



Mexico's Energy Regulatory Commission: Challenges and Opportunities in Reforming the Energy Industry

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Chairman



National
Association of
Regulatory
Utility
Commissioners

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ComisionReguladoraEnergia

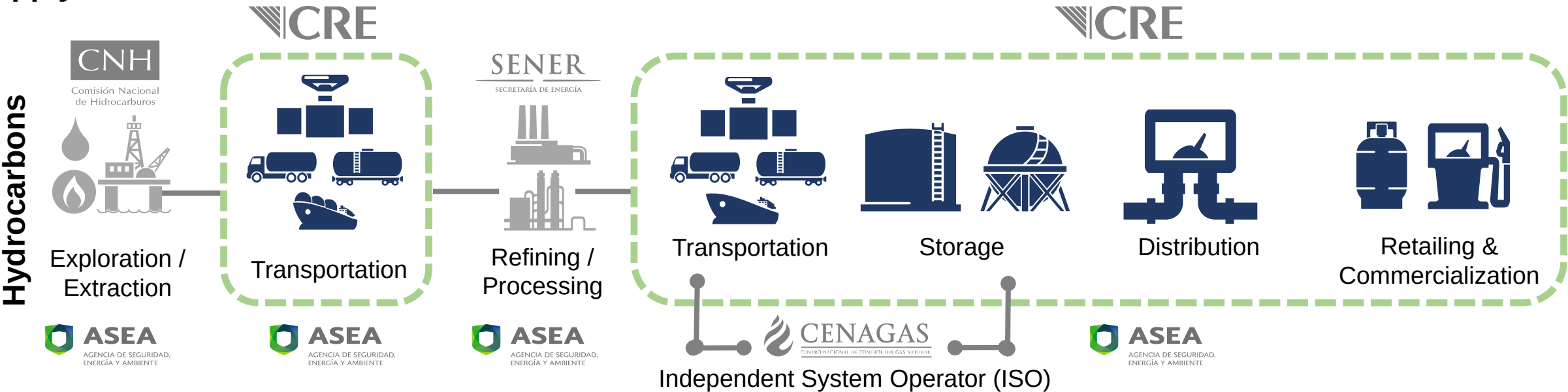
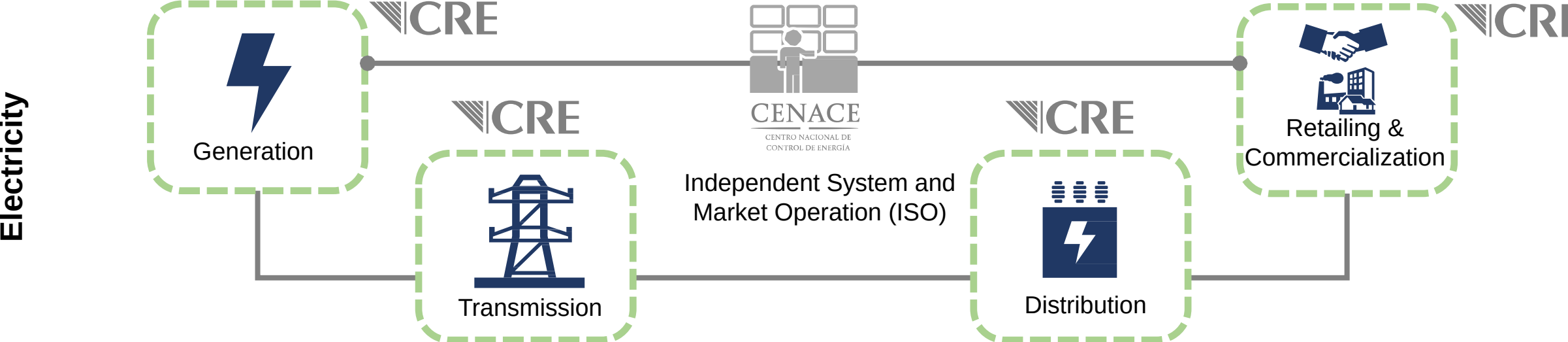


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Comisión Reguladora de Energía

The Energy Regulatory Commission (CRE) has become the regulator of the mid and downstream segments of the oil and gas value chain, as well as the electricity supply chain



CRE in comparison to other North American energy regulators



CRE

Federal regulator of the mid and downstream segments of the oil and gas value chain, as well as the entire electricity supply chain.



FERC

Federal regulator for **interstate** transmission of electricity, natural gas, and oil.



NARUC

Local regulators for **energy**, telecommunications, **power**, water, and transportation utilities.



NEB

Federal regulator for **Inter-provincial and international** oil, gas and electric imports and exports, as well as construction and operation of power lines and pipelines.



CAMPUT

Provincial and territorial regulators in charge of the **electric**, water, **gas**, and **pipeline** utilities.



NERC

Not-for-profit international regulatory organization that develops protocols for the reliable operation of North America's electric systems.

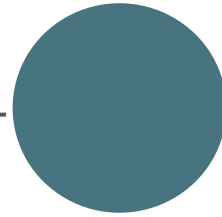
"Mexico's Grid Code includes 10 NERC standards in the Baja California Region"

The Energy Reform is in motion and it has already shown positive results.

Some factors that guarantee its continuity are as follows:



The Energy Reform was a constitutional reform that required two-thirds majority vote cast of the Congress. **Any amendment would require the same level of approval**



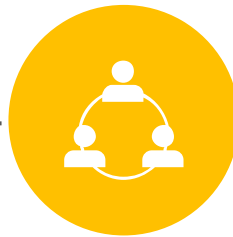
The Supreme Court of Justice determined that **federal judges can't abolish resolutions or laws from the energy regulating bodies**, which reinforces its constitutionality and avoids the suspension of any regulation of the energy sector



CRE's Commissioners terms are staggered and transcend the political cycles of the country. Hence, the continuity of its duties is not affected by changes in the administration



The Energy Reform has already established commitments. Currently, there are 130 companies from 19 countries that have been awarded contracts to develop energy infrastructure



The Energy Reform facilitates the **access to clean and low cost energy for state and municipal governments**



Academic participation in the implementation of the Energy Reform enhances the professionalization and specialization of the human resources that will participate in the development of energy projects

