

**SENER**  
SECRETARÍA DE ENERGÍA



# MEXICO'S ENERGY REFORM: AN OCEAN OF OPPORTUNITIES

**César Hernández Ochoa**  
Undersecretary of Electricity

September 23rd, 2016

# ESTIMATED IMPACT OF THE REFORMS

**TABLE 2. IMPACT OF THE REFORM ON THE LEVEL OF GDP IN THE MEDIUM TERM**  
**OECD ESTIMATES OF THE REFORMS THAT HAVE BEEN LEGISLATED AND THOSE**  
**EXPECTED<sup>1</sup>**  
**EFFECT AFTER 5 YEARS, ASSUMING THAT IMPLEMENTATION IS IMMEDIATE.**

	<u>Via productivity growth (%)</u>	<u>Via intensification of capital (%)</u>	<u>Via employment growth (%)</u>	<u>GDP growth (%)</u>
<b>A. Reforms from Pact for Mexico</b>	<b>0.41</b>	<b>0.51</b>	<b>0.03</b>	<b>1.0</b>
<b>1. market regulation</b>				
a) telecommunications	0.06			0.06
b) Electricity and Gas	0.32			0.32
c) Oil		0.45		0.45
<b>2. Labor market reform</b>				
Employment protection			0.03	0.03
<b>3. Tax structure</b>		0.07		0.07
4. Legal reform	0.03			0.03
<b>B. Additional reforms</b>	<b>0.91</b>	<b>0.00</b>	<b>0.10</b>	<b>1.0</b>
<b>5. Judicial reform</b>	0.50			0.50
<b>6. Labor market reform</b>				
a) Reforms towards formality	0.42			0.42
b) Participation of women			0.10	0.10
<b>Total</b>	<b>1.82</b>	<b>0.51</b>	<b>0.13</b>	<b>2.0</b>

1. It is likely that the tax and education reforms will have significant effects on growth (the latter especially long-term), but these have not been included in the table because of the difficulty in quantifying these effects.

Source: Bourles *et al.* (2010); Bassanini *et al.* (2009); Dougherty and Escobar (2014); Thévenon *et al.* (2012); IMF-OECD-World Bank (2014); Dougherty (2014).

