



Mexico's Energy Reform

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Mexico's Energy Reform

- Introduction
- Background of the Upstream Sector
- What does the Reform say
- Early results of the Reform
- Closing remarks

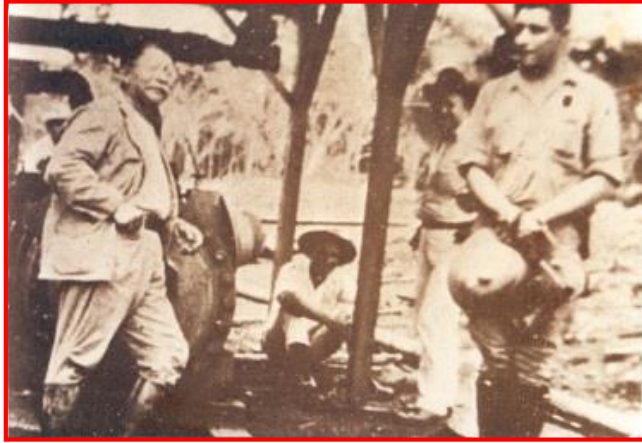
Introduction

The Energy Reform of México

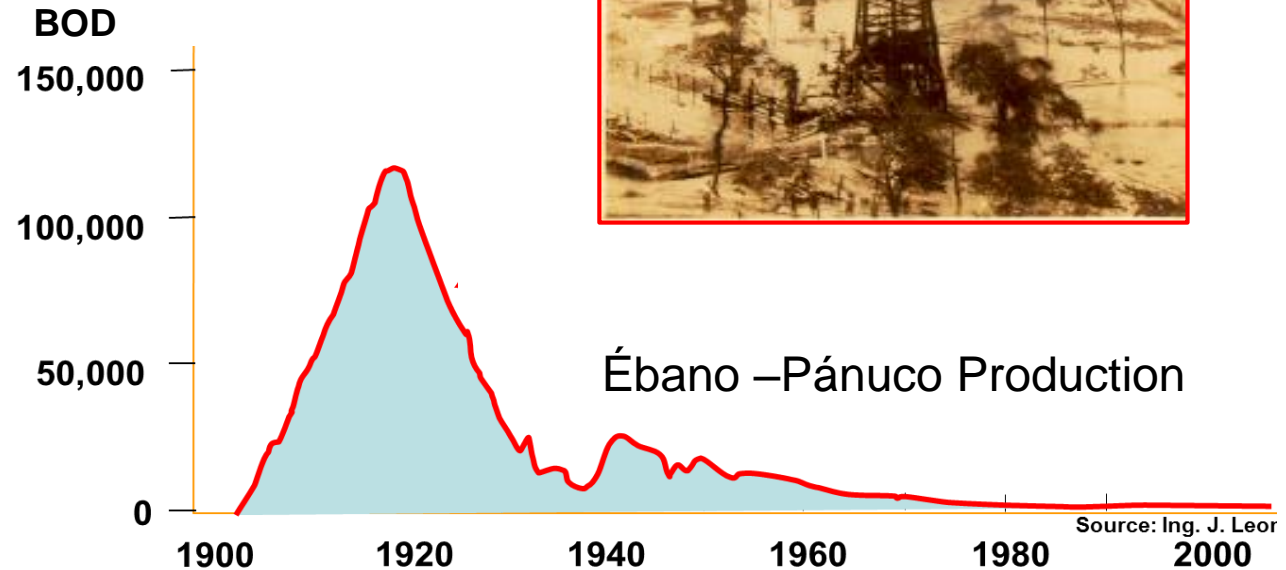
Every once in a long while events take place in the E&P industry that change the face of the business, this presentation tells about one that could be opening up to industry players around 159 bboe in one of the most stable and accessible places of the planet.

Background

In 1904 heavy oil was discovered in México in commercial quantities in the Ébano – Pánuco Province, Tampico Basin

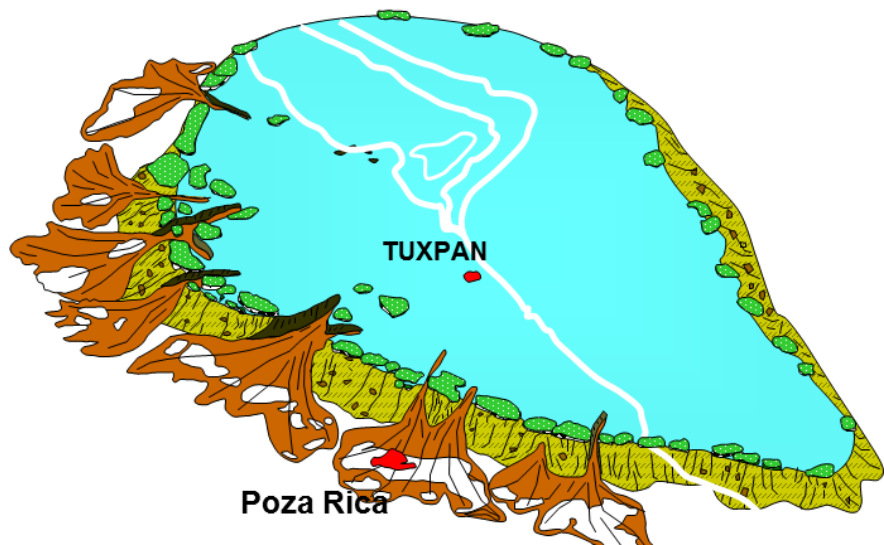


Edward Doheny and Ezequiel Ordoñez



Discovery of the Golden Lane in 1908, led México to extract 385,240 bod in 1924 and become the world's 2^d largest producer.

SOURCE: Charles A. Bay, "Review of the Petroleum Industry in Tampico, 1924," Tampico, 5 Feb 1925, State Dept.