Mexico's landmark Energy Reform is now a reality, creating significant investment opportunities throughout the entire value chain



Estimated Investment :
255 billion dollars



Committed Investment
83 billion dollars
(30 billion more in 2017)



Hydrocarbons: “Rounds One and Two”

Round 1:
1st Tender: **2.7 billion USD**
2nd Tender: **3.1 billion USD**
3rd Tender: **1.1 billion USD**
4th Tender: **34.4 billion USD**

Ronda 2:
1st Tender: **8.2 billion USD**
2nd Tender: **1.1 billion USD**
3rd Tender: **1.0 billion USD**
4th Tender: **31.5 billion USD**

Farmouts:
Trión: **11 billion USD**
Cárdenas-Mora: **127 million USD**
Ogarrio: **95 million USD**

Seismic data: **2.5 billion USD**

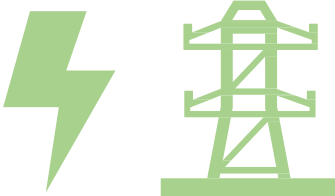


Natural Gas, LPG and Petroleum Products

Gas pipelines: **12 billion USD**

LPG: **97.1 million USD**

Petroleum Products: **17.9 billion USD**
•Transportation: **3.9 billion USD**
•Storage and Distribution: **2 billion USD**
•Retailing: **12.0 billion USD**



Power Sector

1st Power Auction: **2.6 billion USD**
2nd Power Auction: **4 billion USD**

Other in PRODESEN*
• Generation: **97 billion USD***
• Transmission: **12.8 billion USD***
• Distribution: **9.6 billion USD***

A total of **130 companies** from 19 countries, of which **51 are Mexican**, have committed projects for the development of hydrocarbons and electricity industry

*Total expected investment by PRODESEN throughout 2030. Source: Mexico's Ministry of Energy

The renegotiation of NAFTA can promote a more balanced and interdependent market system in North America



*“**Preserve and strengthen investment, market access**, and state-owned enterprise disciplines benefitting energy production and transmission and support **North American energy security and independence, while promoting continuing energy market-opening reforms**”.*

Summary of the objectives for the NAFTA renegotiation (July, 2017)*



There are **20 natural gas interconnection points** between Mexico and the United States

Natural gas imports by pipeline will contribute to **satisfy the increasing demand** of the industrial and electricity generation sectors in Mexico



The **liberalization strategy of the fuels market** in Mexico has aroused the interest of international companies, including several corporations from the United States and Canada



Mexico assisted the United States during the **2011 power outage in California** and, the United States assisted Mexico during the **2016 power outage in Baja California**



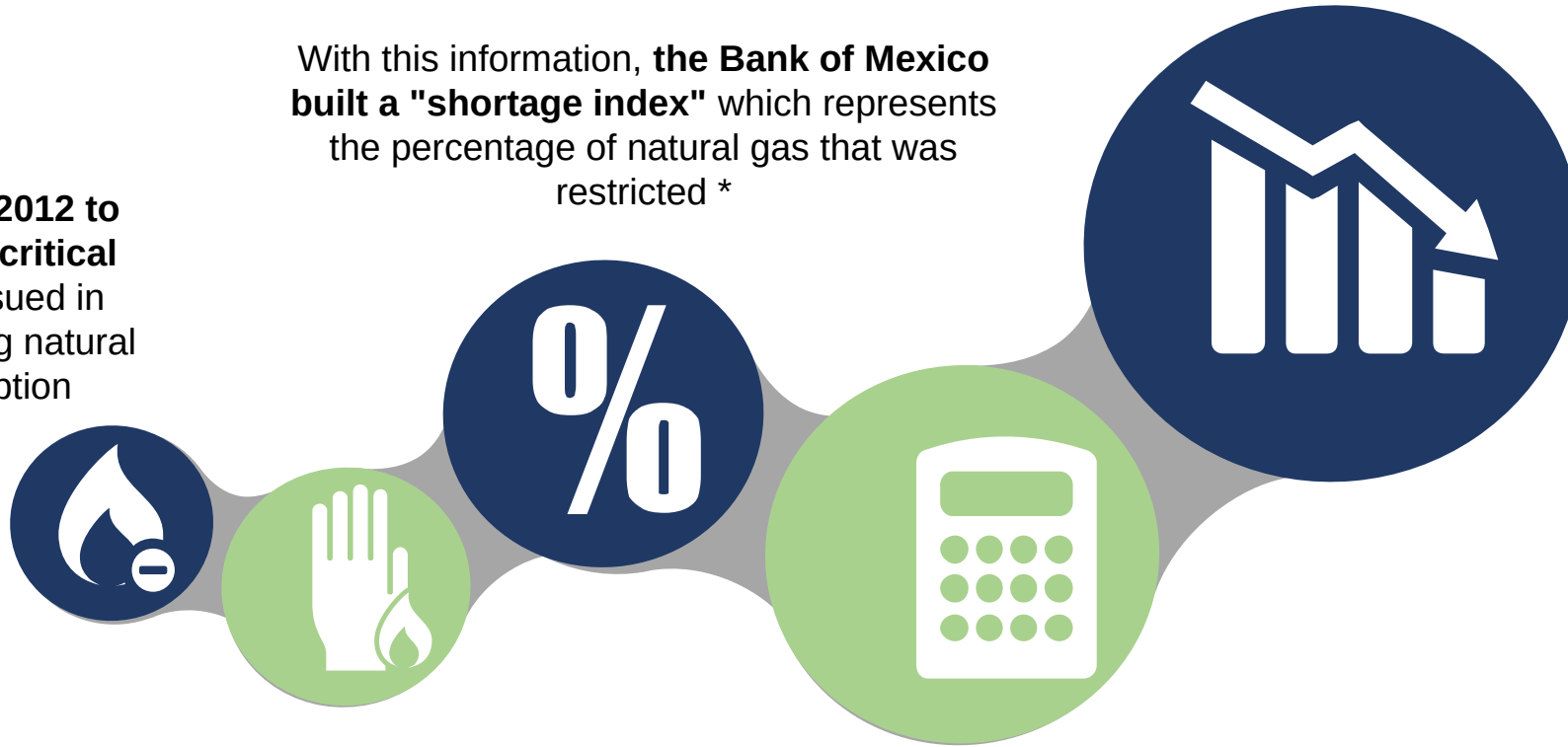
Additionally, in May 2017, Tamaulipas and Texas worked together during the **power outage registered in Matamoros and Reynosa**

