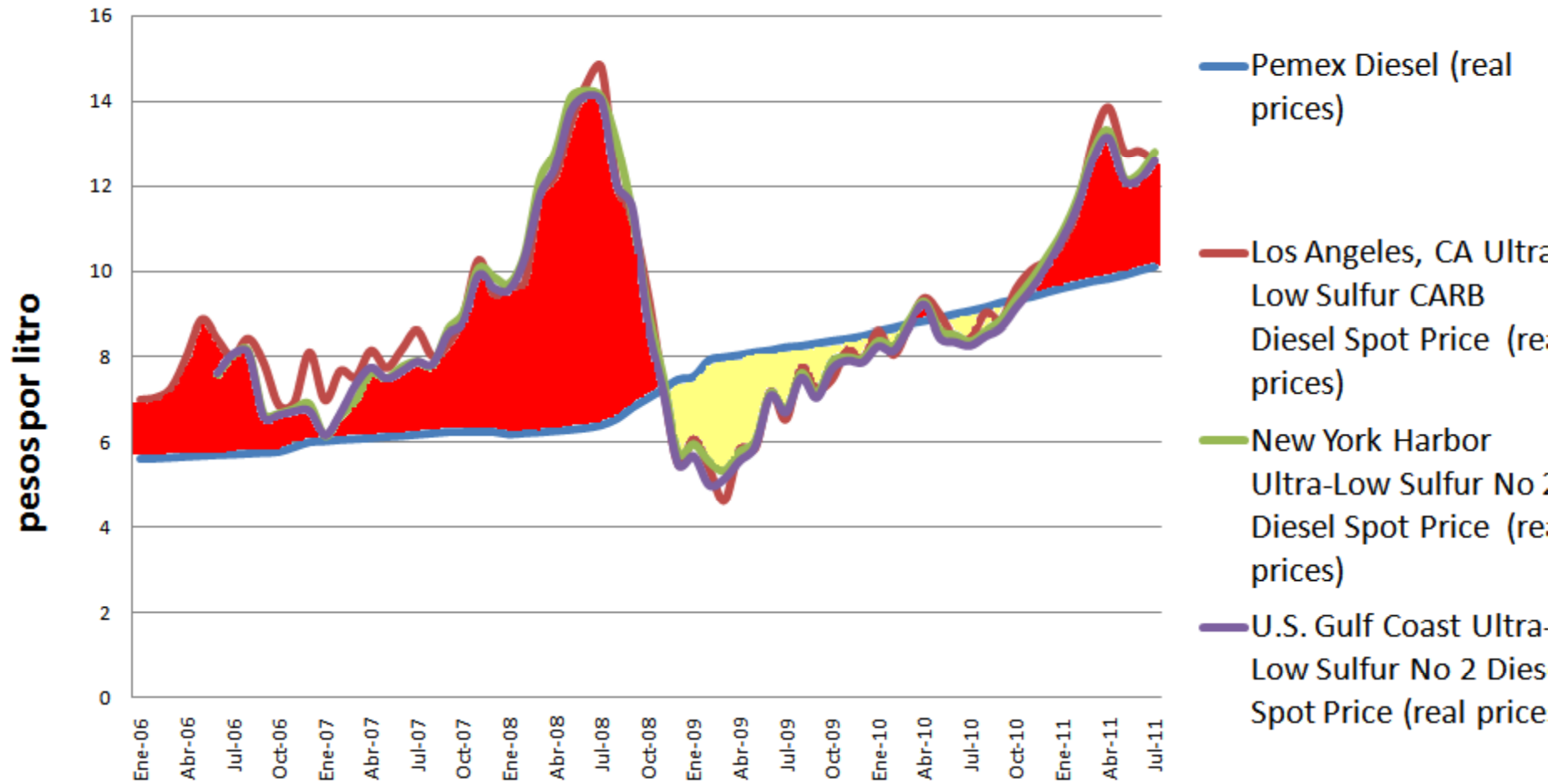


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DIESEL:

Precios de combustible: subsidios e impuestos implícitos (2006-2011)