## **TWO** STATE OWNED ENTERPRISES DOING EVERYTHING

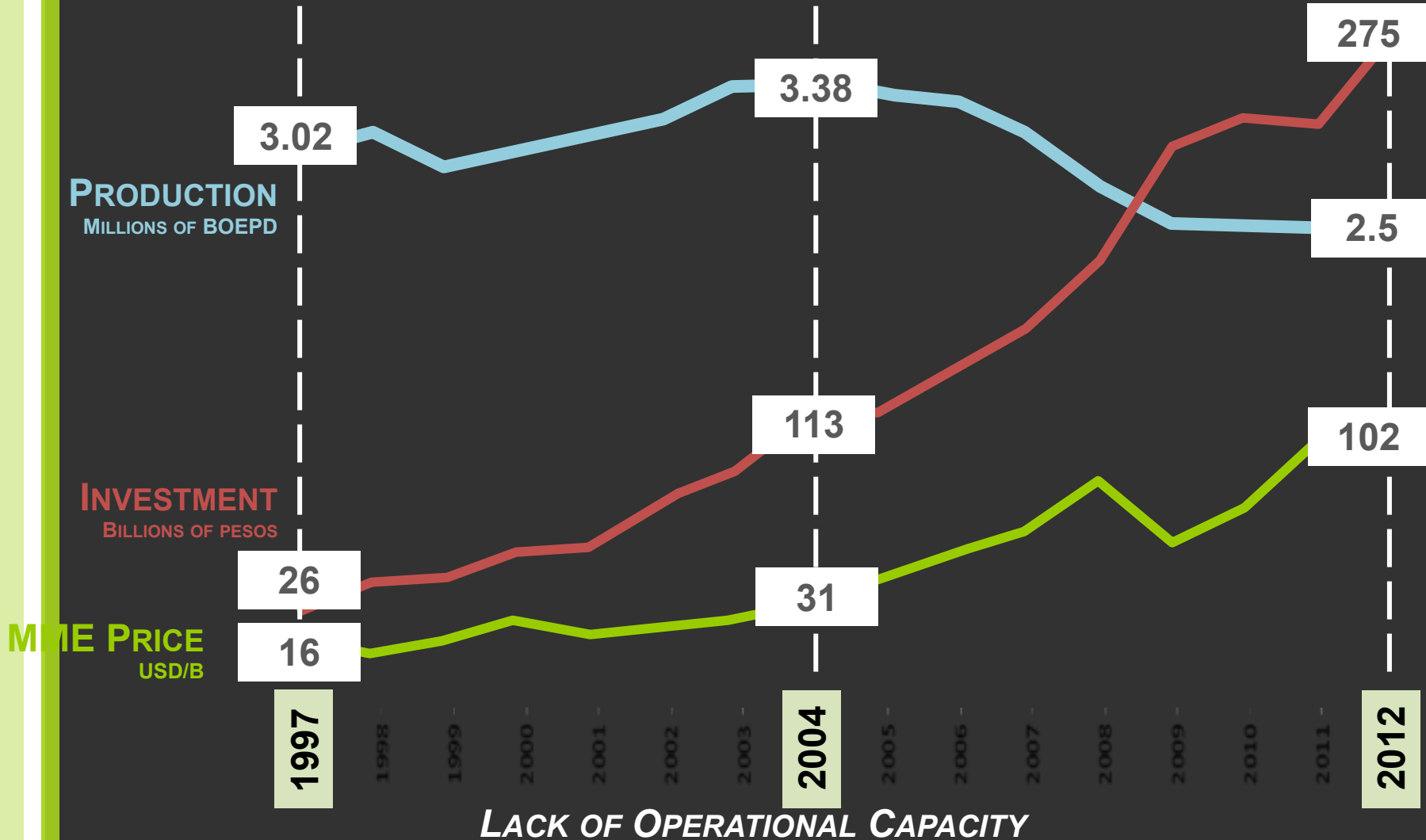


## SELF REGULATED

ALL **RISK** AND **INVESTMENT** WAS CARRIED OUT BY THE **STATE**

# OLD MODEL CONSEQUENCES

## OIL PRODUCTION DECLINE

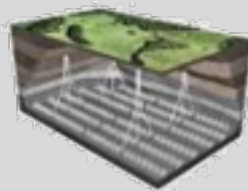


## WE NEED INVESTMENT AND TECHNOLOGY TO REACH NEW RESOURCES

### DEEP WATER



### SHALES



### CHICONTEPEC



### MATURE FIELDS



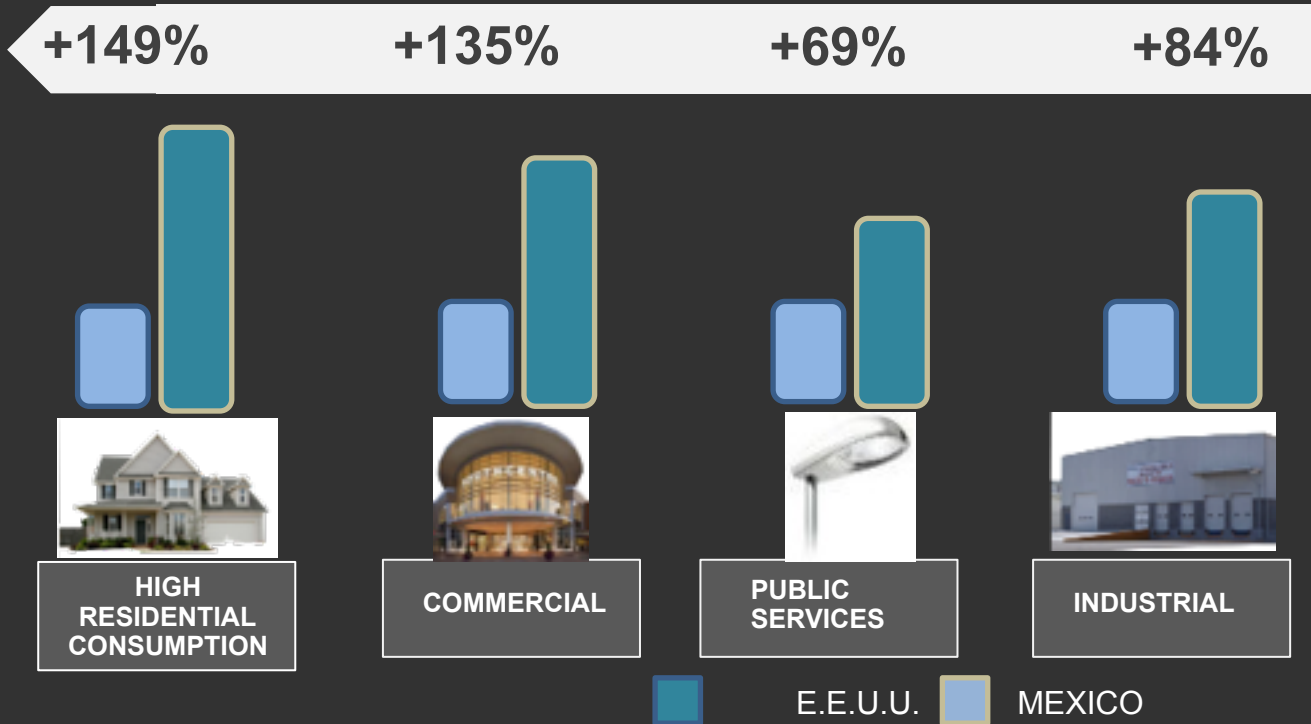
**76%** of prospective resources are in unconventional and deepwater reservoirs

Mature fields' remaining oil equals **3** times the entire prospective resources

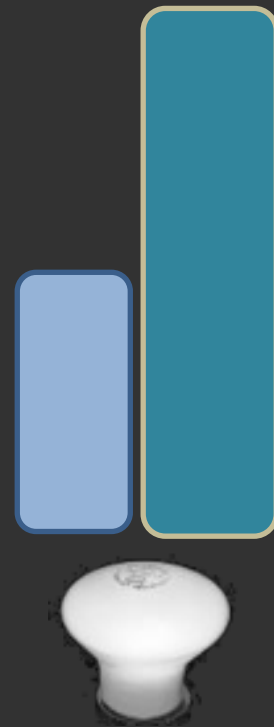
# AVERAGE PRICE OF ELECTRICITY

IN 2012, AVERAGE POWER RATES WERE **25%** GREATER THAN THE AVERAGE IN THE USA

WITHOUT SUBSIDIES, SUCH GAP WAS **73%**



REAL PRICE  
**+73%**



WITHOUT  
SUBSIDIES

# THE MEXICAN REFORM

# MAIN OBJECTIVES OF THE ENERGY REFORM

## OIL & GAS

- ATTRACT NEW CAPITAL AND STATE OF THE ART TECHNOLOGY.
- ACCESS DEEPWATER AND NON-CONVENTIONAL RESERVOIRS.
- INCREASE NATURAL GAS AND OIL SUPPLY.

## ELECTRICITY

- CREATE A NEW WHOLESALE ELECTRICITY MARKET.
- EQUAL CONDITIONS FOR PUBLIC AND PRIVATE COMPANIES.
- WITH A WIDE RANGE OF MARKET PARTICIPANTS.
- PROMOTE CLEAN ENERGIES UNDER COMPETITION.