52 months have passed since the last critical alert on record restricted natural gas consumption in the country



From **January 2012 to June 2013**, **35 critical alerts** were issued in Mexico, curtailing natural gas consumption

With this information, the **Bank of Mexico** built a **"shortage index"** which represents the percentage of natural gas that was restricted *



Pemex limited the natural gas volumes used by the manufacturing sector

The impact of natural gas shortage on the manufacturing sector and the national GDP **was quantified ***

Estimate:
Shortage of natural gas reduced the GDP annual growth rate by 0.28 percentage points in the second quarter of 2013

On August 24th, 2017, CENAGAS issued a **temporary state of alert due to the impact of hurricane Harvey**. Nevertheless, there were no natural gas supply disruptions registered

Due to the following reasons:

- The Capacity Reserve Regime
- Imports from alternative points to the affected ones
- The employment of maximum capacity in the regasification terminals of Manzanillo and Altamira

Source:



Mexico's Gas Pipeline Network will expand considerably from 2012 to 2019



Pipelines*

- 1 Kinder Morgan (operating) **KM**
- 2 Gasoductos de Chihuahua (operating) **Sempra Energy**
- 3 Transportadora de Gas Natural de Baja California (operating) **Sempra Energy**
- 4 Gasoducto Rosarito (operating) **Sempra Energy**
- 5 Gasoductos del Noreste (operating) **Sempra Energy**
- 6 Gasoducto de Aguaprieta (operating) **Sempra Energy**
- 7 Gasoductos de Tamaulipas (operating) **Sempra Energy**
- 8 Gasoducto de Aguaprieta- Sonora (operating) **Sempra Energy**
- 9 TAG Pipelines Norte (operating) **Sempra Energy/Pemex**
- 10 Arguelles Pipeline (operating) **Energy Transfer Partner**
- 11 Gasoducto de Aguaprieta -San Isidro- (operating) **Sempra Energy**
- 12 Gasoducto de Aguaprieta –Ojinaga- (operating) **Sempra Energy**
- 13 Midstream de México (operating) **Howard Midstream Energy Partners**