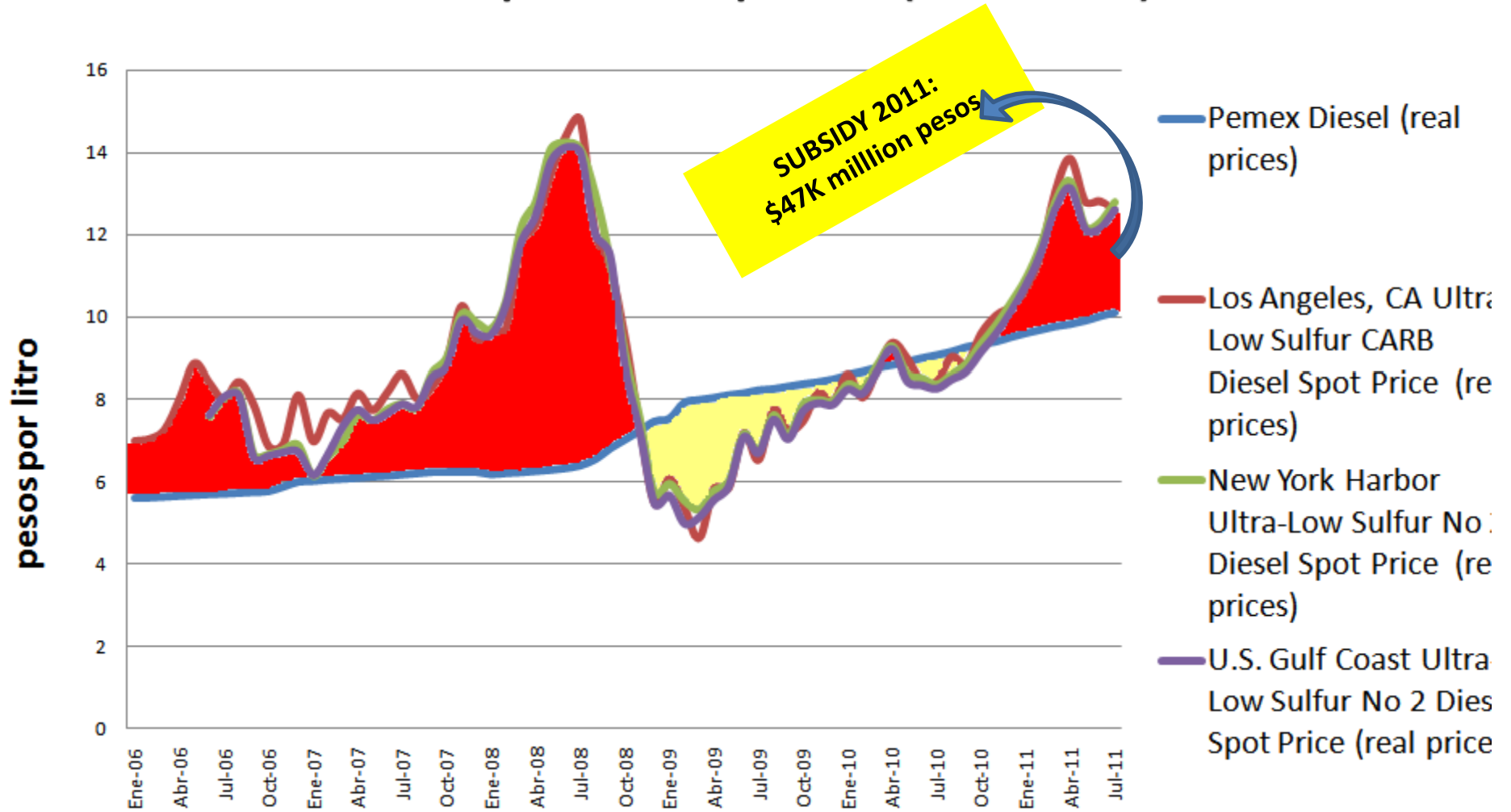


Impuesto neto al carbono

Subsidio neto al carbono

DIESEL:

Precios de combustible: subsidios e impuestos implícitos (2006-2011)



Impuesto neto al carbono

Subsidio neto al carbono

A Public Policy approach to solve it:



Solution

Reduce

(fiscal reasons)

- 2012 Federal Budget approved with continuous real price increases. Though not enough to totally eliminate subsidy.

Decouple

(if vulnerable group or political feasibility)