## OPEN MARKETS FOR THE ENTIRE VALUE CHAIN



## REGULATED BY THE STATE

STRENGTHEN ENERGY SECURITY  
ENHANCE PRODUCTIVITY  
TECHNOLOGICAL LEAP  
STRENGTHEN ENERGY MARKETS  
NEW INVESTMENTS

# LEGAL FRAMEWORK AND INSTITUTIONAL ARRANGEMENT

**3**

**CONSTITUTIONAL ARTICLES WERE MODIFIED**

**21**

**SECONDARY LAWS ISSUED**

**25**

**REGULATIONS PUBLISHED**

**4**

**INSTITUTIONS WERE CREATED:  
ASEA, CENACE, CENAGAS AND  
FMP**

**2**

**REGULATORY AGENCIES WERE  
STRENGTHENED: CRE AND CNH**

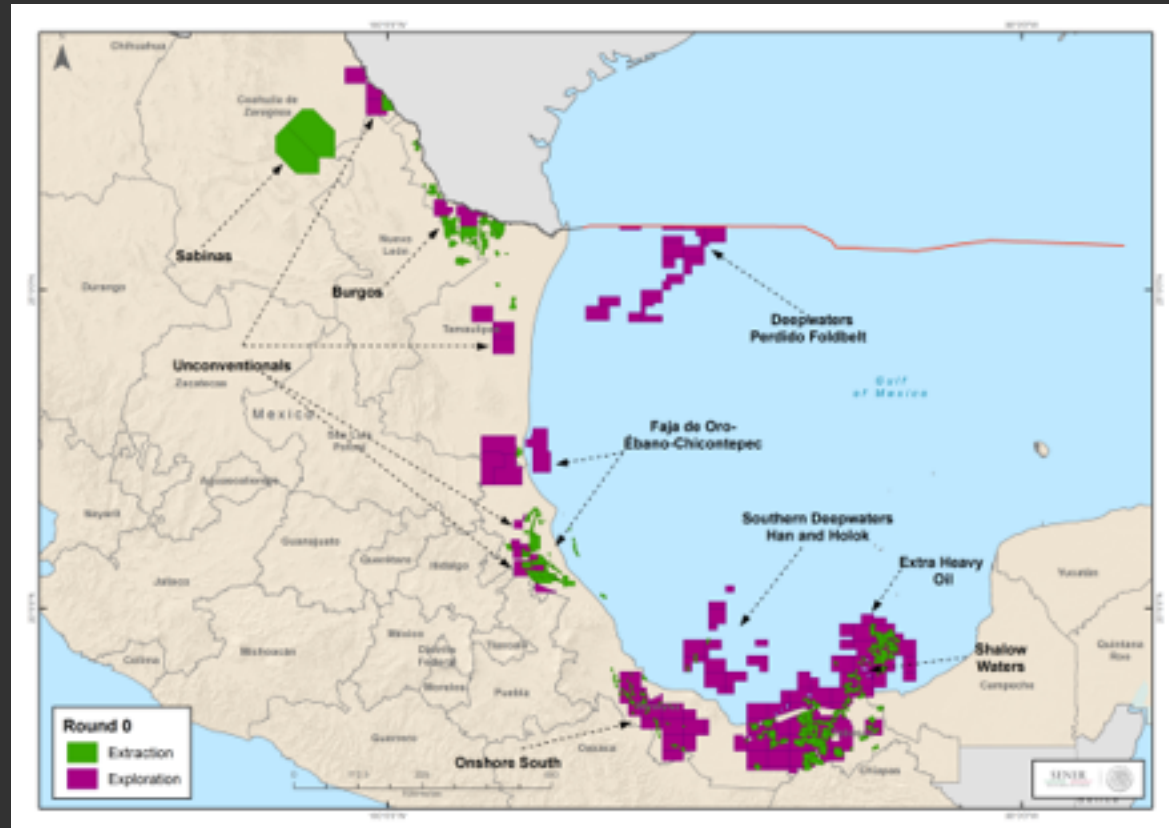
**2**

**STATE ENTERPRISES WERE TRANSFORMED  
INTO STATE PRODUCTIVE ENTERPRISES:  
PEMEX AND CFE**



# ADVANCES IN THE IMPLEMENTATION OF THE MEXICAN REFORM

# ROUND ZERO FOR PEMEX



90  
THOUSAND KM<sup>2</sup>

83%  
2P  
RESERVES

21%  
PROSPECTIVE  
RESOURCES

5<sup>TH</sup>  
PLACE FOR 1P  
RESERVES

# ROUND ONE. THREE HYDROCARBONS TENDERS COMPLETED

## 30 CONTRACTS SIGNED

37  
NEW COMPANIES FROM  
7 COUNTRIES.  
26 ARE MEXICAN

7 BILLION USD OF  
INVESTMENT

60% OF INCOME TO THE STATE

68% AWARDED  
(30 OF 44 BLOCKS)

### 1st Shallow Water exploration



### 3rd Onshore Extraction



### 2nd Shallow Water extraction



# ONGOING HYDROCARBONS TENDERS: ROUND ONE- 4TH TENDER

R 1.4

**10 CONTRACTS IN DEEP WATER AND ULTRA-DEEP WATER  
FIELDS**




**10** CONTRACTUAL  
AREAS

**24** THOUSAND KM<sup>2</sup>

PROSPECTIVE  
RESOURCES:

**10 THOUSAND 889**  
MMBOE

1. ATLANTIC RIM (ANADARKO) 
2. CHEVRON
3. EXXON MOBIL
4. HESS MÉXICO
5. MURPHY SUR
6. NOBLE

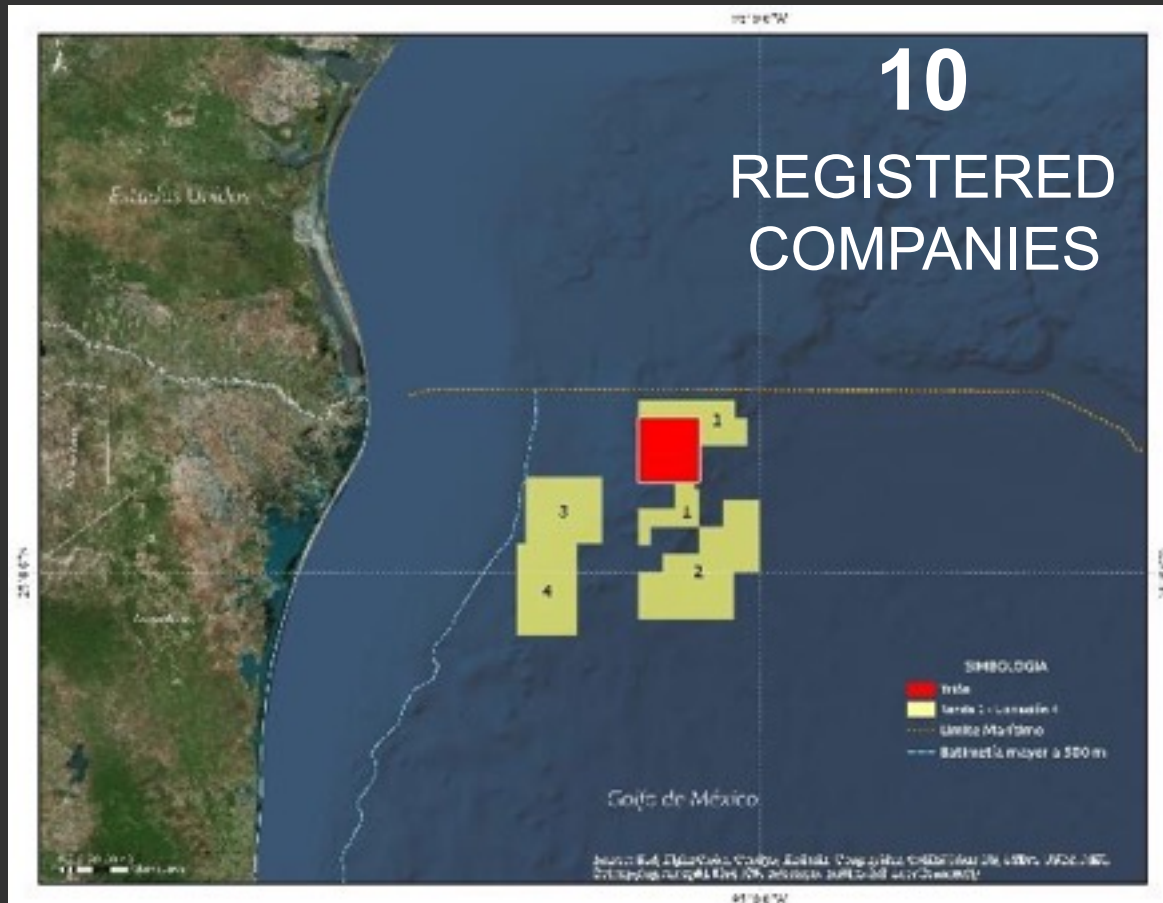
Submission of proposals and allocation:  
**DECEMBER 5<sup>TH</sup>**