12
Billion dollars

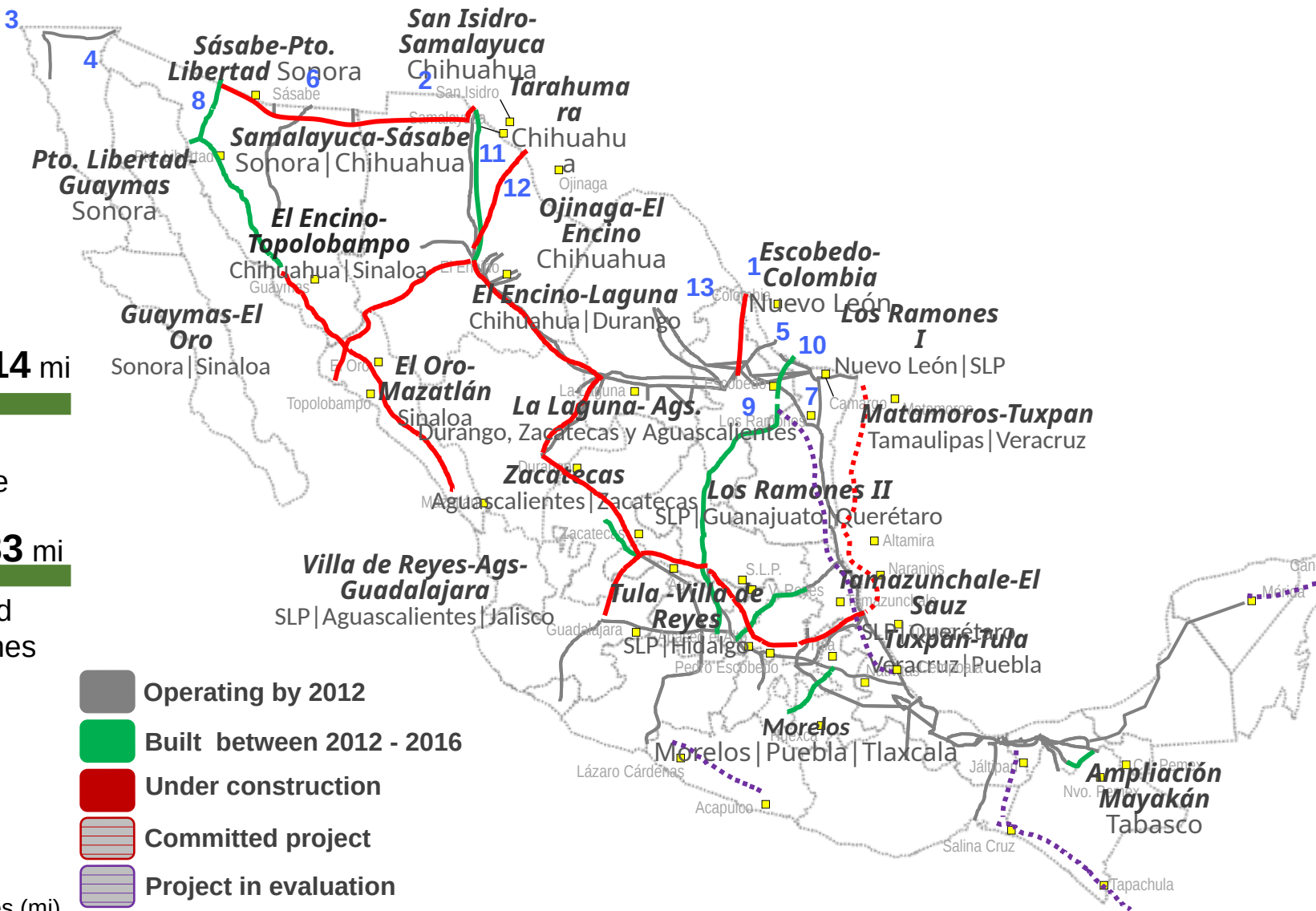
Committed
investment

7,586 km* / 4,714 mi

Committed
pipelines since
2013

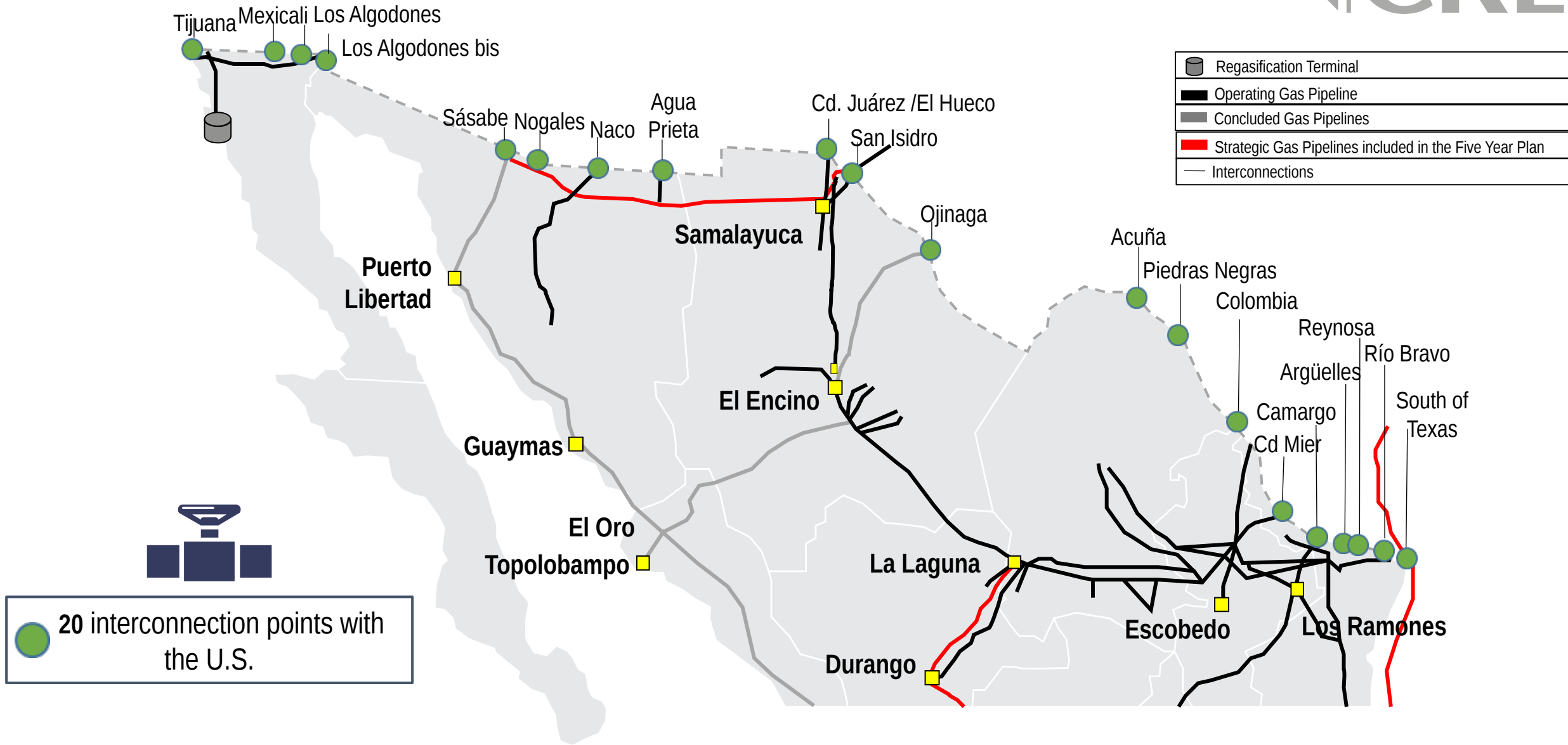
2,386 km / 1,483 mi

Committed and
operating pipelines



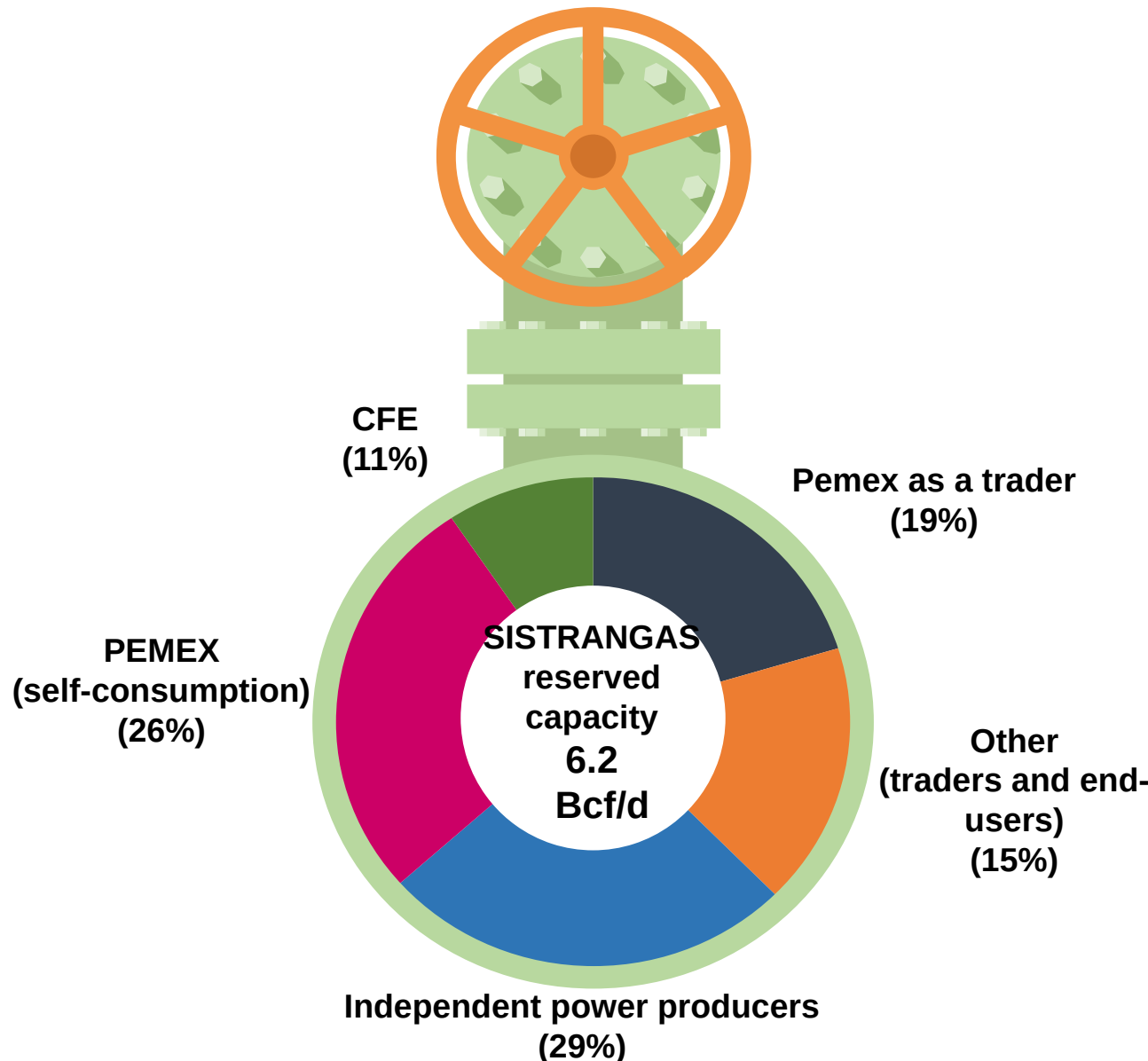
*/ kilometers (km) / miles (mi)