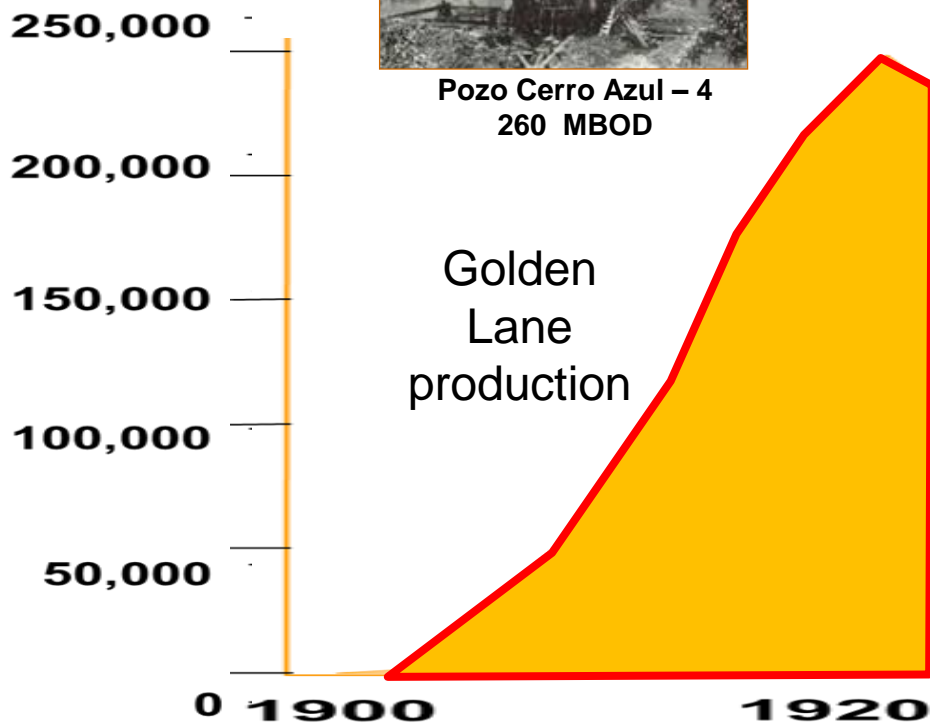


Poza Rica

Tuxpan platform
Mid Cretaceous



Pozo Cerro Azul – 4
260 MBOD

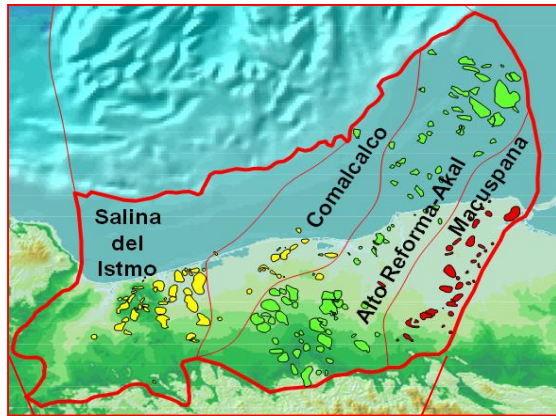


Golden Lane
production

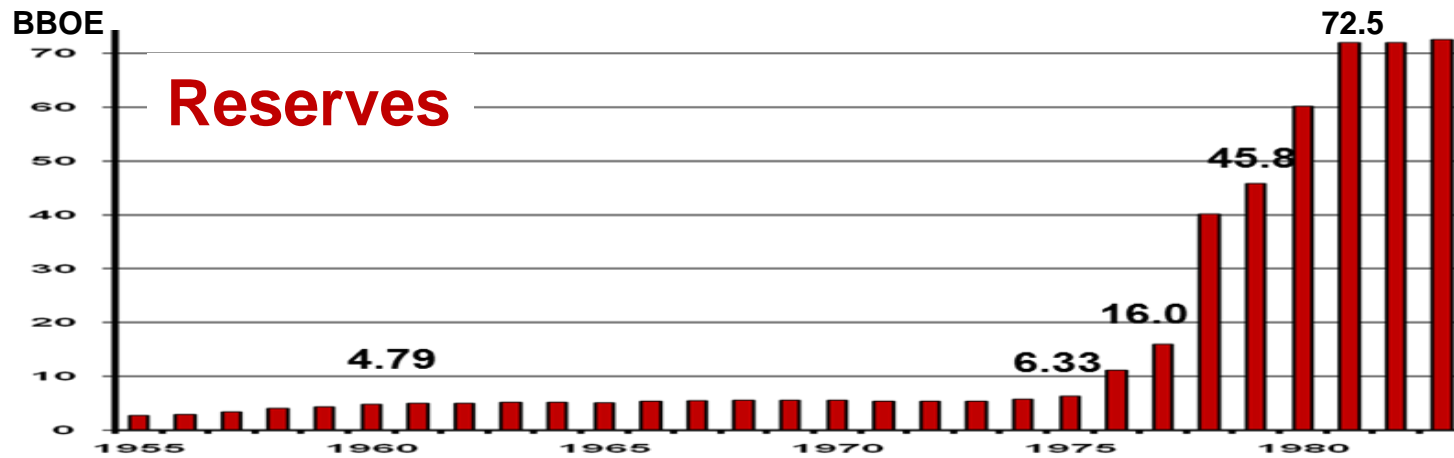
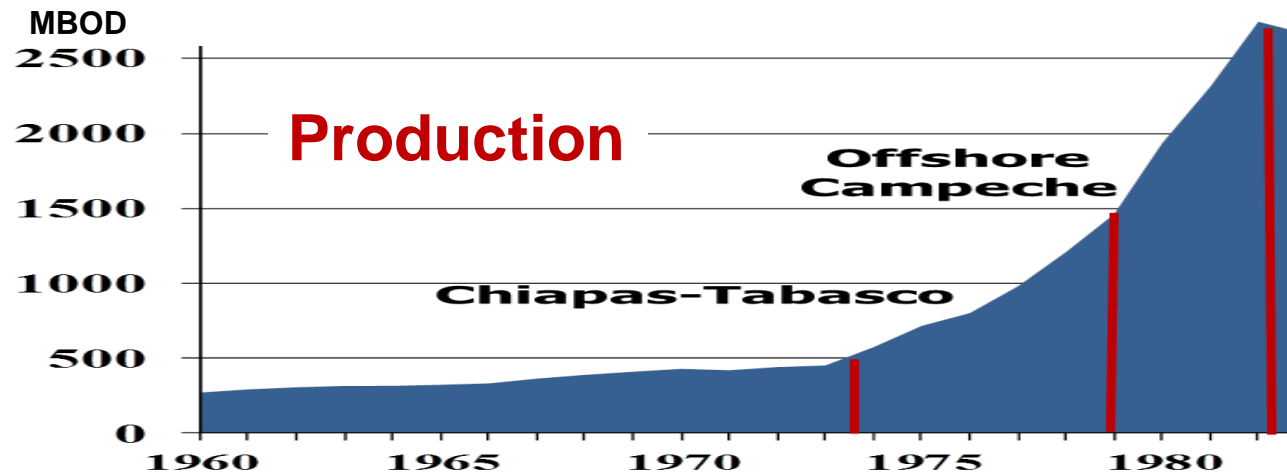
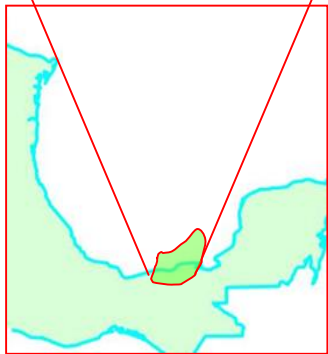
In 1938 the refusal of the international oil companies to abide by the government's legal decrees led to the expropriation of their holdings, the nationalization of the industry and the creation of Petróleos Mexicanos (Pemex).



From the 1940's through the early 70's México barely got by through some discoveries mostly in the Tampico – Misantla Basin but with the discoveries in the Mesozoic in the Southeastern Basin, reserves increased to 73 bbo and production grew to more than 2.7 mmbod in 10 years.

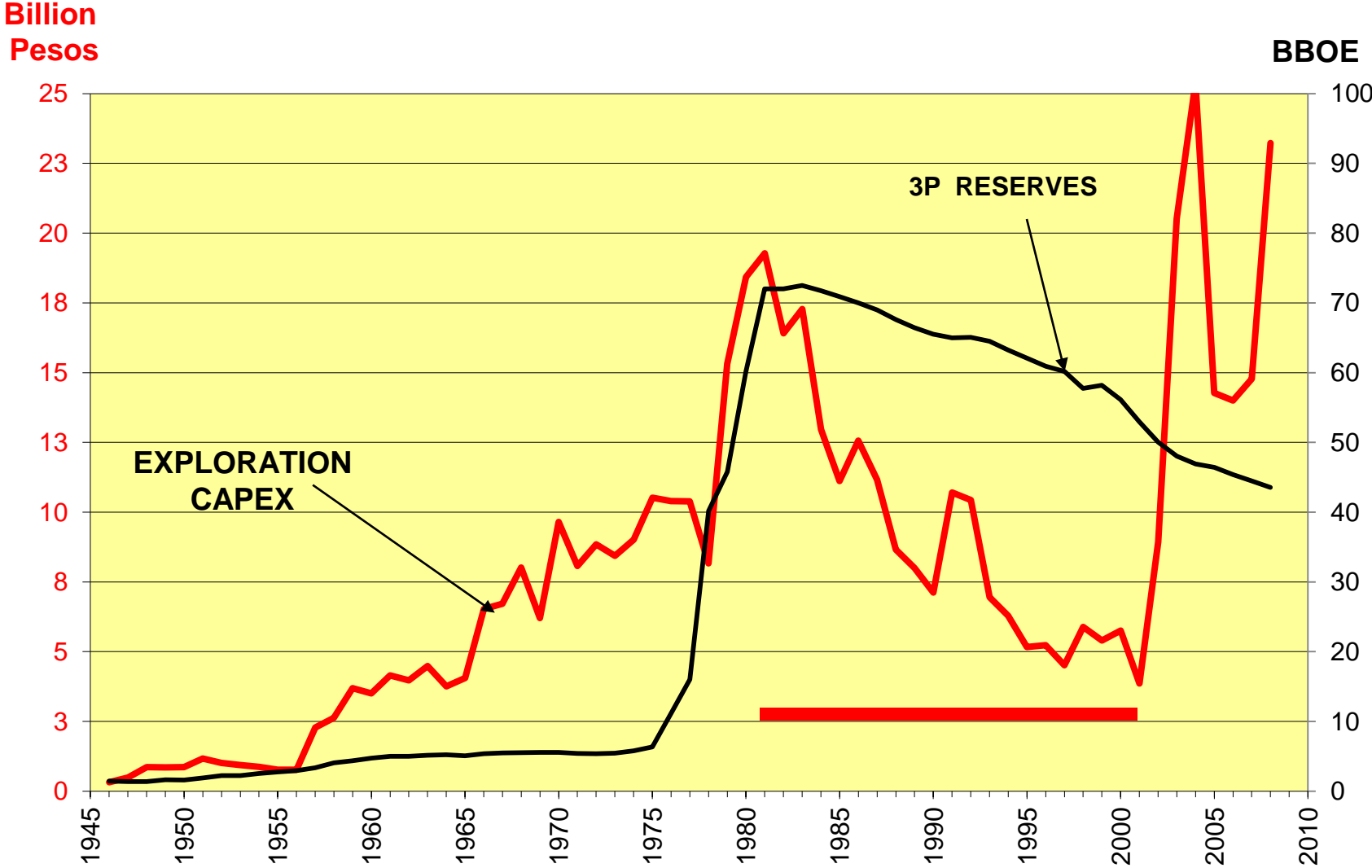


Southeastern Basin



Source: G. Domínguez, National Hydrocarbon Commission

As a colateral result of the discoveries, for all practical purposes, exploration was suspended from 1980 to 2001, so reserves declined and no new important developable fields were found.