# ONGOING HYDROCARBONS TENDERS: FIRST PEMEX FARM-OUT –TRION FIELD –

1ST  
FARMO  
UT

COMPANIES MUST BE PART OF A CONSORTIUM. PEMEX SHALL  
HAVE A PARTICIPATION OF 45%



SURFACE: 1,285 KM<sup>2</sup>  
WATER DEPTH: 2,500  
M

3P RESERVES:  
485 MMBOE

INVESTMENT:  
11 BILLION USD

1. ATLANTIC RIM (ANADARKO)
2. CHEVRON
3. EXXON MOBIL



Submission of proposals and allocation:  
DECEMBER 5<sup>TH</sup>

# HYDROCARBONS TENDERS UNDERWAY: ROUND TWO- 1ST TENDER

R 2.1

**15** CONTRACTS OF SHARED PRODUCTION . **EXPLORATION AND EXTRACTION IN SHALLOW WATERS**



**INDUSTRY  
NOMINATIONS**

**AVERAGE BLOCKS  
SIZE:  
594 KM<sup>2</sup>**

**PROSPECTIVE  
RESOURCES:  
1,587 MMBOE**

**BASINS: SOUTHEAST,  
TAMPICO-MISANTLA  
AND VERACRUZ**

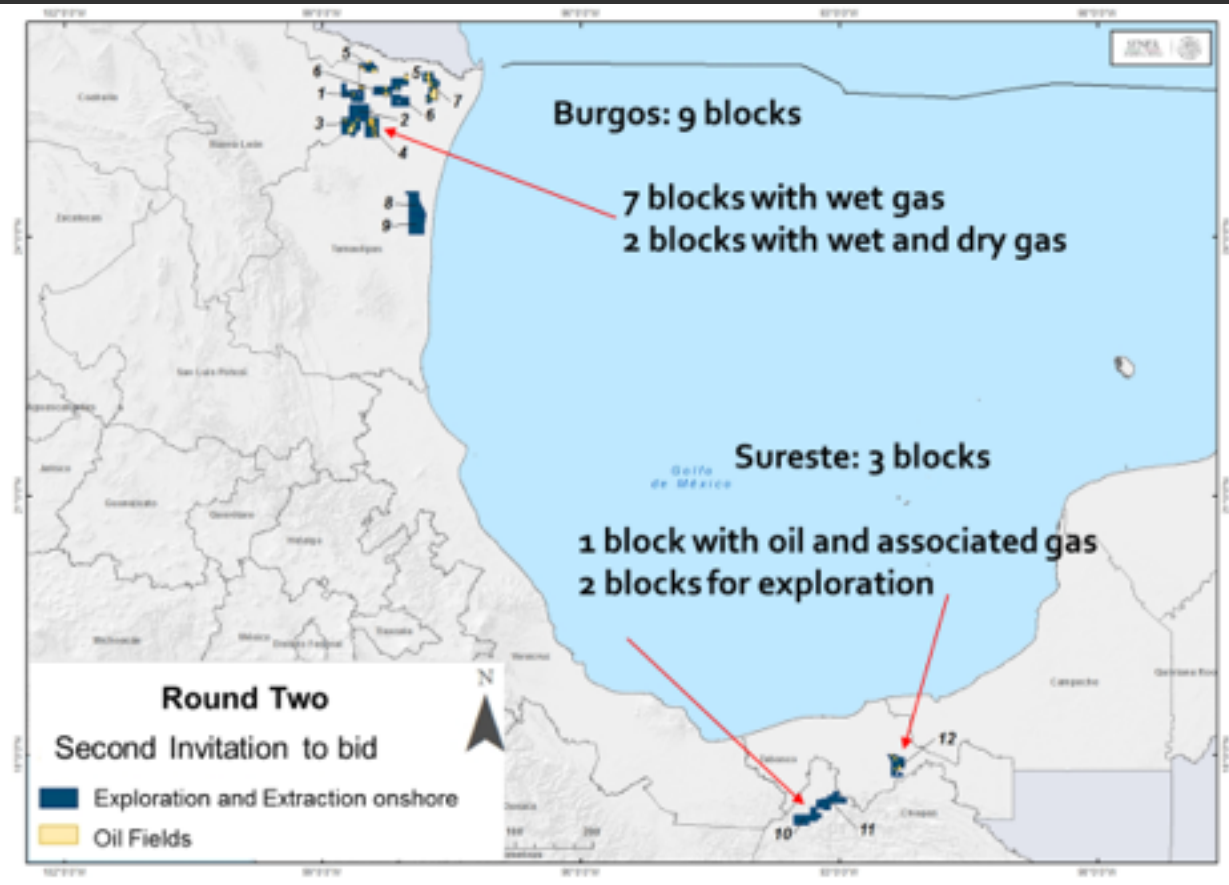
**Submission of proposals and allocation:  
MARCH, 2017**