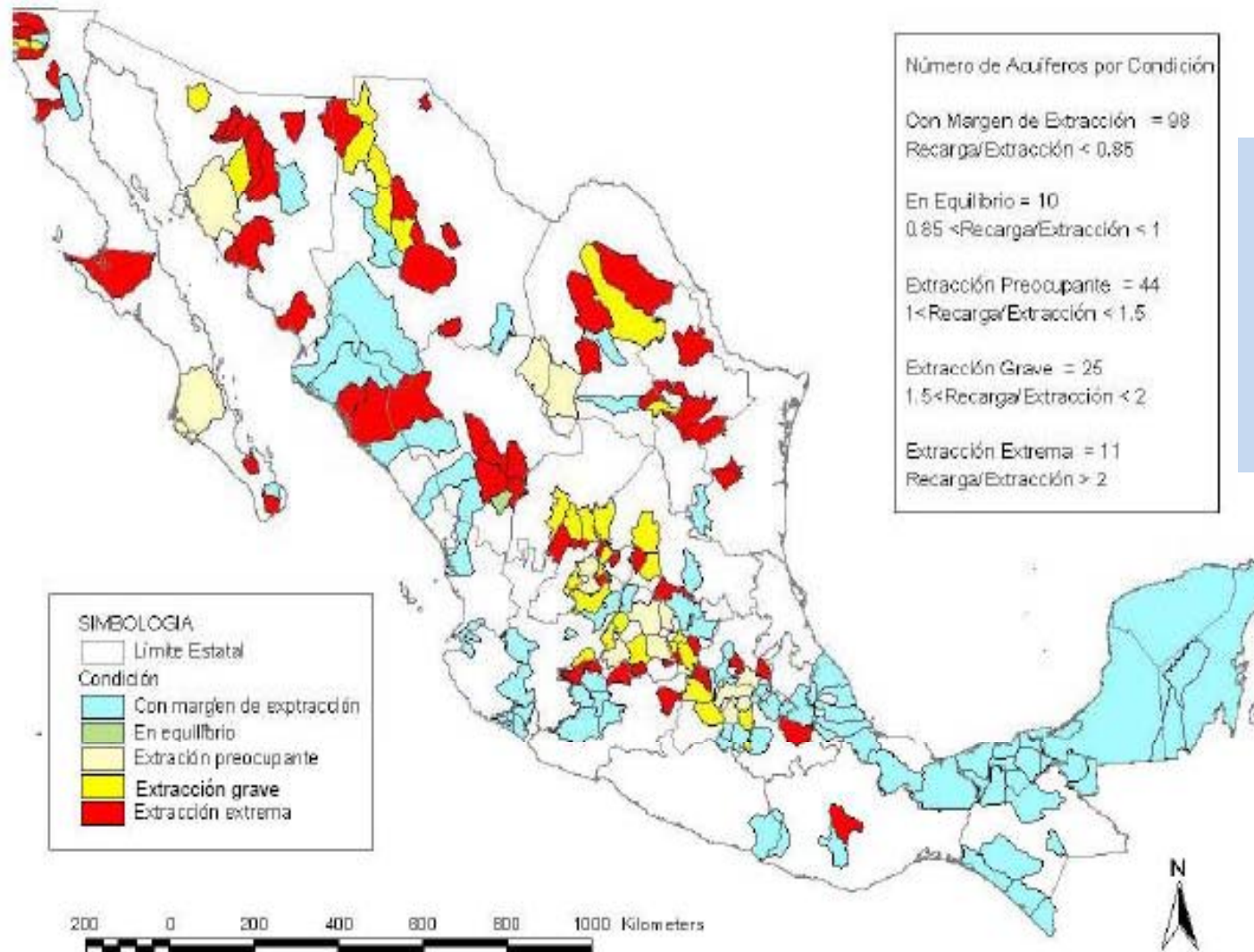
- President Calderón fulfilled one of his campaign promises, not by reducing the price of fuel and electricity but by increasing the *energy support* given as direct transfers to extreme poverty households.
- Efforts in 2011-2012 by Department of Agriculture to decouple diesel via “tractors deals”.

WATER: Electricity subsidy and aquifer overdraft

- In Mexico, 77% of the water is used by agriculture and cattle ranching.
- 104 of the main 188 aquifers are overdrafted. This means:
 - **Costs** to present and future generations of farmers.
 - **Supply problems** cities (industry and population).
 - **Crisis** where there is saline intrusion or toxic metals.
- Water pumping for agriculture consumes approx 8kGWh per year (5 million tons of CO₂ per year).
- The difference in electricity use between using dirt canals and drip irrigation is 12:1

This overdraft is caused in large part by the subsidies currently given to electricity used for pumping.

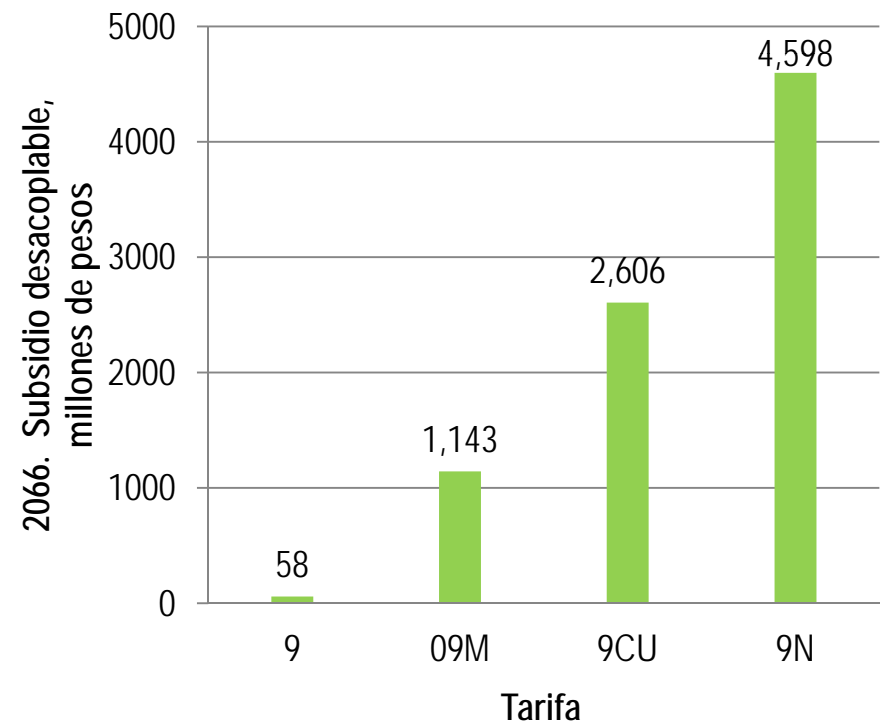
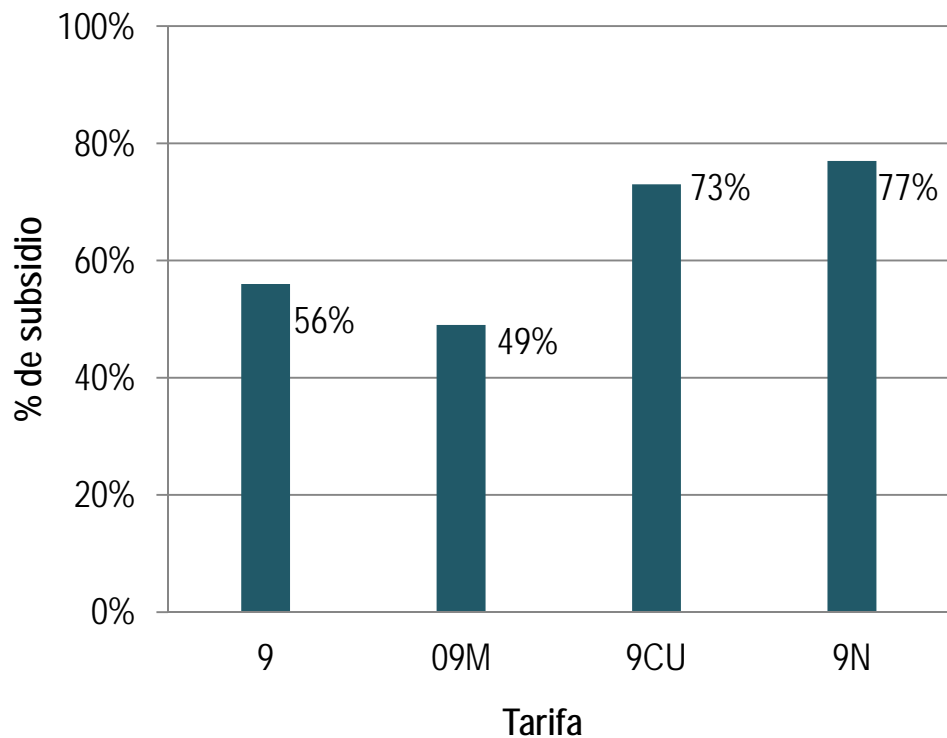
Aquifer Overdraft