CRE is continuously working to provide a regulatory framework that encourages natural gas integration ties between Mexico and the U.S.



Source: Five Year Gas Pipeline Plan 2015-2019 (Second revision), http://www.gob.mx/cms/uploads/attachment/data/file/206501/2a_Revisi_n_anual_Plan_Quinquenal_Sistrangas2015-2019_.pdf
National Gas Infrastructure, <http://www.gob.mx/sener/articulos/mapa-infraestructura-nacional-de-gas-natural-2016>

Considering “Round Zero” capacity allocation Pemex and CFE, the first Open Season and the recognition of previously existing contracts, 97% available capacity on SISTRANGAS has been allocated on a firm basis



- ✓ Up to **44% of reserved capacity was allocated to agents different of PEMEX** (traders, independent power producers and other end-users). This will facilitate the participation of new actors in the natural gas market.



As of September 5th, 2017, **Pemex has released 32.16% of its total trading volume** associated to its client portfolio

76% of Mexican households use Liquefied Petroleum Gas (LPG) as the main fuel for cooking and water heating, followed by firewood with 14.3% of households

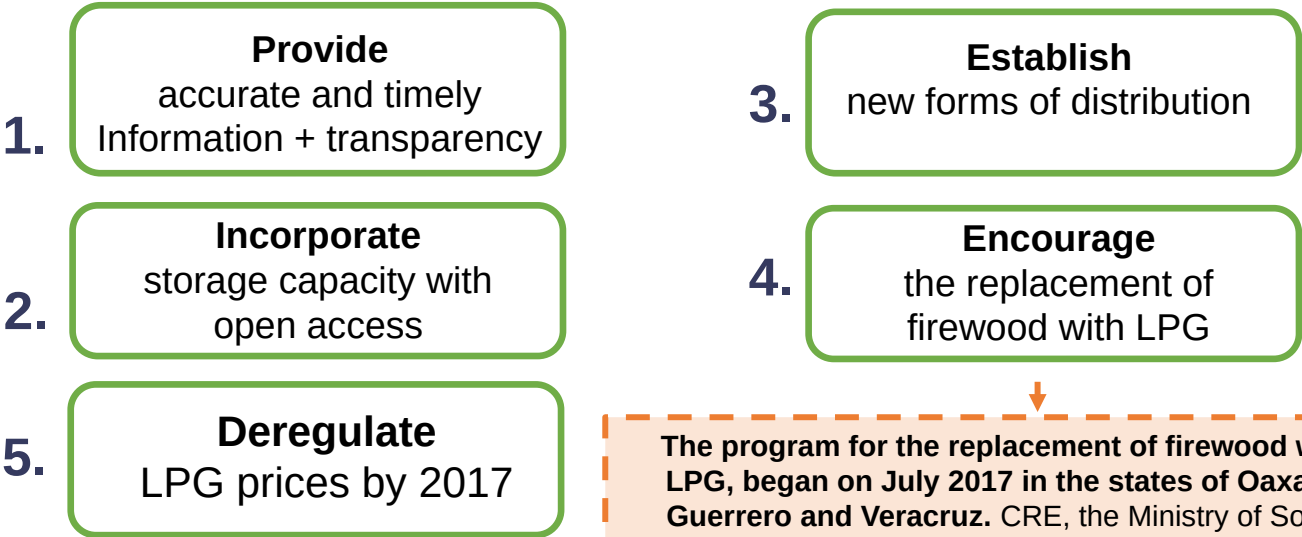


The results of the National Survey of Incomes and Expenses of Households (ENIGH), show a **1.41% reduction of firewood consumption, and an 1.1% increase of LPG consumption between 2014 and 2016.**

Fuel	2014	2016
 LPG	74.6%	75.7%
 Firewood	15.7%	14.3%
 Natural Gas	8%	8%
 Electricity	0.73%	1.05%
 Coal	0.44%	0.30%

Social Lagging Indicators	Share of Households
Unavailability of power	0.49%
Earthen floor	3.07%
Unavailability of tap water from the public grid	7.09%
Unavailability of drainage	4.98%
Firewood use	14.3%

The **government** has various **tools** to **promote** a **competitive environment** in the LP Gas industry



The program for the replacement of firewood with LPG, began on July 2017 in the states of Oaxaca, Guerrero and Veracruz. CRE, the Ministry of Social Development and the Ministry of Energy are engaged in the project.

Source: Encuesta Nacional de Ingresos Gastos de los Hogares (ENIGH), 2014 and CONEVAL 2015
*According to the Ministry of Energy's 2016-2030 Natural Gas Prospective's an increase of 15.9% by 2030 is expected.