# HYDROCARBONS TENDERS UNDERWAY: ROUND TWO- 2ND TENDER

R 2.2

**12** CONTRACTS OF LICENSE FOR **EXPLORATION AND EXTRACTION** IN ONSHORE FIELDS



**AVERAGE BLOCKS  
SIZE:  
422 KM<sup>2</sup>**

**PROSPECTIVE  
RESOURCES:  
643 MMBOE**

**9 BLOCKS IN  
BURGOS BASIN AND  
3 IN SOUTHEAST  
BASIN**

Submission of proposals and allocation: **APRIL, 2017**

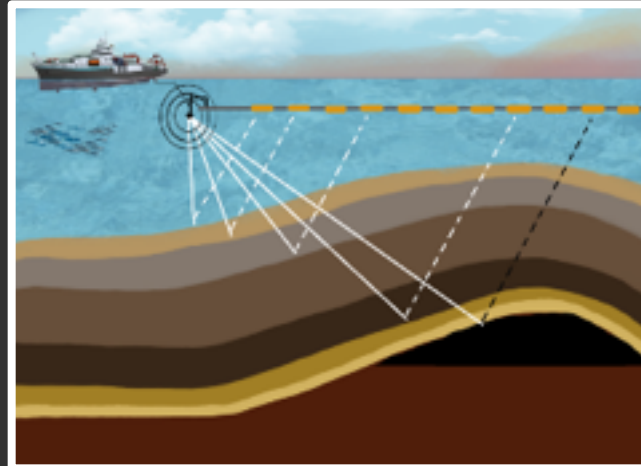
# SEISM EXPLORATION

**2.5**  
BILLION  
USD

**36**  
PERMITS  
GRANTED TO  
15 COMPANIES

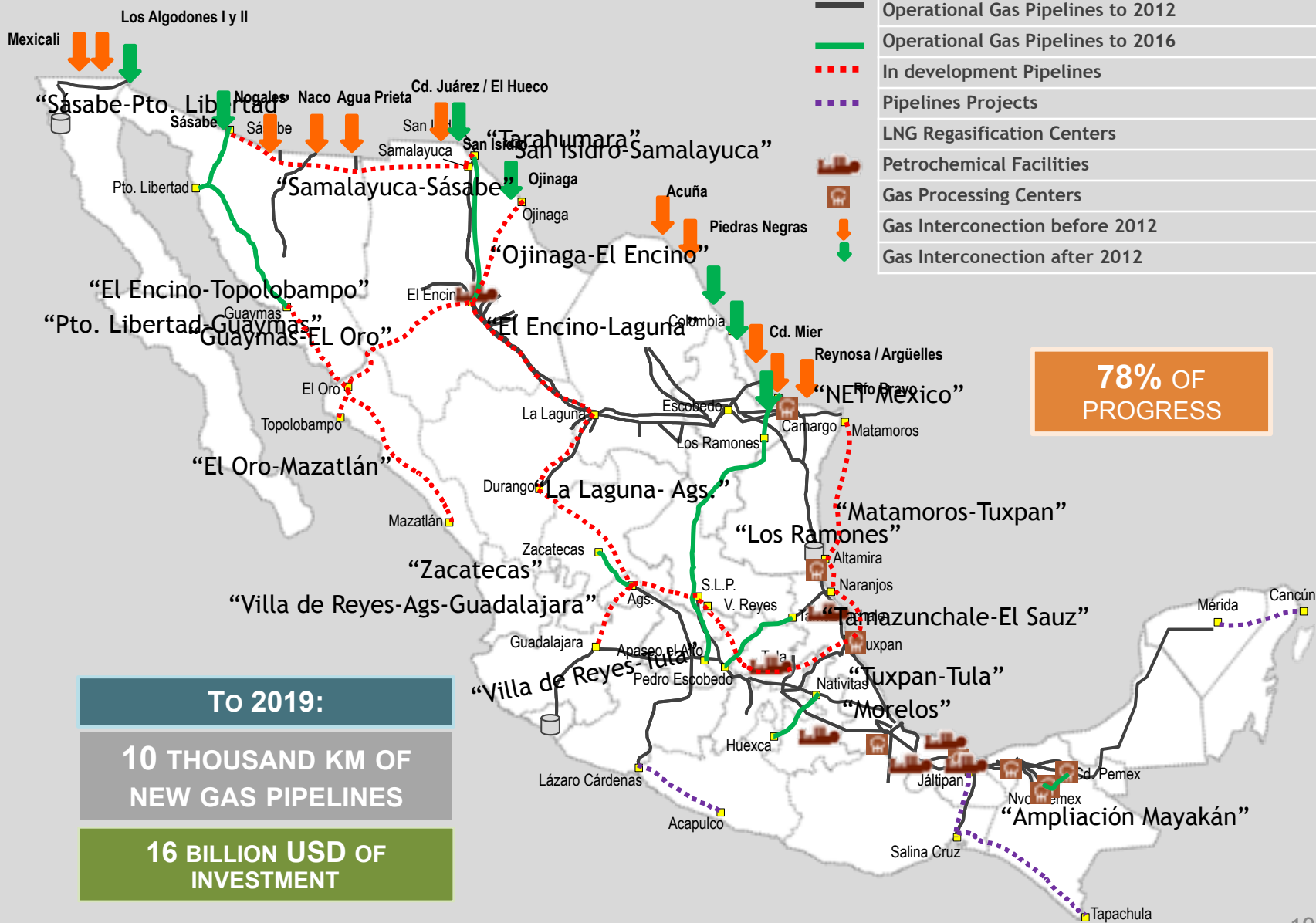
**3.2 TIMES**  
ALL 3D SEISMIC  
ACQUIRED IN  
MEXICO'S HISTORY

- ✓ UPDATED DATA TO IDENTIFY NEW EXPLORATION OPPORTUNITIES
- ✓ VALUABLE INFORMATION FOR DECISION-MAKING AND INVESTMENT PLANS
- ✓ COMMERCIALIZATION OF INFORMATION
- ✓ ECONOMIC BENEFIT AND GROWTH