104 of the 188 most important aquifers are overdrafted.

Fees and costs

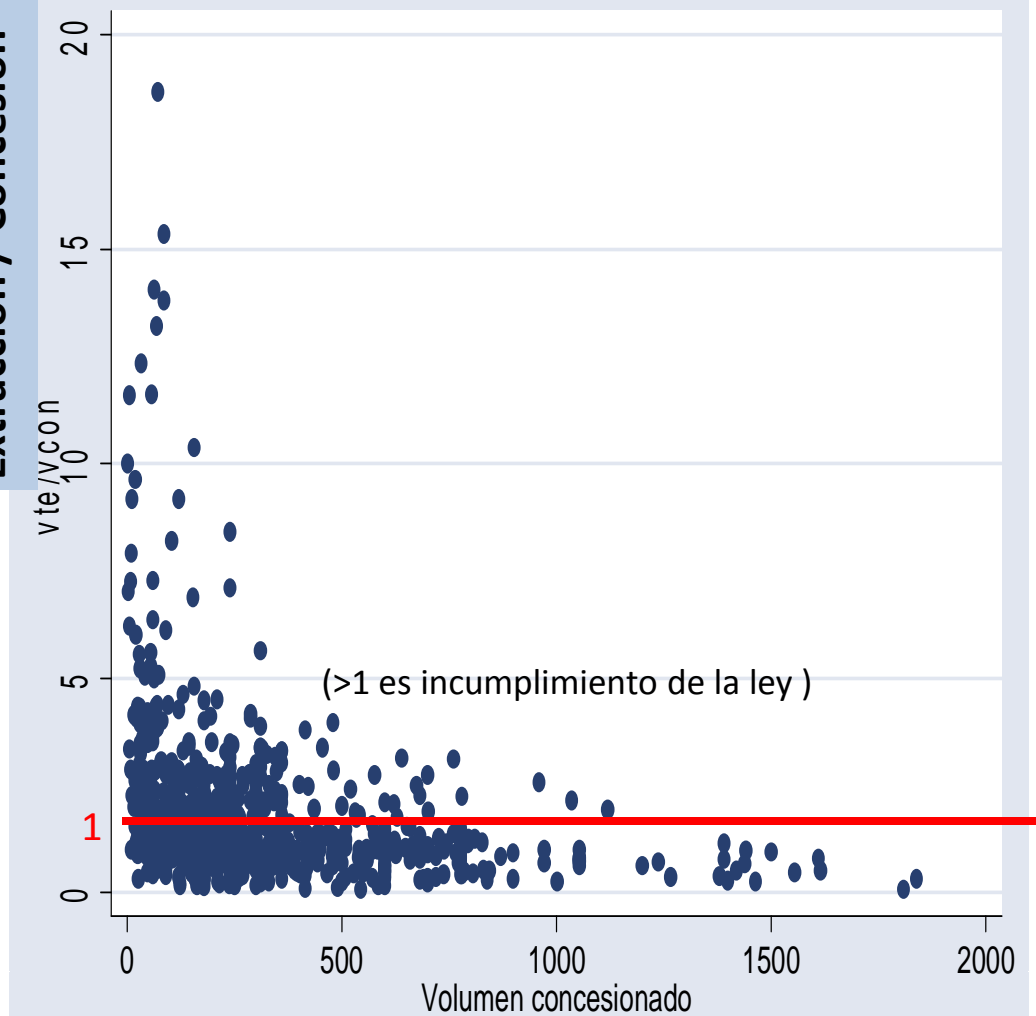
- On average, the cost of generating and distributing electricity in Mexico is around US\$0.15 per kW/h
- This means farmers receive nearly US\$ 800 million dollars in electricity subsidies every year



Rule of Law problems also.