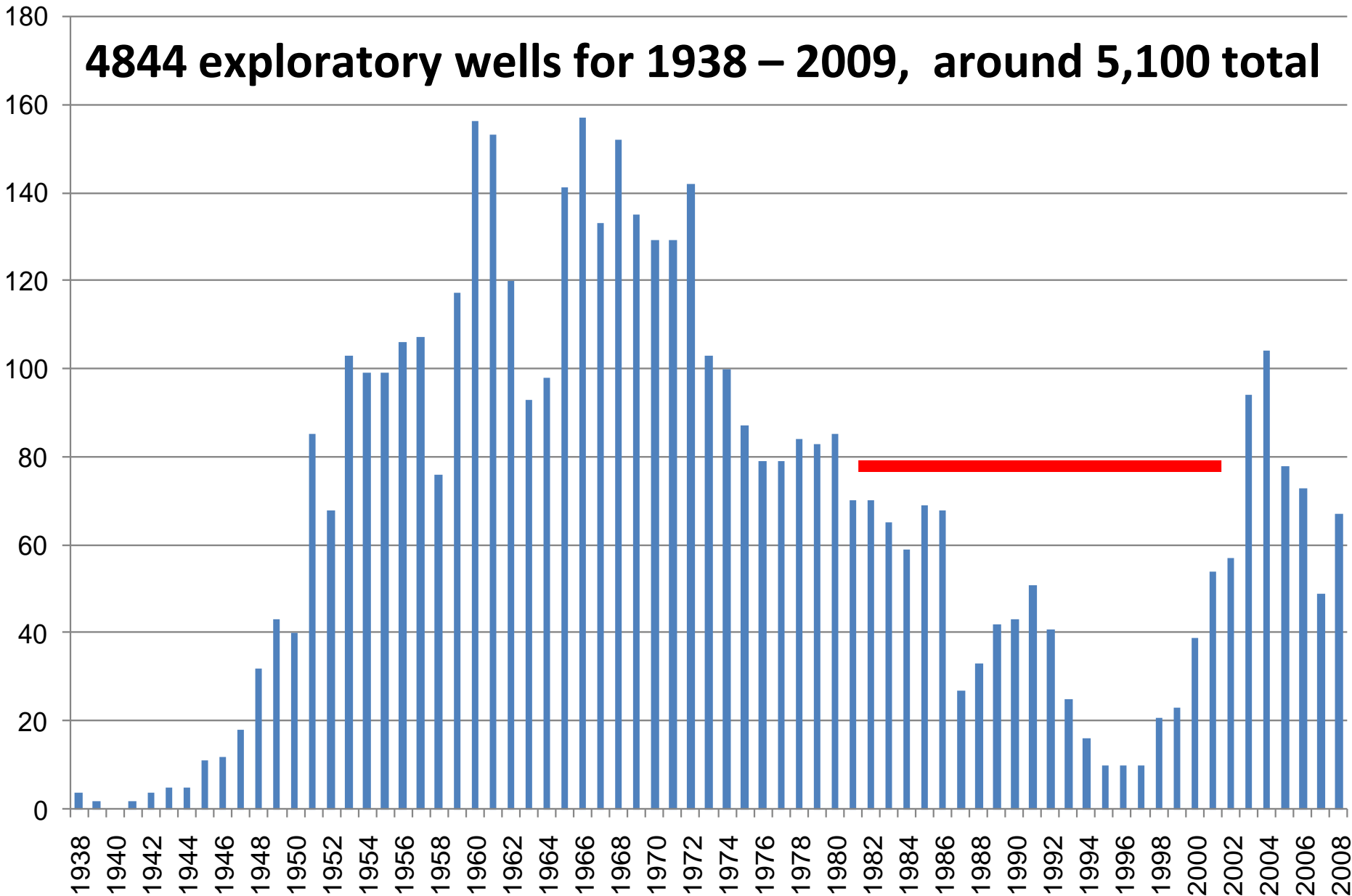


2010 Pesos (~10 pesos / 1US)

Source: J. Leon Alvarez

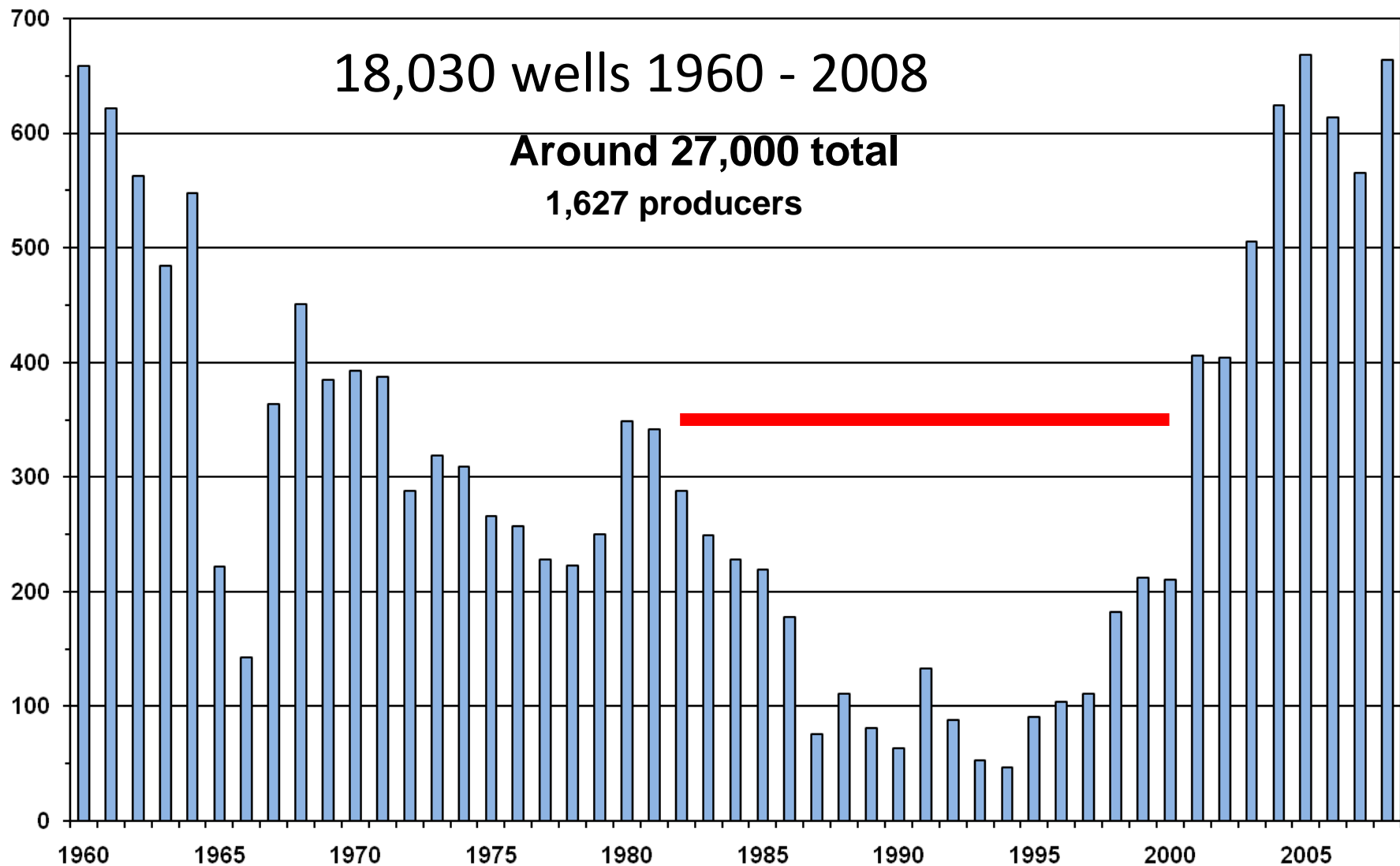
The lack of investment reflected in the exploratory drilling, which to start with was minimal for industry standards

4844 exploratory wells for 1938 – 2009, around 5,100 total

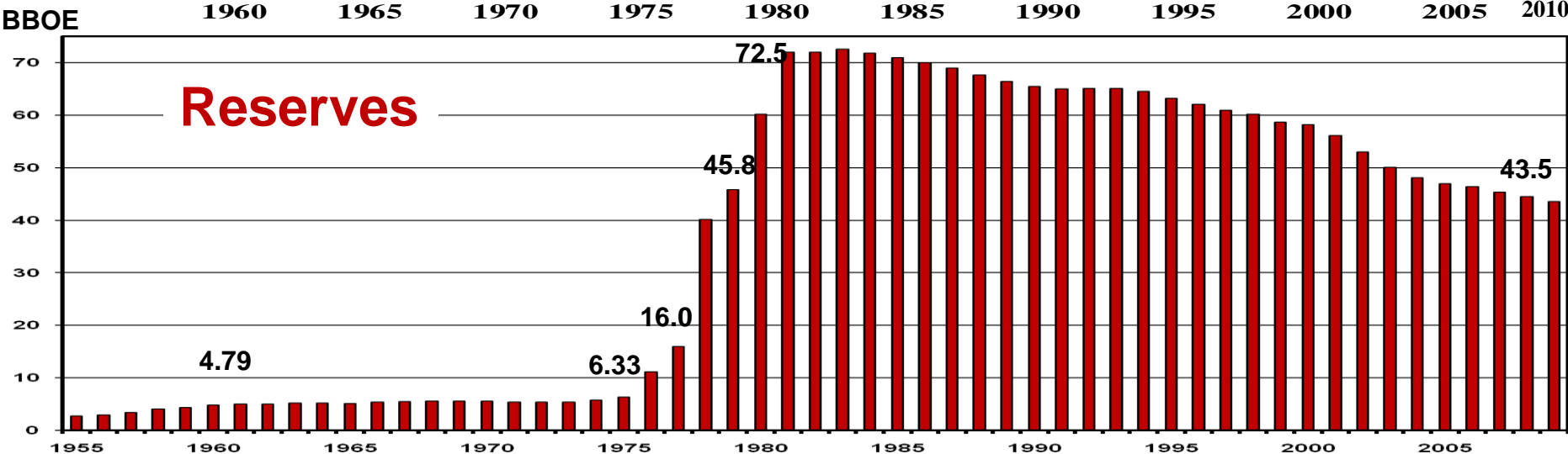
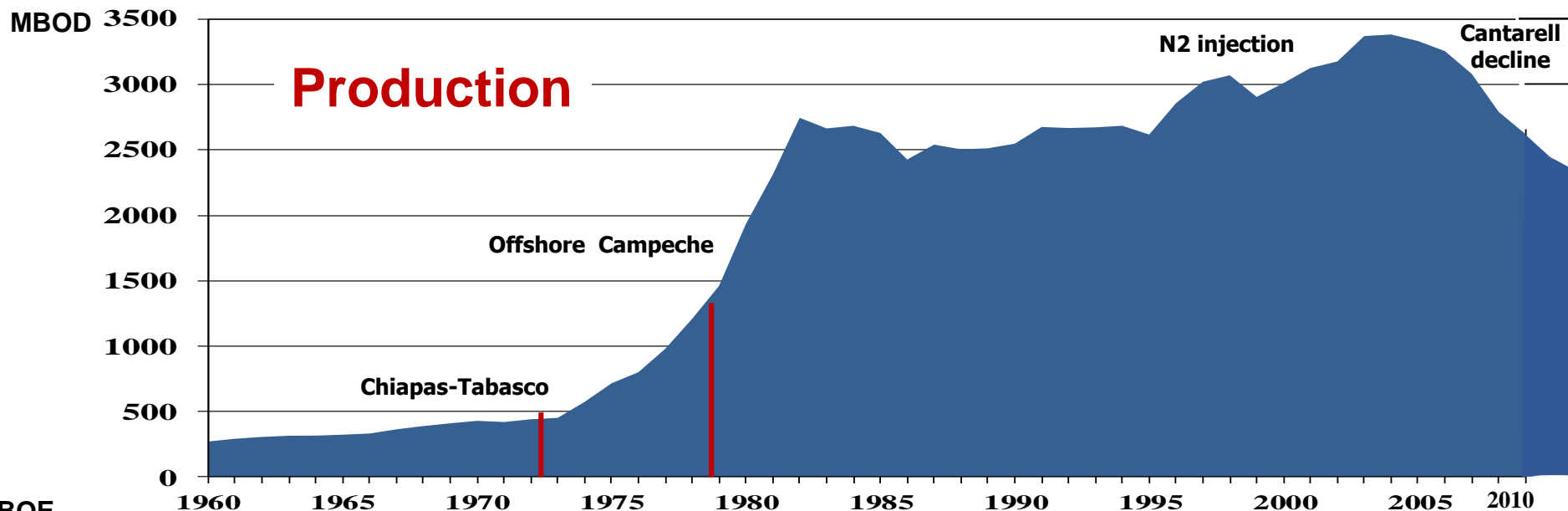