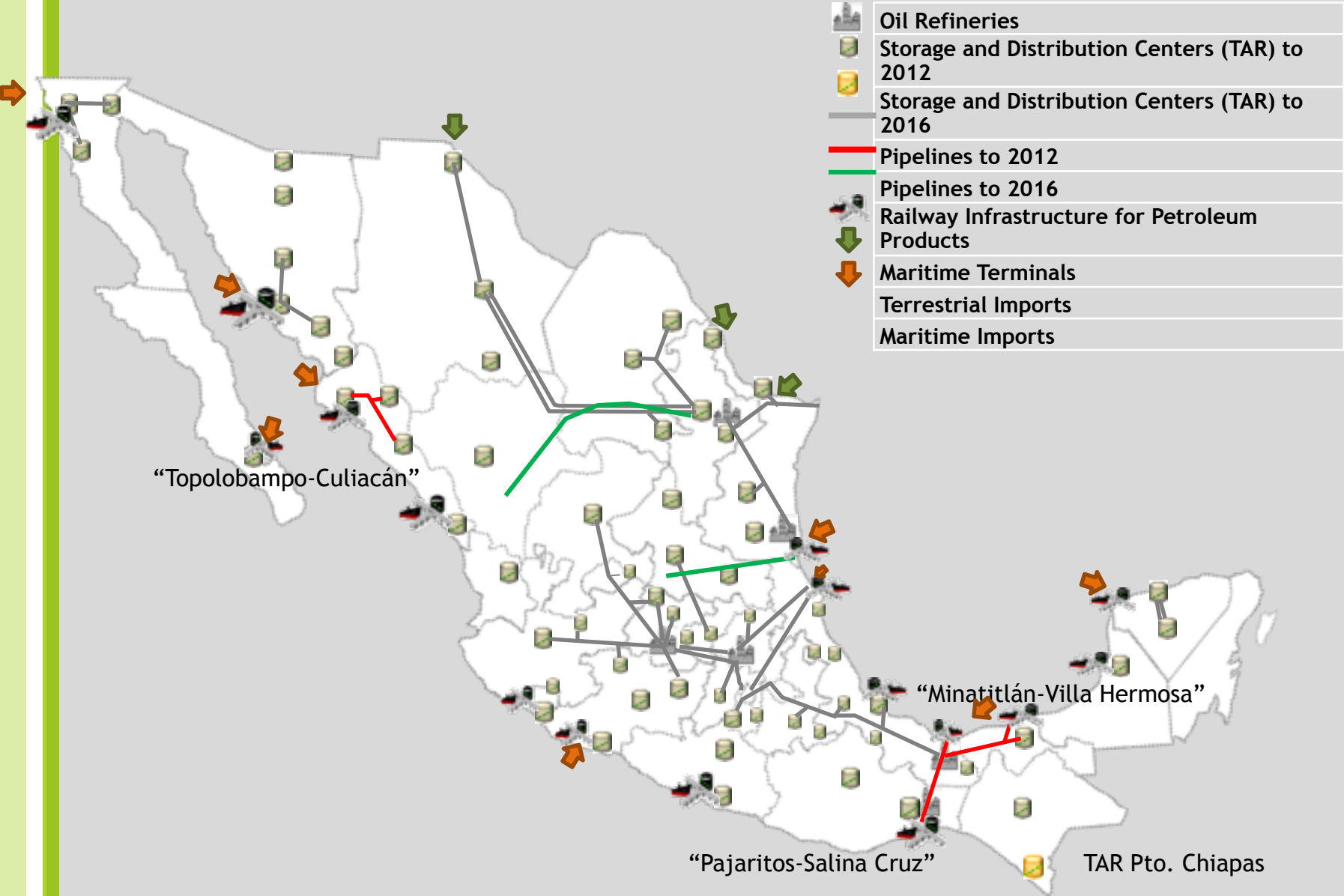


**ENERGY REFORM HAS ALLOWED PRIVATE COMPANIES TO ACQUIRE 3D SEISMIC DATA IN THE GULF OF MEXICO, ONE OF THE REGIONS WITH THE HIGHEST RESEARCH WORLDWIDE**

# EXPANSION OF THE GAS PIPELINE NETWORK



# EXPANSION OF THE OIL PRODUCTS NETWORK



# BUILDING OF INFRASTRUCTURE OF STORAGE AND TRANSPORT OF OIL PRODUCTS

## RELEVANT PROJECTS FOR THE INDUSTRY:

1

STORAGE TERMINALS AND MULTIPURPOSE PIPELINES FOR IMPORT OF LIQUID FUELS FROM TEXAS, TO LAREDO, NUEVO LAREDO AND MONTERREY. OPEN SEASON HAS BEEN CONCLUDED.

2

TRANSPORT AND STORAGE INFRASTRUCTURE OF OIL PRODUCTS FROM TUXPAN TO TULA.

3

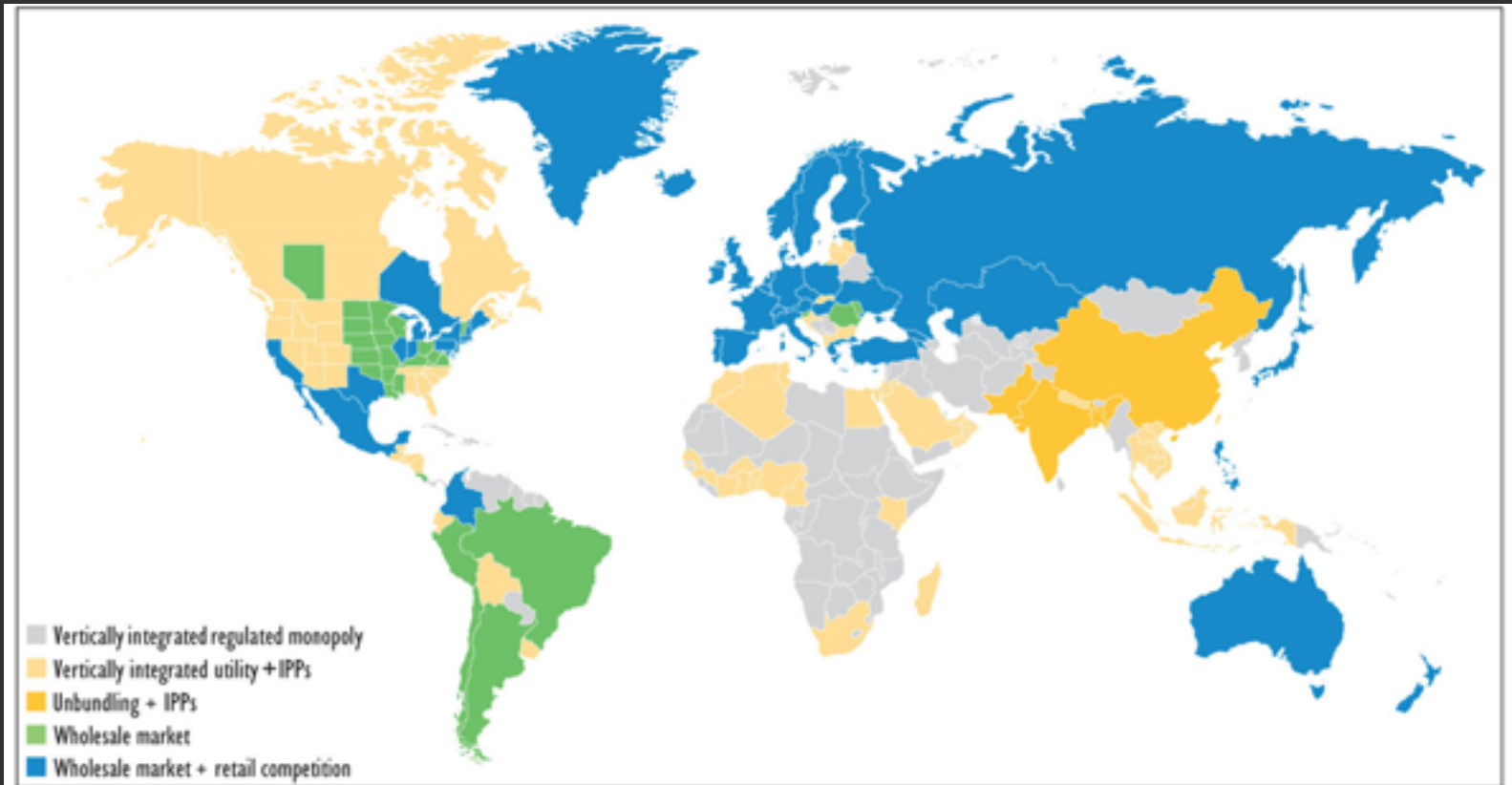
SUPPLY LOGISTICS BY RAIL BETWEEN HOUSTON AND GREENSPORT, TEXAS AND MEXICO CITY.

4

STORAGE TERMINALS IN MEXICO CITY, SAN LUIS POTOSÍ, TULA AND NUEVO LEÓN. NEW RAIL INFRASTRUCTURE IN THE LATTER ONE.