- Overdraft could be controlled by the total **cap** established by water concessions, but enforcement is (still) weak with both legal and illegal wells.

Extracción / Concesión



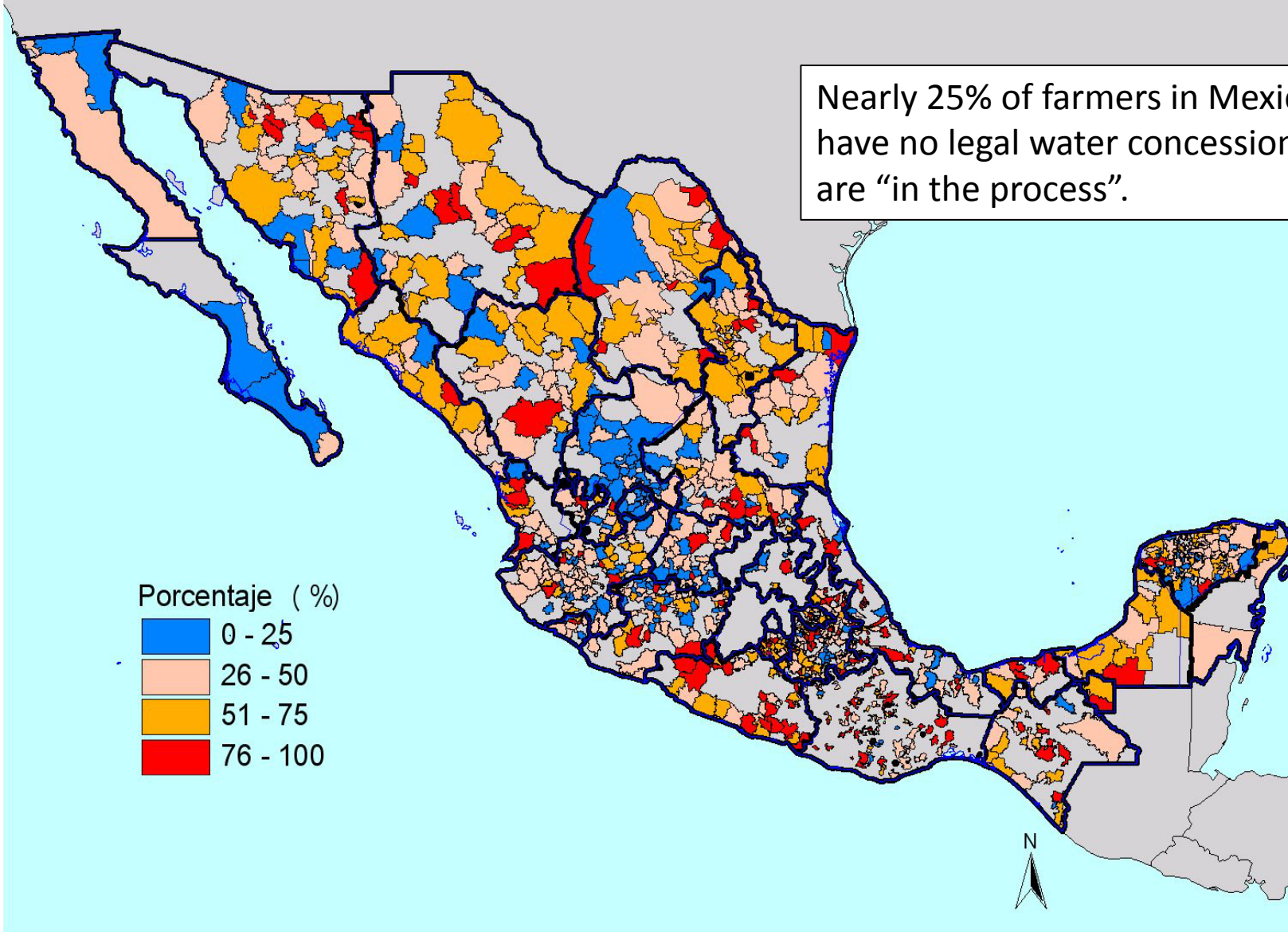
Fuente: Encuesta a productores agrícolas CNA - 2002

Number of illegal wells

Porcentaje de presuntos ilegales por municipio (2008)