At CRE's website, users can consult LPG prices and identify the highest or lowest per municipality



gob.mx						Trámites	Gobierno	Participa	Datos	Q
Precios al público										
Mediante Auto-tanque (litros)										
No. De Permiso	Razón Social / Nombre	federativa	Municipio	Localidad	Precio por litro					
LP/14774/DIST/PLA/2016	GASIPO, S.A. DE C.V.	Ciudad de México	Álvaro Obregón	Apapaxtla	\$9.44					
LP/14774/DIST/PLA/2016	GASIPO, S.A. DE C.V.	Ciudad de México	Álvaro Obregón	El Campanario	\$9.44					
LP/14541/DIST/PLA/2016	AZTECA GAS, S.A. DE C.V.	Ciudad de México	Álvaro Obregón	Álvaro Obregón	\$9.48					
LP/14540/DIST/PLA/2016	BULGAS, S.A. DE C.V.	Ciudad de México	Álvaro Obregón	Texcalatlaco	\$9.3					
LP/14540/DIST/PLA/2016	BULGAS, S.A. DE C.V.	Ciudad de México	Álvaro Obregón	Tiximaloya	\$9.3					
LP/14683/DIST/PLA/2016	REGIO GAS, S.A. DE C.V.	Ciudad de México	Álvaro Obregón	El Campanario	\$9.36					
LP/14687/DIST/PLA/2016	SERVICIOS ESPECIALES DE GAS L.P., S.A. DE C.V.	Ciudad de México	Álvaro Obregón	Cuauhtlamila	\$9.48					
LP/14774/DIST/PLA/2016	GASIPO, S.A. DE C.V.	Ciudad de México	Álvaro Obregón	Álvaro Obregón	\$9.44					
LP/14030/DIST/PLA/2016	GAS AMERICA, S.A. DE C.V.	Ciudad de México	Álvaro Obregón	Álvaro Obregón	\$9.49					

Lowest

Highest

Prior to the Reform, Mexico's fuel retail model generated significant inefficiencies:



Fixed Price Regime

- National single price (prevented adequate cost recognition on a regional basis)
- Fluctuations of international prices were reflected with a delay
- Lack of efficient price signals resulted in underinvestment throughout the value chain
- The excessive subsidy benefited the population with the highest income (200 billion pesos per year)



Pemex did not recover logistical costs

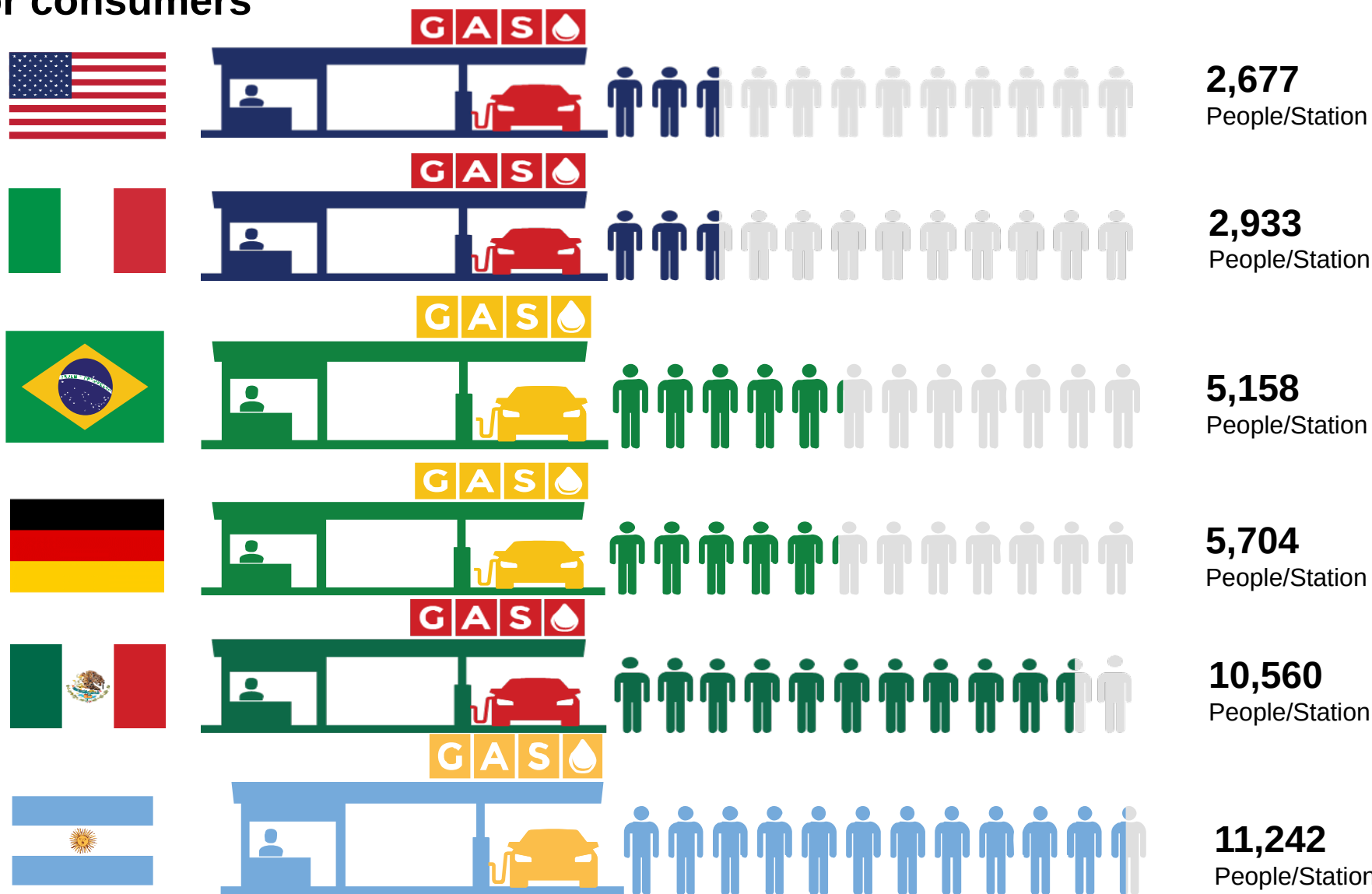
- Pemex lost resources for unacknowledged logistical costs in the overall gas price