Source: National Hydrocarbon Commission

There was also a drop in the development wells in part due to the high productivity of the Mesozoic wells

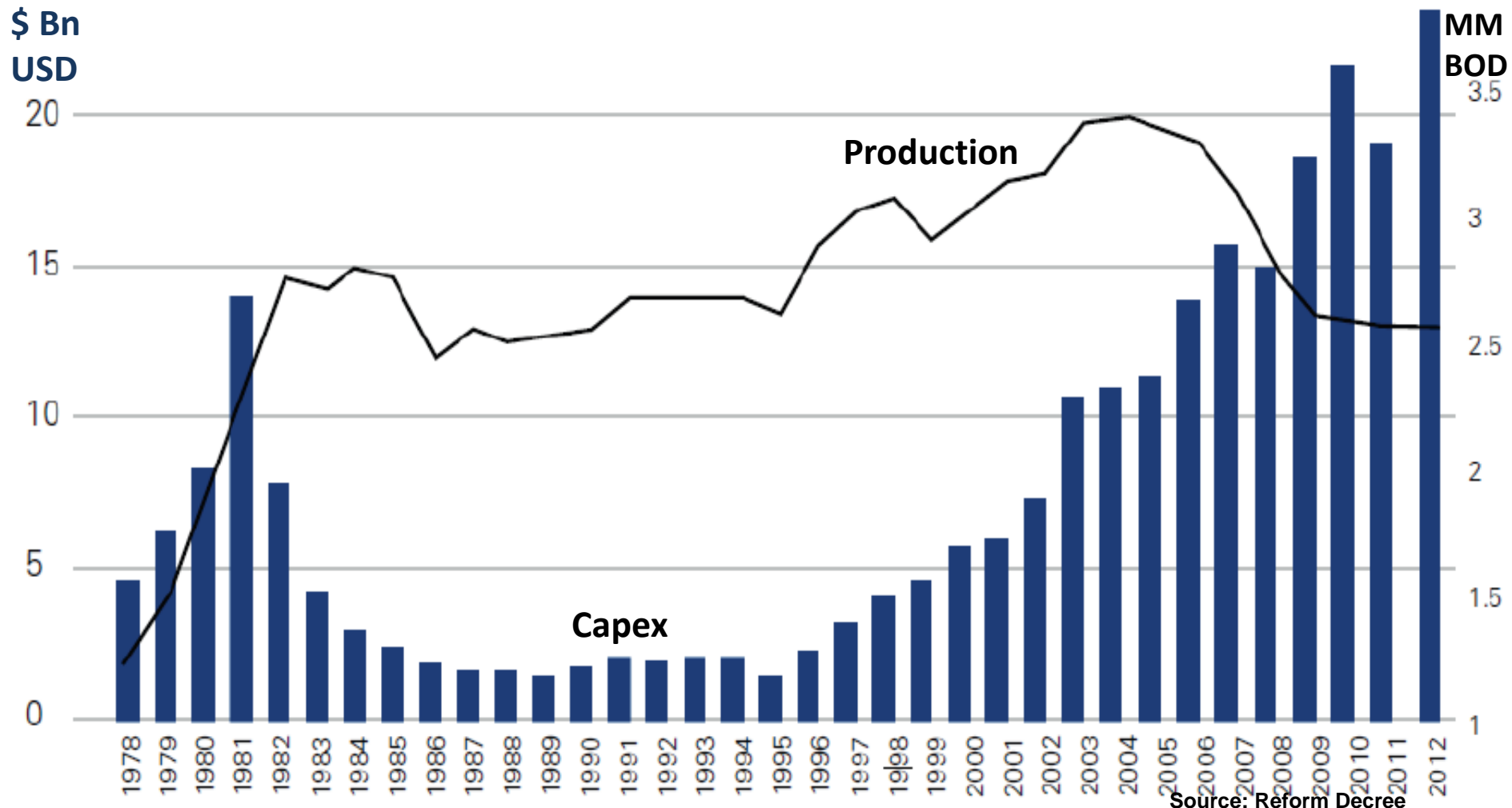


So when Cantarell went into a steep decline in 2004 the only important volumes that could be put into production were Ku-Maloob-Zaap and Chicontepec with which it was not possible to make up for the lost production.



Source: G. Domínguez , National Hydrocarbon Commission

The net production loss was of only 800,000 bopd thanks to the development of Ku-Maloob-Zaap (an 11° oil field), otherwise total loss would have been 1.7 mmbopd. Production went down regardless of ever increasing investment in E&P. The increase in the price of oil made up for the lost income from less sales.



Source: Reform Decree

What does the Reform say

On December 20th 2013, the President of México signed into law seminal constitutional modifications in the energy sector having to do with oil, gas and electricity:

Article 25

- Created "State Productive Enterprises"
- Pemex will operate as any international oil enterprise able to do JV's and contracts as it sees fit to fulfill its charter.

Article 27

- Oil and gas resources belong to the Nation. These hydrocarbons in the subsurface also belong to the Nation.
- **The State may contract with third parties for their exploration and production.**

Article 28

- E&P activities will no longer be carried out as a monopoly.
- A sovereign trust fund will manage after tax profits generated by the licenses and contracts.



DIARIO OFICIAL DE LA FEDERACION

ORGANO DEL GOBIERNO CONSTITUCIONAL DE LOS ESTADOS UNIDOS MEXICANOS

Tomo DCCCXXXIII No. 17 México, D.F., viernes 28 de diciembre de 2013

EDICION VESPERTINA

CONTENIDO

Secretaría de Gobernación

Secretaría de Desarrollo Social

Secretaría de Salud

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512.08 KAREMLAR

The Secondary laws and regulations were approved by Congress on August 11th 2014

- Pemex is now a “**State Productive Enterprise**” with technical and management autonomy based on the best international practices and under a special regime for acquisitions, leases, contracts for works and services, acquisition of debt and administrative responsibilities.
- **Contract models** now allowed are:
 - i) **Services** paid for in cash.
 - ii) **Profit Sharing** paid for with a percentage of the profits.
 - iii) **Production Sharing** paid for with a percentage of the production.
 - iv) **Licenses**, paid in cash to the State by the contractor.
 - v) Any combination of the above.

Royalties and contributions will be paid for the extracted products.

- Authority and responsibilities of E&P will fall upon the Ministry of Energy, National Hydrocarbons Commission, Treasury Secretariat (Hacienda) and the Energy Regulatory Commission.
- Companies may book the **expected benefits** from their licenses or contracts for accounting and financial purposes but not the reserves

Secondary laws (Cont.)

- Pemex will have first choice on licenses (**Round 0**) and may operate them with participation of private companies. The **Energy Secretariat** and the **National Hydrocarbon Commission** will select the partners and manage and control the contracts.
- **Contracts and licenses shall have a "National Content" of 25%.**
- **Contracts** will have public **transparency clauses**, will be auditable, awarded with maximum transparency and all **terms will be public**. New transparency laws will prevent any corruption attempts
- **A sovereign Petroleum Trust Fund was created.**
- The "**National Natural Gas Control Center** " will operate all the trunk pipelines and storage facilities and the "**National Energy Control Center**" will do the same for electricity.
- **Geothermal and Coal Bed Methane** extraction were regulated.
- The "**National Industrial Safety and Environmental Protection Agency of the Hydrocarbons Sector**" was created.
- Pemex and Federal Electricity Commission employee **unions shall no longer have representation in the Boards** of Directors of the two companies.