# ELECTRICITY MARKETS WORLD MAP

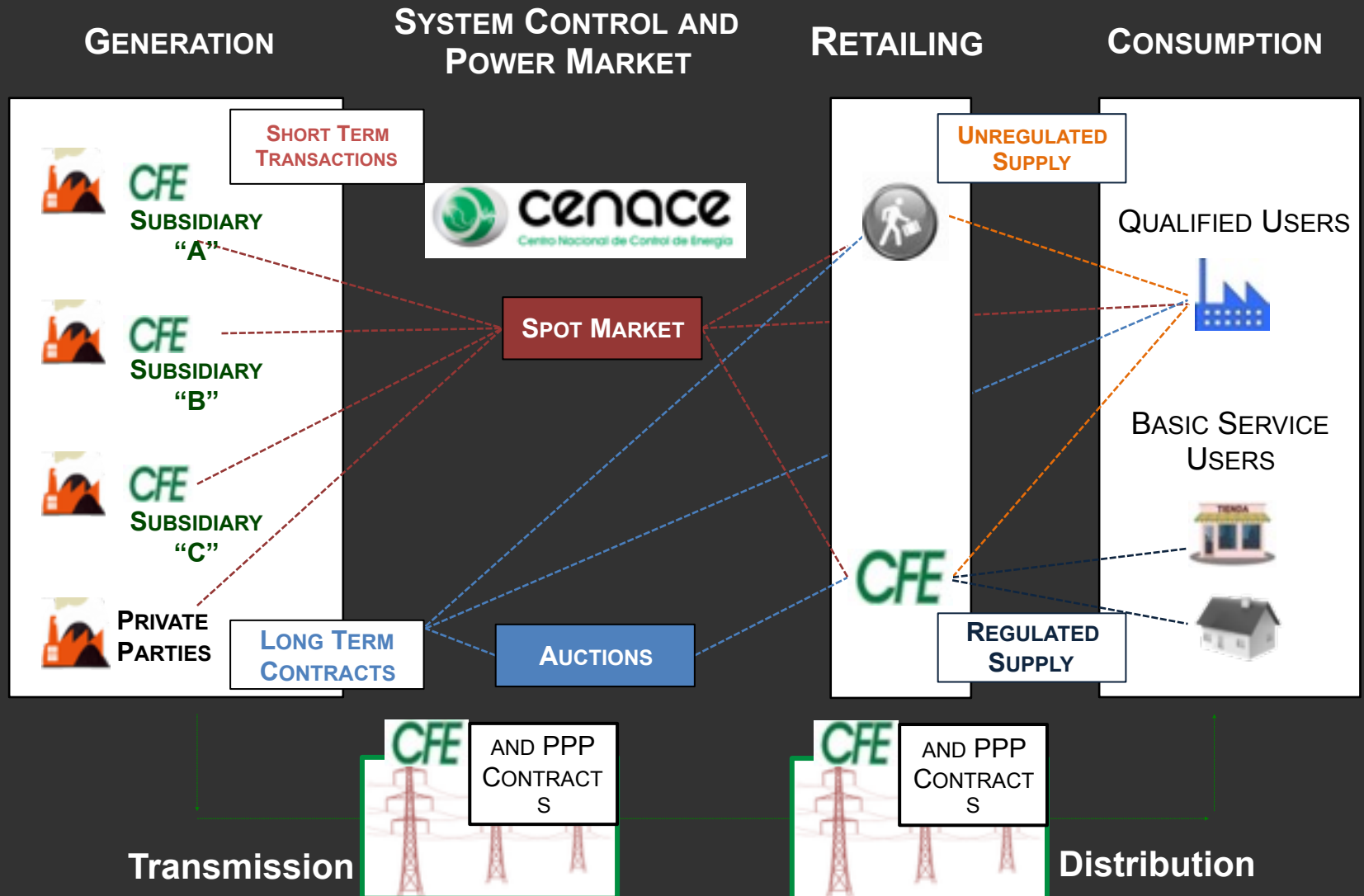
- WITH THE ENERGY REFORM MEXICO INTRODUCED A WHOLESALE MARKET WITH RETAIL COMPETITION.
- MEXICAN INDUSTRIAL ORGANIZATION IN THE ELECTRICITY SECTOR IS MOVING TOWARDS THE **OECD STANDARD**.



This map is without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

Sources: IEA and Renewable Energy and Energy Efficiency Partnership (REEEP) Policy Database 2012-2013.

# NEW INDUSTRY STRUCTURE: INVESTMENT OPPORTUNITIES IN MARKETS AND PPPs





# WHOLESALE ELECTRICITY MARKET



**CENACE:**  
INDEPENDENT  
SYSTEM OPERATOR  
FOR THE ENTIRE  
GRID

## SPOT MARKET:

SHORT TERM TRANSACTIONS. IMMEDIATE DELIVERY.

### CURRENTLY PARTICIPATING:

582  
AVERAGE  
DAILY  
OFFERS

- CFE- NATIONAL POWER COMPANY
- GRUPO FÉNIX
- FISTERRA
- SUMEX
- 200 OFFERS OF PERMIT HOLDERS REPRESENTED BY CFE
- 10 COMPANIES ABOUT TO JOIN

## LONG TERM MARKET

ELECTRICITY TENDERS. LONG TERM PURCHASE AGREEMENTS.

### ON PROGRESS:

1ST TENDER CONCLUDED (2015)  
2ND TENDER ONGOING (2016)

### BENEFITS:

- ✓ **COMPETITIVE** ENVIRONMENT
- ✓ **TRANSPARENCY** AND RULE OF LAW
- ✓ **NO SELLING BARRIERS** FOR GENERATORS
- ✓ **QUALIFIED CONSUMERS** HAVE MORE BUYING OPTIONS



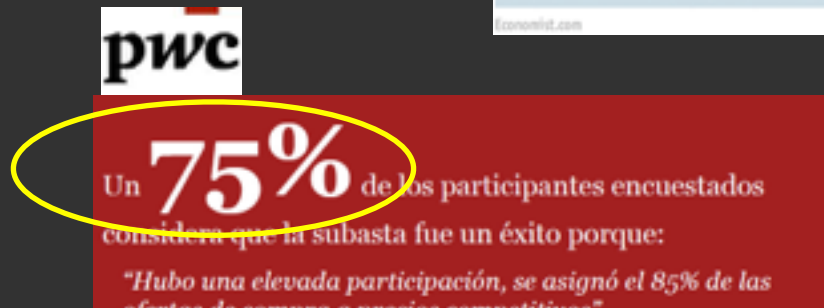
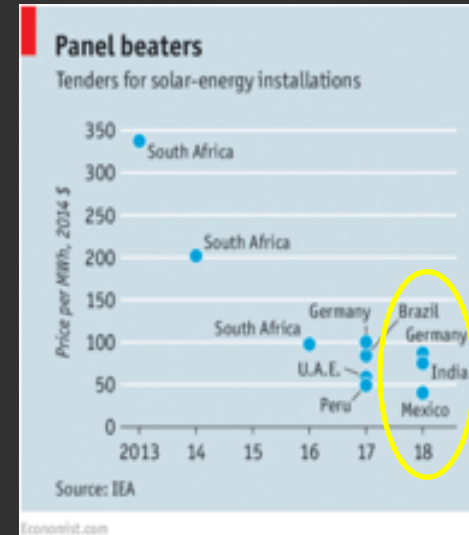
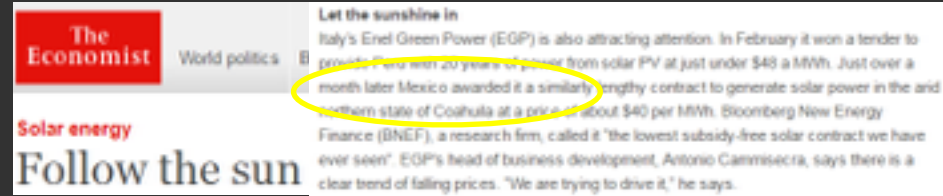
# 1ST CLEAN ENERGY AUCTION: RESULTS

• 11 COMPANIES WON A TOTAL OF 18 DEALS THAT BENEFIT 7 ENTITIES.