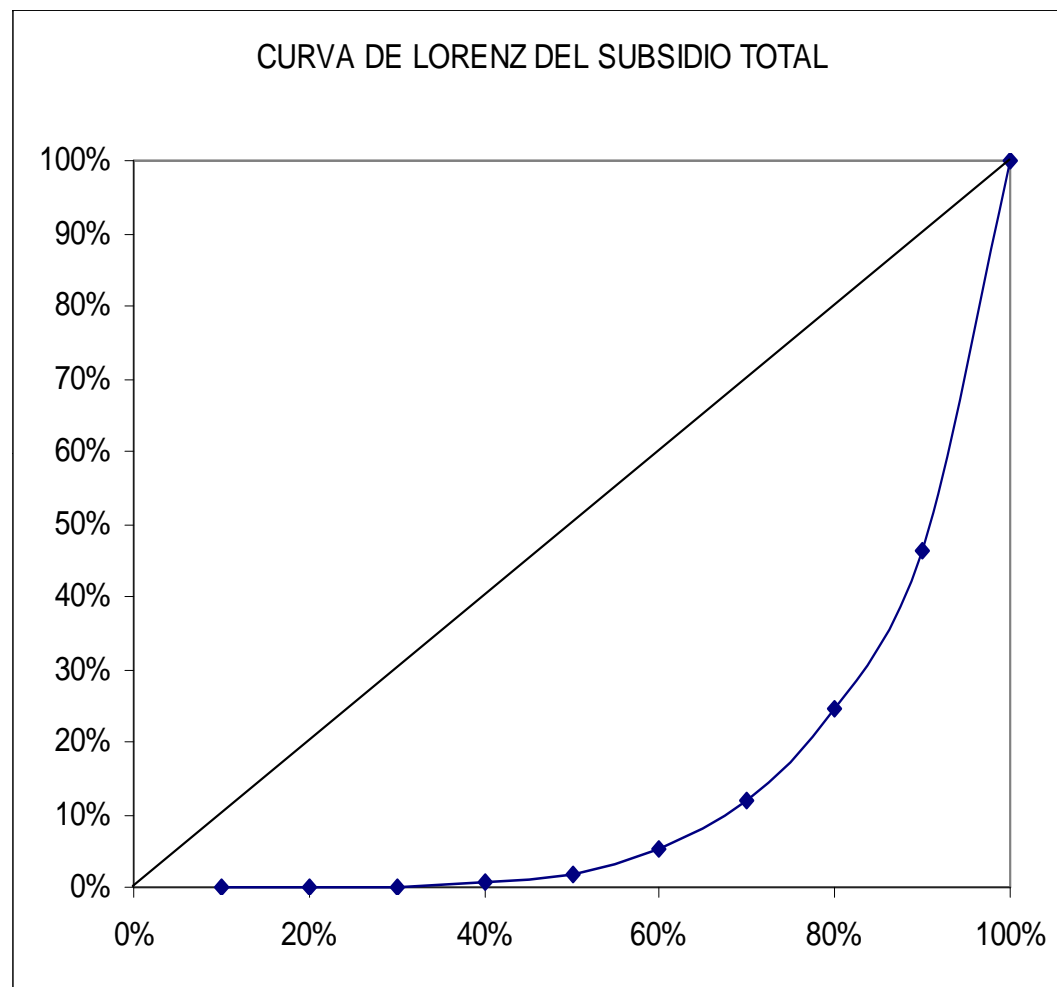
Nearly 25% of farmers in Mexico have no legal water concession or are “in the process”.

Porcentaje (%)



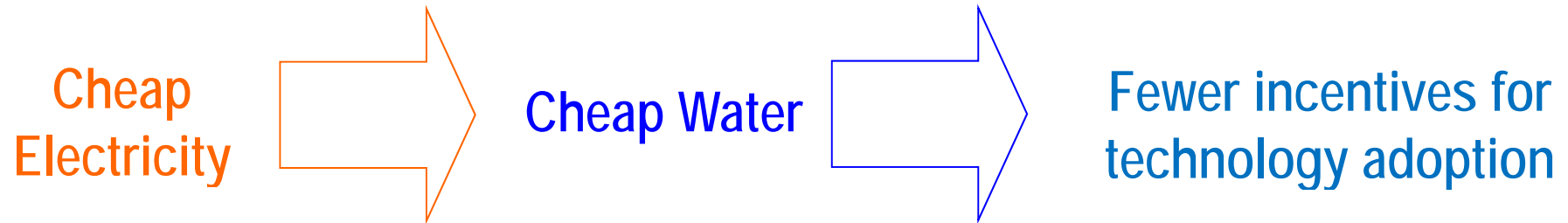
A subsidy that benefits richer farmers

DECILES (por índices de marginación)	PORCENTAJE DEL TOTAL DEL SUBSIDIO QUE RECIBE CADA DECIL
I	0.00% (113 pesos por usuario)
II	0.02%
III	0.15%
IV	0.47%
V	1.28%
VI	3.27%
VII	6.8%
VIII	12.5%
IX	21.8%
X	53.7% (409 mil pesos por usuario)



Subsidio promedio por usuario: 67 mil pesos anuales

Energy subsidies slow technology adoption



- **Short** term: **false profitability** of certain crops.
- **Medium** term: no incentives to adopt and maintain **better technologies**.
- **Long** term: loss in competitiveness for agriculture and vulnerability to Climate Change.