What can be expected from the Reform

The Reform opens up a large resource base to industry, México has discovered in the subsurface **263 bb** of oil and **279 tcf** of gas, not including the Yet to Be Found in conventionals and unconventionalals. The total endowment is considered to be in the order of 435 bboe.

	Oil BBO	Gas TCF	BBOE
1. Produced volumes	40.6 (12%)	71.6 (15%)	55.0 (13%)
2. Reserves (3P)	30.8 (9%)	63.2 (14%)	44.5 (10%)
3. Yet to be discovered conventional	45.3 (13%)	46.5 (10%)	54.6 (13%)
4. Yet to be certified unconventional	31.9 (10%)	141.5 (30%)	60.2 (14%)
5. Remnant oil "not economic"	191.9 (56%)	144.7 (31%)	220.7 (50%)
	340.5	467.5	435.0

Source Pemex

Assuming Pemex's numbers for the Yet to Be Found in conventionals and unconventionalals are right and not considering what today is remnant "uneconomic" there are at least **159 bboe** to be produced.

From the point of view of exploration the Reform opens up over **77 bbo** and **188 tcf** of gas to be discovered and certified **(115 bboe)**

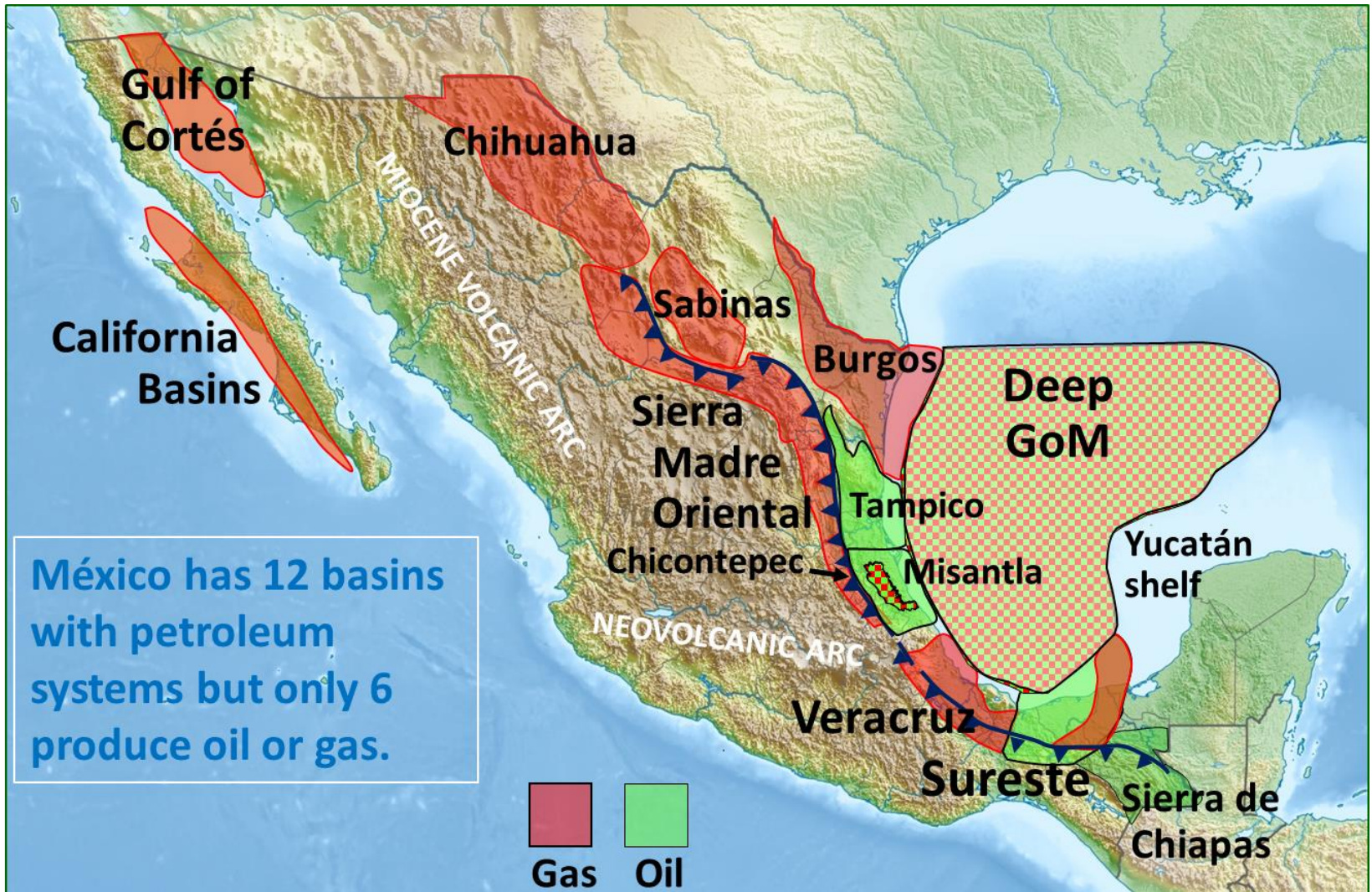
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And for development and exploitation, considering the reserves base and the discovered remnant “uneconomic” volumes, the Reform opens up **223 bbo** and **208 tcf**, (60% of the total **435 bboe**) which could improve substantially the expected recovery factors through good science and new technologies.

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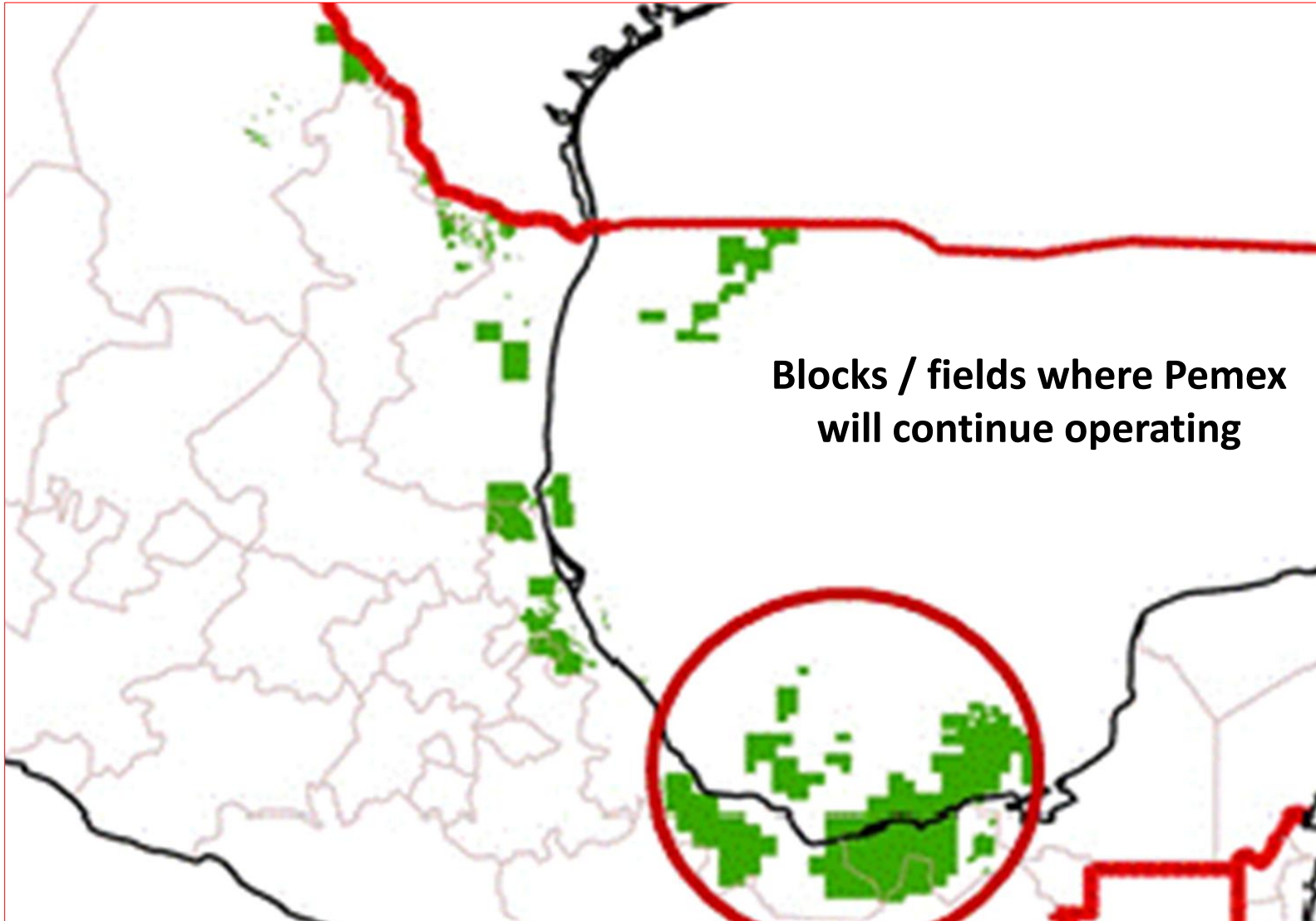
Early results of the Reform

The volumes just described are what Mexico has produced, has as 3P reserves, has as remnant resources and what has identified as resources to be found as conventional and unconventional oil and gas, but these are just in 6 basins, 2 for oil and 4 for gas. Mexico has yet to produce from the other basins and in deep GoM and from shales.