Underinvestment in the industry

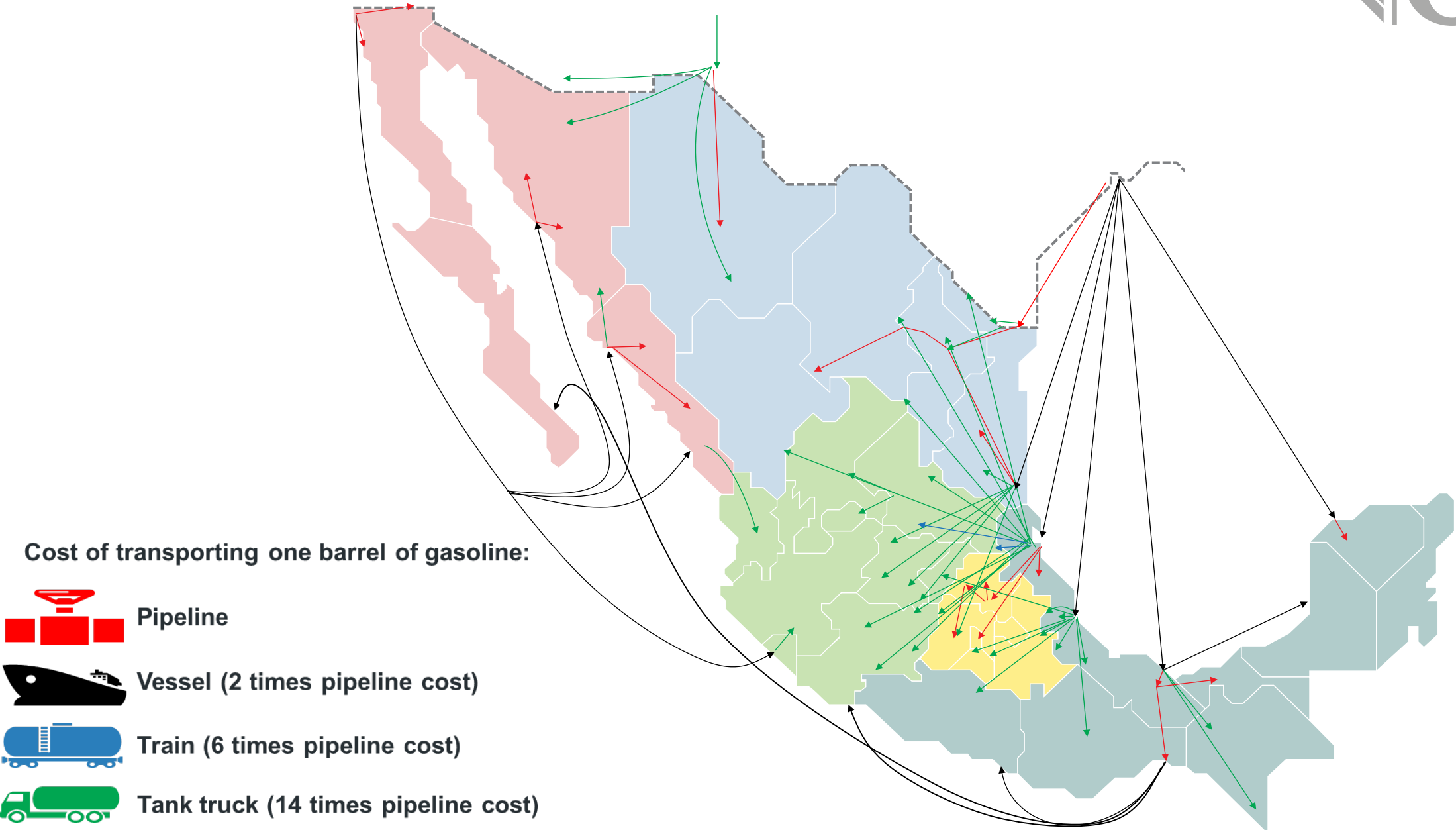
- Limited infrastructure: low capacity and vulnerability (extreme weather events)
- Mexico accounts only with 10% (3 days) of the internationally recommended inventory capacity
- Lack of incentives to improve service quality in gas stations
- 40% of municipalities do not have gas stations

Fuel price flexibility will trigger significant investments and create new jobs at the retail level. Also, it will enhance fuel availability and supply security for consumers