A Public Policy approach to solve it:

- If **subsidies** interfere with market signals:



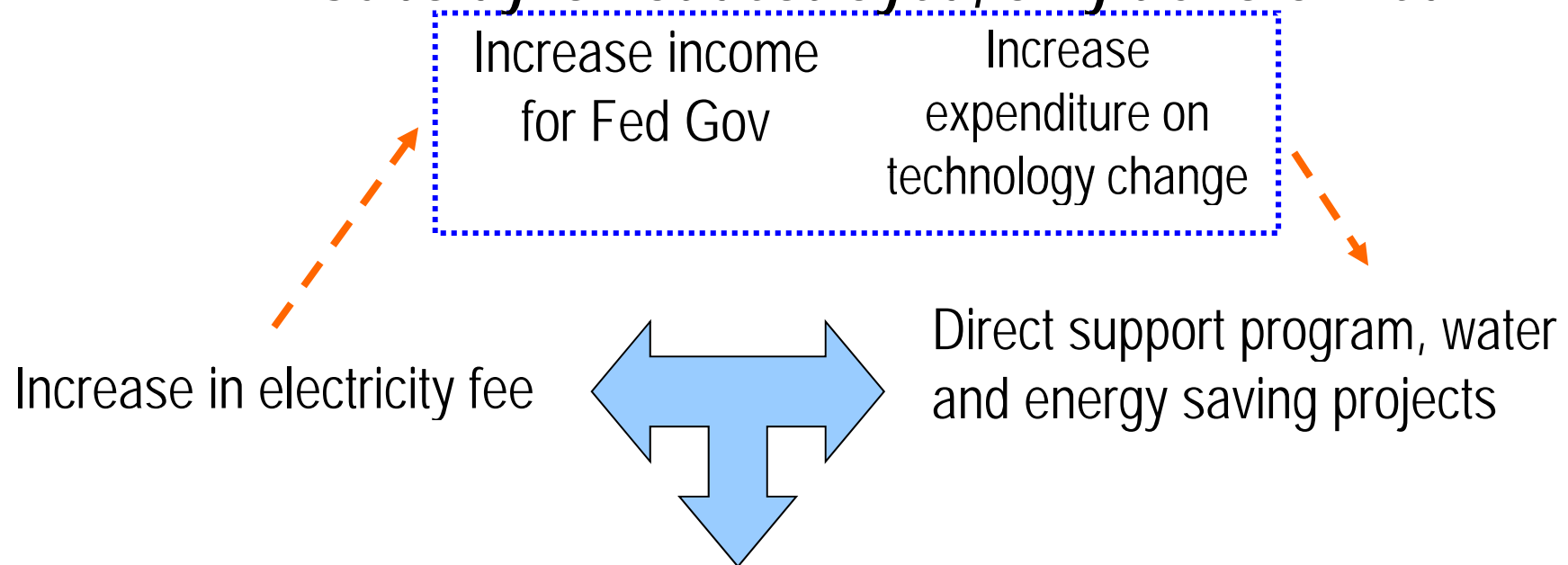
Reduce
(fiscal reasons)

Decouple
(if vulnerable group or
political feasibility)

Mexico 2012: Pilot project for Subsidy Decoupling

Substituting the electricity fee subsidy for a direct transfer given to farmers to invest in water saving technologies .