Round 0

Round 0 is where Pemex was authorized to continue working exclusively, it was announced last week a month ahead of schedule. Thanks to it Pemex will keep **83% of the 2P reserves** and **21% of the potential (exploratory) resources**.



First farmouts

Besides what Pemex obtained in Round 0 it asked to be able to do JV's in four type of fields. The partners on this blocks will be competitively selected (Informally called Round 0.5):

	Fields / group	Area Km ²	2P Reserves mmboe	3P Reserves mmboe	Capex MM\$USD	Years
Mature Fields (onshore)	Terrestres (Rodador, Ogarrio, Cárdenas-Mora)	312.8	247.9	263.6	1,701	5
	Marinos (Bolontikú, Sinán y Ek (Jsk))	119.4	350.1	497.3	6,330	6
Heavy & extra heavy oil fields (offshore)	Ayatsil-Tekel-Utsil	88.8	746.6	862.5	6,233	10
Giant gas fields (deep water)	Kunah-Piklis	55.3	211.9	501.6	6,793	10
Discoveries in Perdido area (deep water)	Trión	22.6	-	304.6	8,075	8
	Exploratus*	12.9	-	234.4	3,165	
Total		611.7	1,556.5	2,664.0	32,295	

Round 1

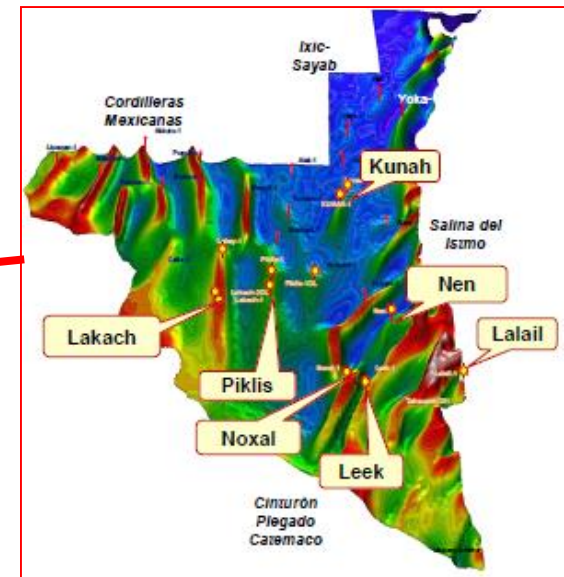
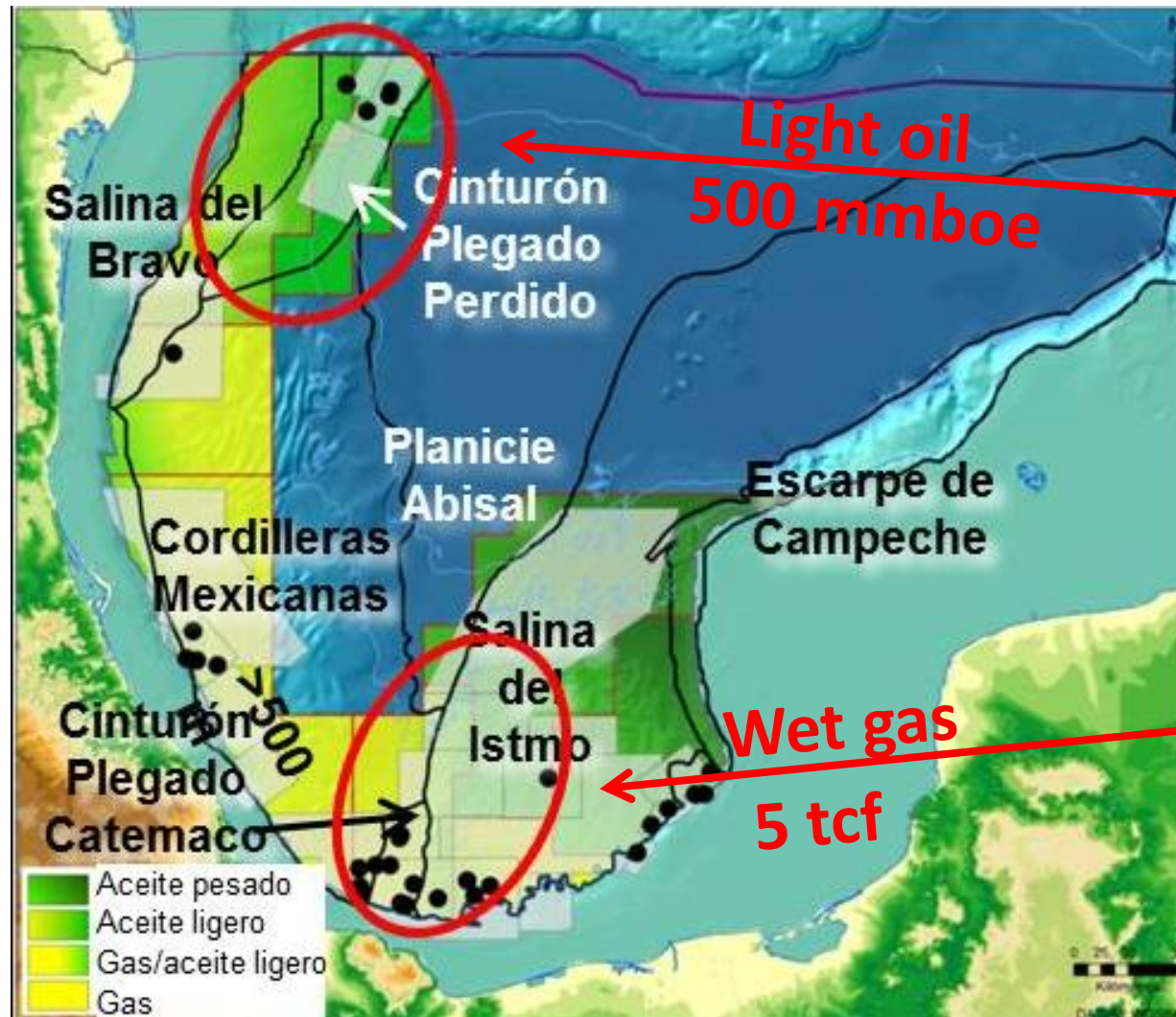
The Government also already announced a *tentative* distribution of areas to be tendered as part of Round 1 in 1Q, 2015 to public and private companies, whether domestic or foreign.

This Round 1 will include 109 exploration and 60 production blocks / fields, that have include shallow water areas in the Southeast Basin, deep water blocks offshore Veracruz and in the Perdido folded belt, mature fields, and heavy and extra-heavy oil fields, and areas in Chicontepec, and for unconventional in the Tampico - Misantla and Sabinas basins.

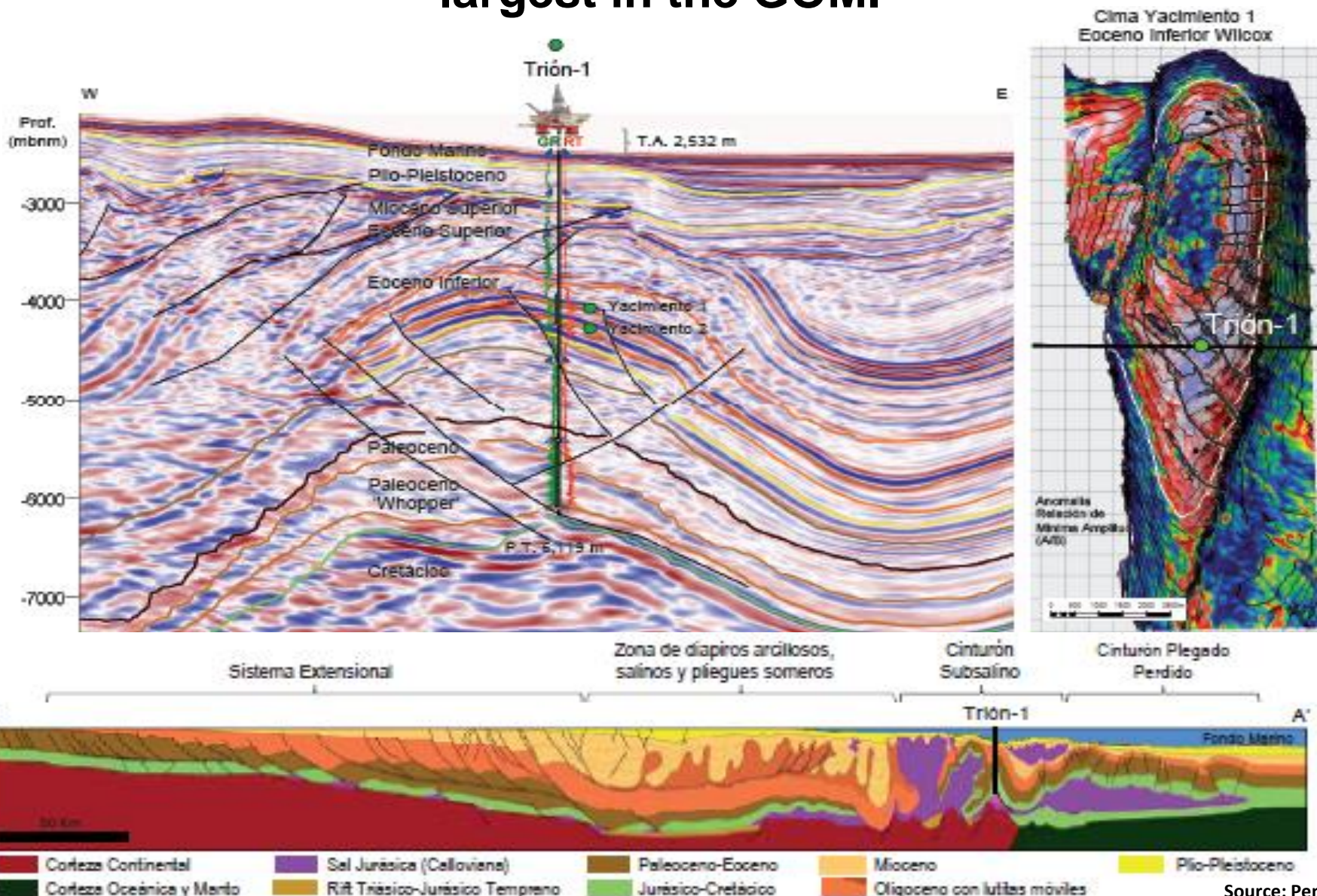
Additionally México will negotiate with the operators of 22 contracts that were tendered in the past as service contracts under the old legal frame to migrate them to a Profit Sharing or Production Sharing scheme.