✓ 16 NEW POWER GENERATION PLANTS  
 ✓ INVESTMENT: 2.6 BILLION USD  
 ✓ 7 STATES BENEFITED



# FIRST LONG TERM AUCTION; PRAISED BY OBSERVERS AROUND THE WORLD



# SECOND AUCTION: CLEAN ENERGY TECHNOLOGIES

- ✓ Capacity
- ✓ Electric Power
- ✓ Clean Energy Certificates

## Important dates:

- Submission of proposals:  
September **13-23**.
- Publishing of official results:  
**September 30**

**646** proposals:  
*38% more than in the 1st  
auction*

**MORE INVESTMENTS IN CLEAN ENERGIES PLANTS**



# FIRST BID OF TRANSMISSION LINES WITH PRIVATE INVESTMENT

Will transport mainly **clean electricity**

Investment: **1.2 billion** USD

High-voltage direct-current **600 linear km**

**3 thousand MW** of transmission capacity

**NEW BUSINESS MODEL FOR THE DEVELOPMENT OF THE TRANSMISSION NETWORK**



# THE TRANSMISSION NETWORK WILL BE STRENGTHENED IN THE NEXT FIVE YEARS





## Human Resources Training Program: 60 thousand scholarships to 2018



**ELECTRICITY  
MARKETS RESEARCH  
AGREEMENT LAWRENCE  
BERKELEY NATIONAL  
LABORATORY**



**BINATIONAL  
LABORATORY  
TECNOLÓGICO DE  
MONTERREY, IIE, ARIZONA  
UNIVERSITY AND BERKELEY  
U.**



**GLOBAL RESEARCH SITE  
U. OF CALGARY, UNAM,  
IMP, U. OF ALBERTA,  
AND ACADEMIA DE  
INGENIERÍA**

# RESEARCH AND DEVELOPMENT: CLEAN ENERGIES

## 5 SPECIALIZED CENTERS FOR:

GEOHERMAL, SOLAR,  
WIND, BIOENERGY AND  
WAVE POWER

Mission Innovation goal:  
*to double clean energy research  
and development funding over  
five years*

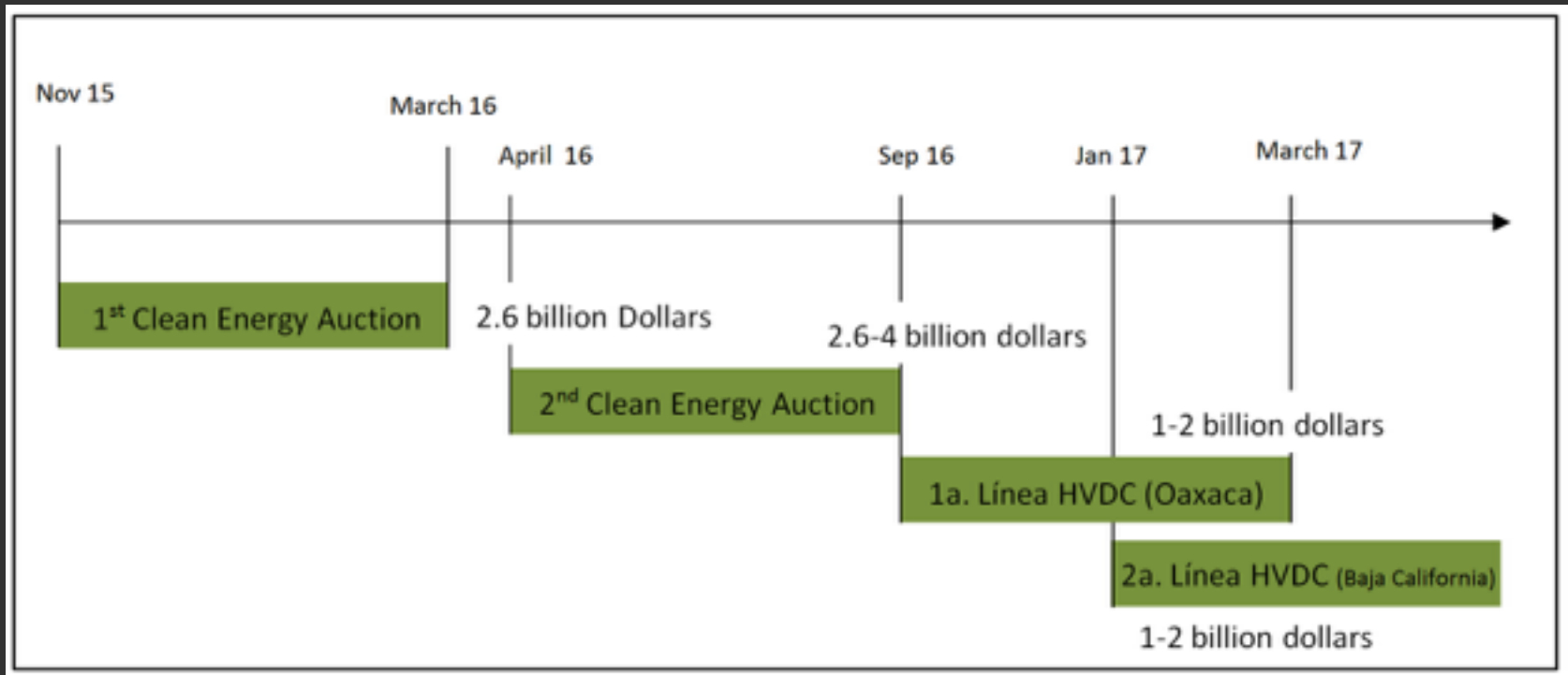
*CEMIE's are the highest  
investment in R&D of  
renewable energies*



## Forthcoming CEMIE's (on call)

1. Smart grids
2. Capture, storage and use of carbon

# CALENDAR: AUCTIONS AND TRANSMISSION LINES





# INVESTING OPPORTUNITIES

# ONGOING INVESTMENTS DERIVED FROM THE ENERGY REFORM

Activity	Contracts	Companies	Investment commitments derived from the Energy Reform (million USD)
Exploration and Extraction of Hydrocarbons	30	37	6,995
Gas pipelines	22	11	12,743
Generation of electricity from renewable sources	18	11	2,620
<b>Total</b>	<b>70</b>	<b>59</b>	<b>22,358</b>



# Thank you

**César Hernández Ochoa**  
**@chdz8a**  
**cehernandez@energia.gob.mx**