Subsidy is not destroyed, only transformed

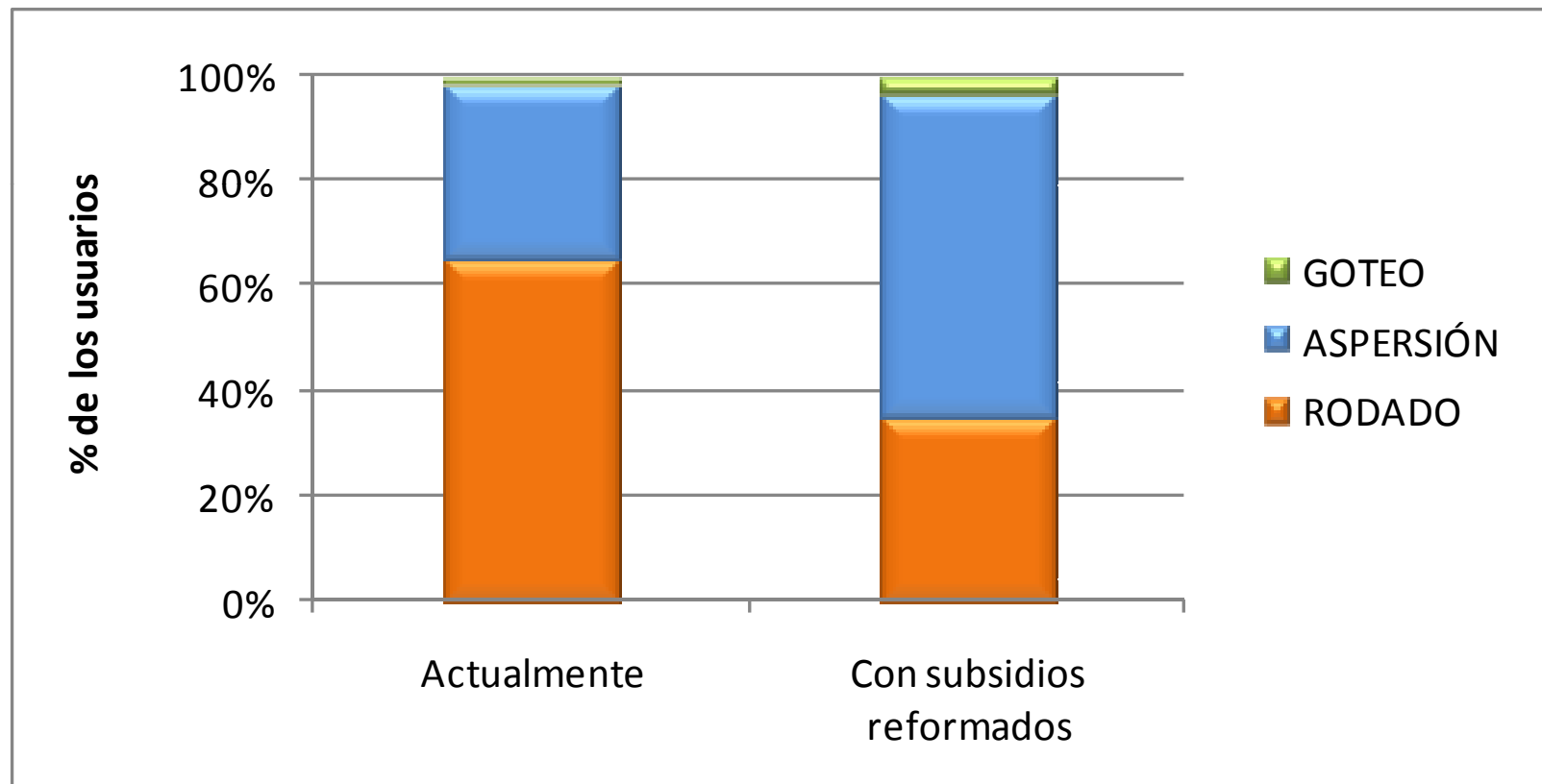


Central element of the proposal:

Farmers receive the same amount of money (5 years upfront) but now the cost of pumping does reflect better true scarcity

The effects of a change in prices

- A large share, not all, farmers would adopt technology
- Help through green financing, information, coordination.



Operational Definition:

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- New technology adoption and new consumption patterns for households, firms and government will come from having correct **price** signals, smart **regulation** and strategic **support**.

Basic tools

Prices, taxes

Taking care of effects

Financing

Communication

Regulation

Targetted
support

Support the emergence
of new firms

Example: *Luz Sustentable* (sustainable lighting)

Prices, taxes

Electricity prices: Δ 20% between 2007- 2011.

Taking care of effects

Block pricing. Households with lower incomes pay less.

Financing

Green Mortgage includes it as an option

Comunication

Strong media campaign for switching lightbulbs.

Regulation

Efficiency standards for lightbulbs, gradually increasing.

Targetted support

Subsidy to poorer households to exchange lightbulbs.

Support the emergence of new firms

Dialogue with producers of traditional for change of production lines, or reorient industry.

Example: *Hipoteca Verde* (Green Mortgage)

Prices, taxes

Taking care of effects

Financing

Larger amount of financing if eco-technologies are used introducing

Comunication

Communication campaing for households, outreach to developers

Regulation

Currently: list of technologies, plans for opening.
Building regulation (in process)

Targetted support

Green subsidy to households with lower income.

Support the emergence of new firms

The size of the business opportunity has sprouted investment in firms that provide the new tech.

Example: Transport: Energy Efficiency

Prices, taxes

Gas prices: Δ 11% real per year: 2007-2011. –still a gap-

Taking care of effects

Oportunidades increased direct transfers for “energy use”.

Financing

Comunication

Ecovehículos website SEMARNAT-PROFECO-CONUEE.

Regulation

Fuel Efficiency Standard for new cars in 2012 (hope so).
Used imported cars with some regulation

Targetted support

Car-scraping program in 2010.

Support the emergence of new firms

Harmonization with US CAFE standards, the importer of 80% of Mexico’s car manufacturers increases scale of new production lines.

Example: Forests

Prices, taxes

Fight against illegal logging increases prices paid to legal producers

Taking care of effects

Financing

CONAFOR, FIRA, credit lines to vertically-linked producers and manufacturers

Comunication

Increasing social and human capital of poor forest owners.

Regulation

Obligatory management plans. Increased enforcement.

Targetted support

- Payment for Environmental Services: watersheds, biodiversity. Targeted
- REDD+

Support the emergence of new firms

PROARBOL includes management training, commercial fairs, value chains and certification.

Example: Shrimp industry and endangered porpoises

Prices, taxes

Against illegal fishing: Δ price of legal product.

Taking care of effects

Voluntary retirement or conversion among legal fishers.

Financing

Credits for launching new firms.

Communication

Fora, councils, community dialogue.

Regulation

Fishing prohibitions in central Refuge polygon.

Targetted support

Compensation for legal fishers participating in the scheme.

Support the emergence of new firms

Local Business Support Center

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A free-market Green Growth Strategy for Mexico