Areas in the Deep Gulf of México

There will be blocks assigned to Pemex in the Perdido Fold and Catemaco fold belts as part of Round 0, two fields in these areas will be farmed out. Round 1 will include blocks in both areas and in the Mexican Cordilleras

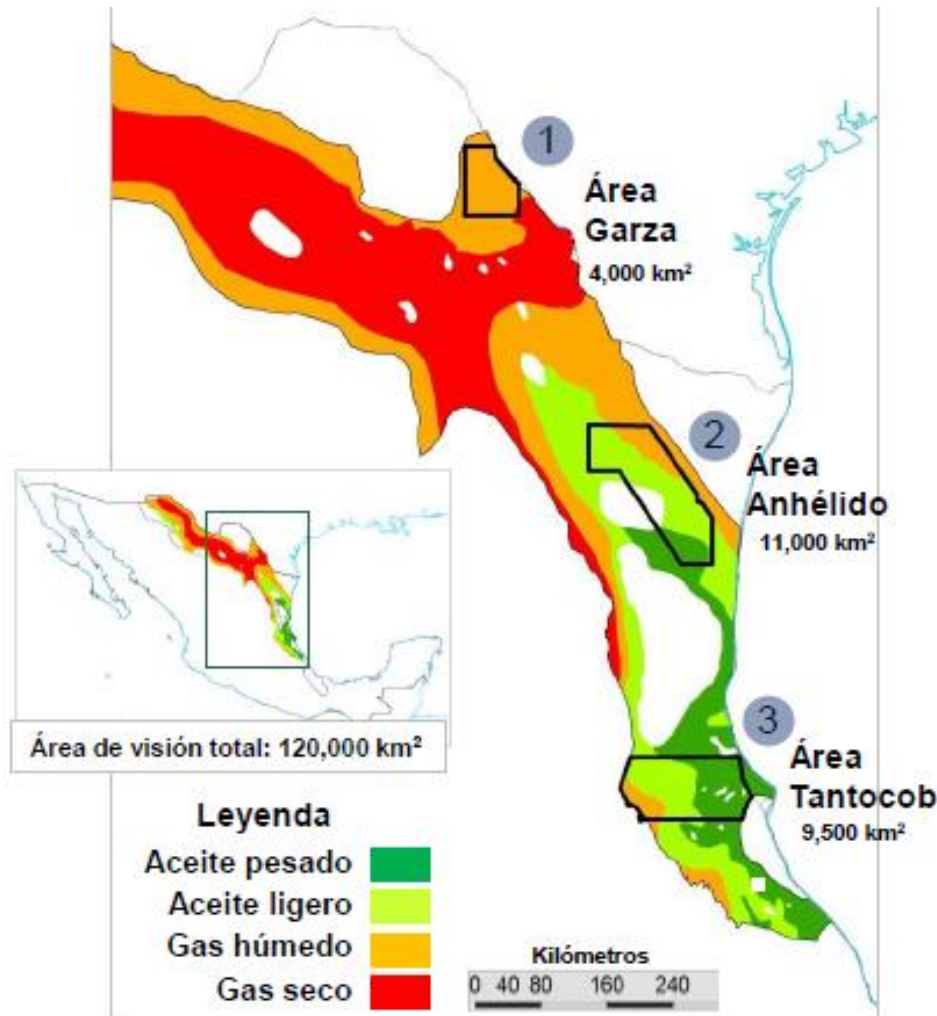


Trion – 1 is the best Deep Water Discovery so far with 3P reserves in the order of 304 mmboe of light oil, some of the largest in the GOM.



Unconventional oil and gas

In México there are plays with potential to produce wet and/or dry gas in the North (Paleozoic) and Northeast (Eagle Ford) and oil in the East Central part (Jurassic).



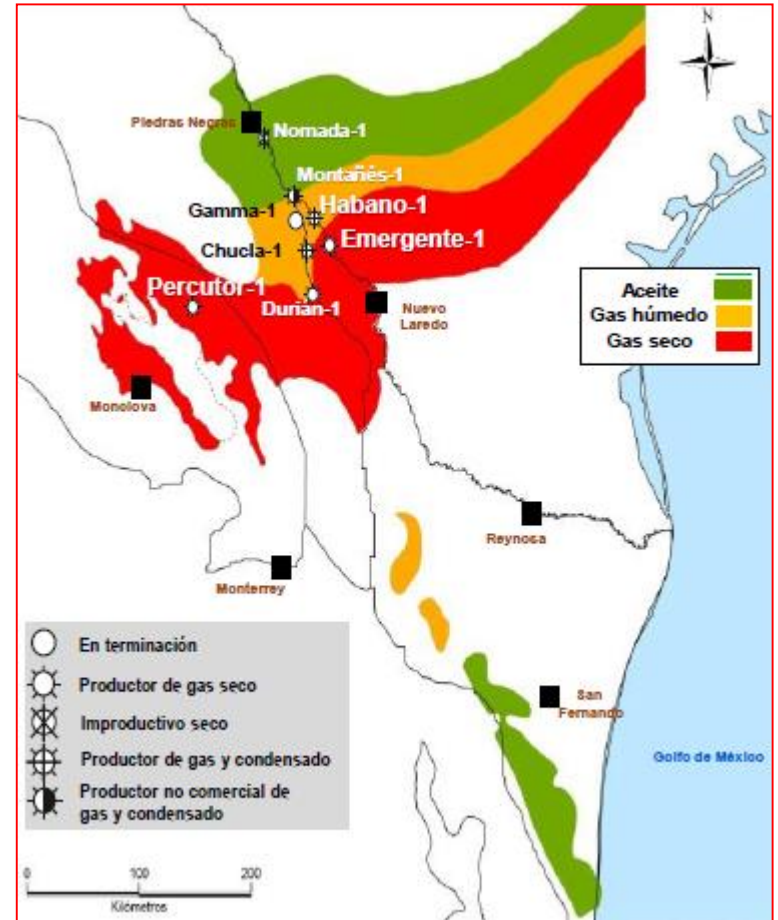
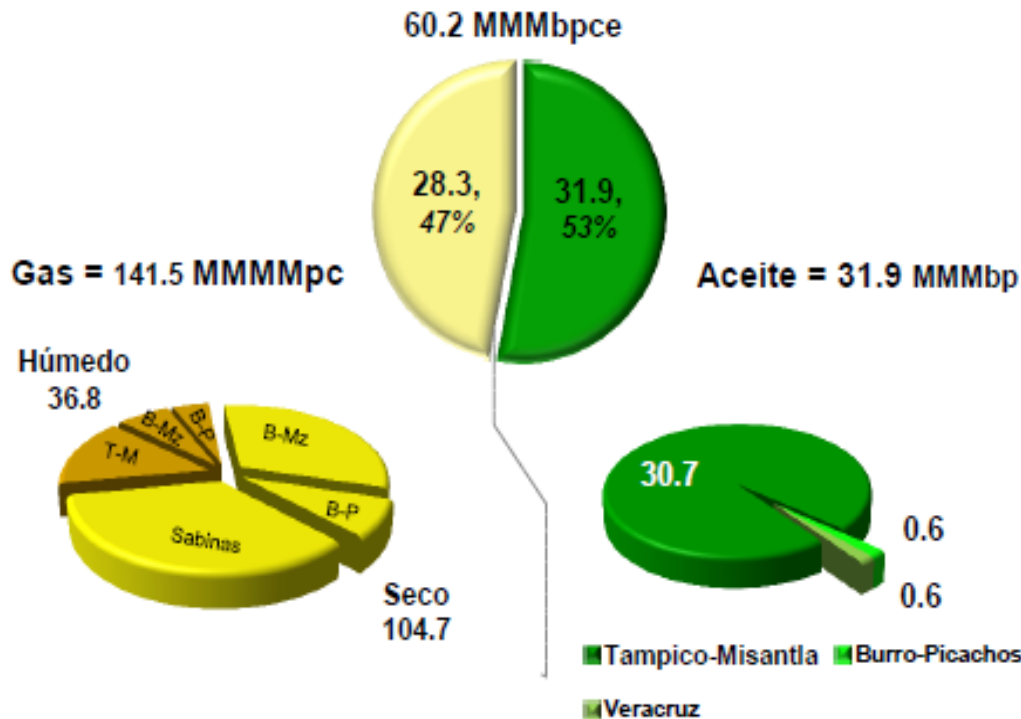
Pemex has recently focused on three areas:

1. For liquids rich gas
2. For light oil
3. For light - heavy oil

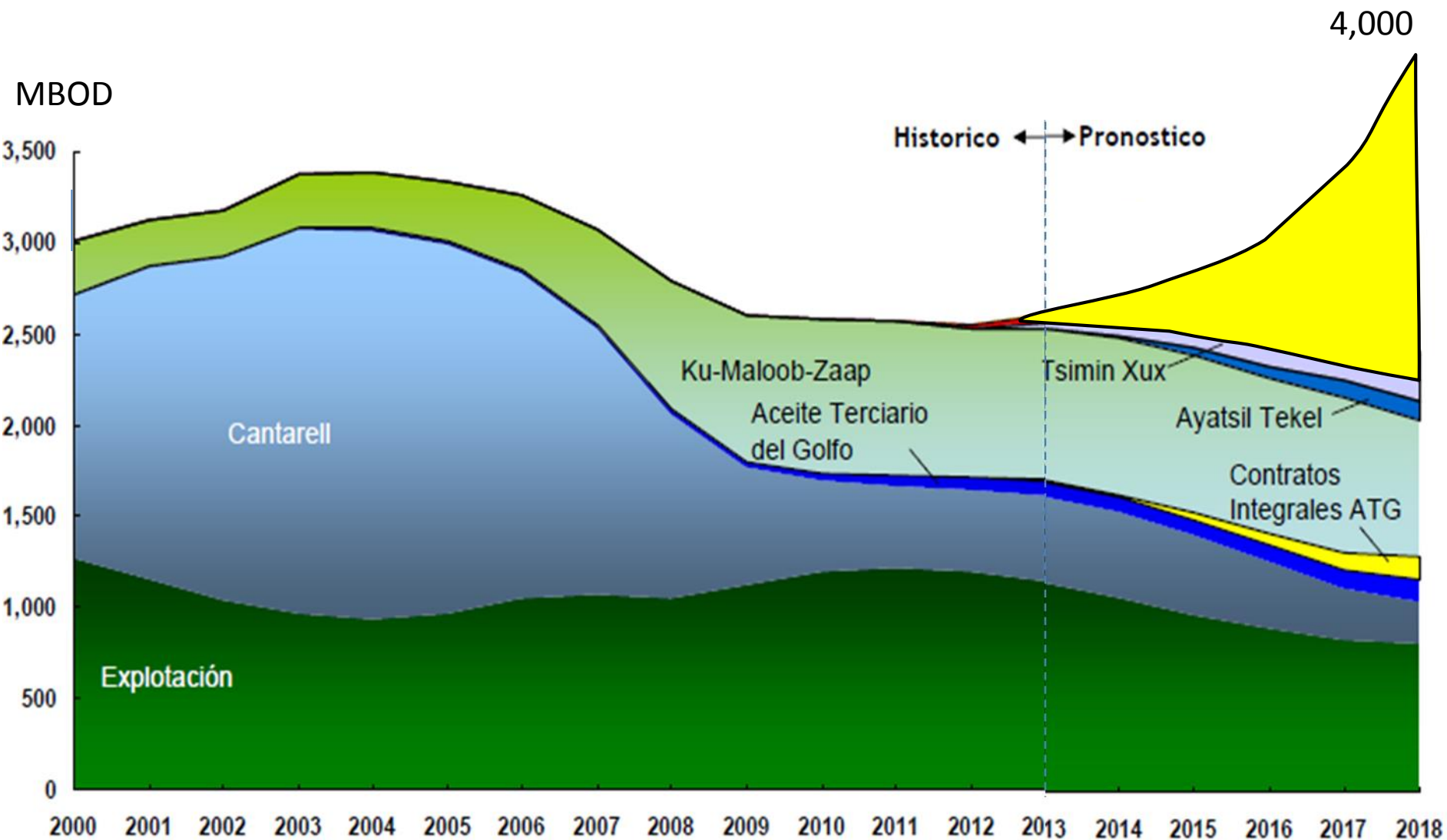
The EIA considers the potential for shale gas in México to be 545 tcf while Pemex puts it at 141 tcf; and for shale oil it puts it at 32 bbo to the 13 bbo of the EIA.

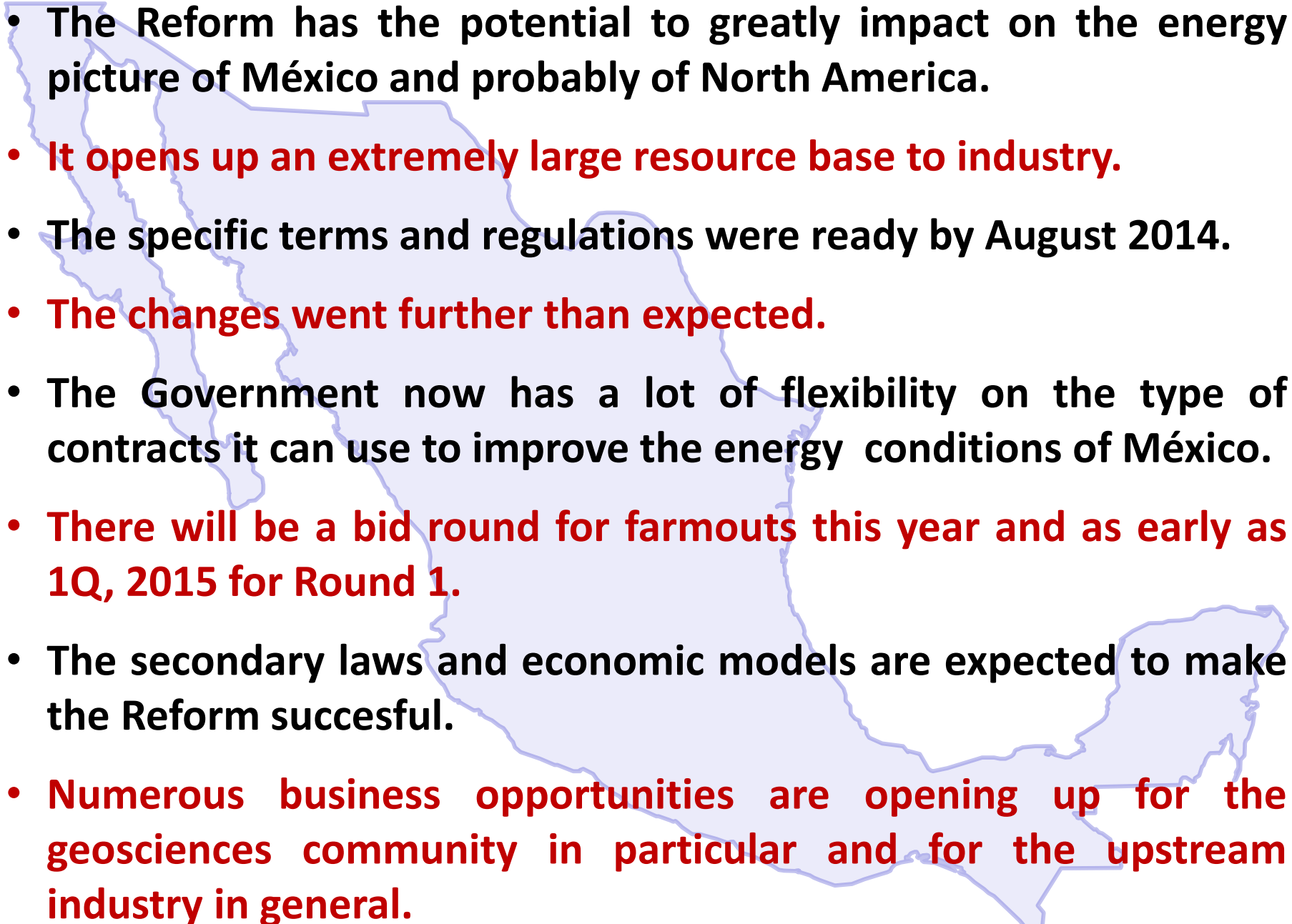
So far:

- 9 exploratory wells
 - 112 mmmboe 3P reserves found,
- In the next 4 years invest \$3 bb US
- to drill 175 wells
 - acquire 10,000 km2 of 3D seismic



With the Reform 0.5 to 1.0 mmbopd could be added to that scenario



- 
- The Reform has the potential to greatly impact on the energy picture of México and probably of North America.
 - **It opens up an extremely large resource base to industry.**
 - The specific terms and regulations were ready by August 2014.
 - **The changes went further than expected.**
 - The Government now has a lot of flexibility on the type of contracts it can use to improve the energy conditions of México.
 - **There will be a bid round for farmouts this year and as early as 1Q, 2015 for Round 1.**
 - The secondary laws and economic models are expected to make the Reform successful.
 - **Numerous business opportunities are opening up for the geosciences community in particular and for the upstream industry in general.**



THANK YOU!

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