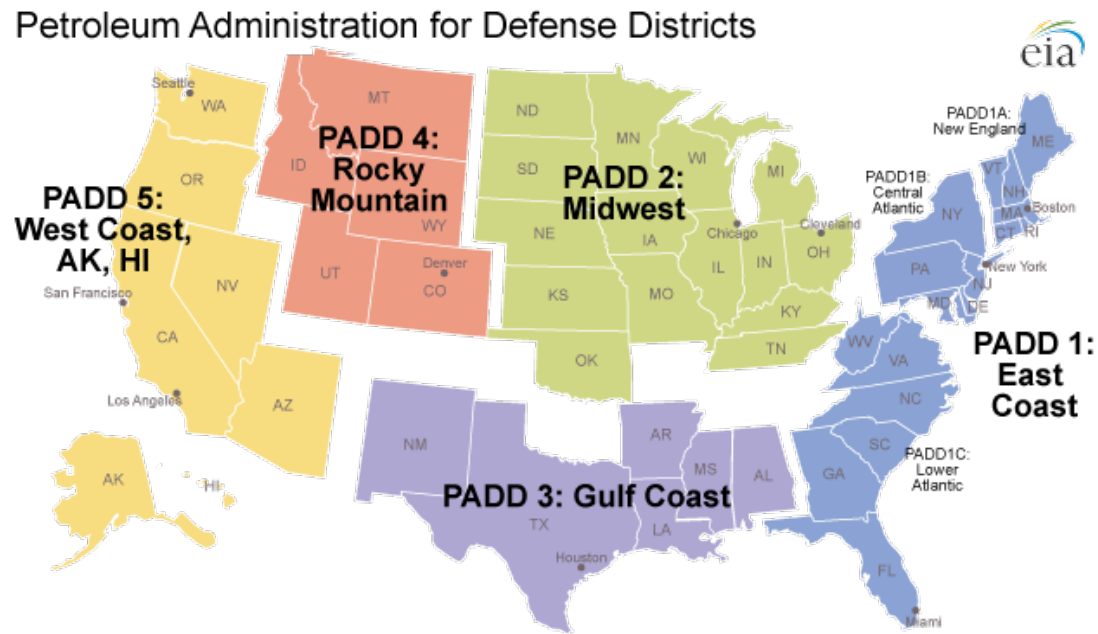
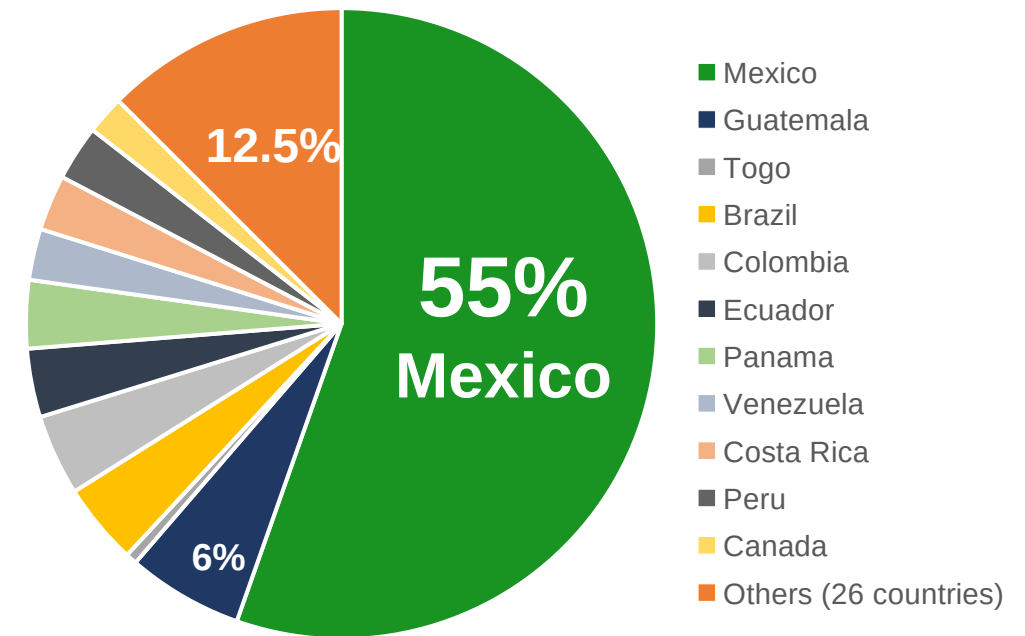
Represents
1,000 people

Logistical routes for imports and supply of gasoline in Mexico



Mexico and the United States have a substantial trade partnership. Over the years, a greater interdependence between both territories has led to this "win-win" relationship becoming more solid, diverse and irreversible

During 2017, Mexico has imported, on average, 372 thousand barrels of gasoline per day from the United States¹, the equivalent to the daily average production of 1.6 of the largest refineries in America.*



Conventional Gasoline Exports by Destination

On average, each of the largest refineries in the U.S (located in the Gulf Coast) produces 235 thousand barrels of gasoline per day.¹

In 2017, the U.S exported, on average, 674 thousand barrels of gasoline per day. Of which, 55% was exported to Mexico.²

1/ Information recovered from: https://www.eia.gov/energyexplained/index.cfm?page=oil_refining#tab4

2/ Information recovered from: https://www.eia.gov/dnav/pet/pet_move_expc_a_EPM0C_EEX_mbbldpd_m.htm

*Assumptions: a) The top 5 refineries in the U.S. process 533,600 barrel of oil per day each. b) According to the EIA, 44% of one barrel of oil is converted to gasoline.

Fuel price liberalization strategy in Mexico



The opening of refined product logistics (gasoline, diesel and jet fuel) has triggered the interest of new investors in the energy sector



- **Route:** Tuxpan, Veracruz - Tula, Hidalgo
- **Project:** 1 storage terminal and 1 polyduct
- **Diameter and length:** 18 inches and 270 Km (167.7 mi)
- **Operational capacity:** 100 thousand barrels per day
- **Will transport:** gasoline, diesel and jet fuel
- **CRE's approval (TA):** March 22, 2016
- **Final ruling:** July 1, 2016
- **Opening:** Second half of 2018
- **Estimated investment:** 600 million USD

invex Polyduct INI4

- **Route:** Tuxpan, Veracruz — Tizayuca y Tula, Hidalgo
- **Project:** 3 storage terminals, 1 polyduct and 3 pumping stations
- **Diameter and length:** 24 inches and 265 Km (164.7 mi)
- **Operational capacity:** 140 thousand barrels per day
- **Will transport:** gasoline and diesel
- **CRE's approval (TA):** March 22, 2016
- **Final ruling:** 20 working days after the deadline for applications reception
- **Opening:** First trimester of 2018
- **Estimated investment:** 500 million USD

- **Route:** Tuxpan, Veracruz – Central Mexico
- **Project:** 1 marine terminal, 1 polyduct and 1 inland storage and distribution hub
- **Length:** 265 Km (164.7 mi)
- **Operational capacity:** 100 thousand barrels per day
- **Will transport:** gasoline, diesel and jet fuel
- **Estimated investment:** 800 million USD

Investment: 1.3 – 2.4 billion dollars



Frontera-Norte Polyduct

- **Route:** Corpus Christi, Texas — Nuevo Laredo, Tamps. — Santa Catarina, Nuevo León
- **Project:** 4 storage terminals and 1 polyduct
- **Diameter and length:** 12 inches and, 460 km (285.8 mi)
 - 242 Km (150.3 mi) in the USA and,
 - 218 Km (135.5 mi) in Mexico
- **Operational capacity:** 90 thousand barrels per day
- **Will transport:** gasoline, diesel and jet fuel
- **CRE's approval (TA):** March 10, 2016
- **Final ruling:** May 23, 2016
- **Opening:** First trimester of 2018
- **Estimated investment:** 500 million USD



New Burgos Pipeline

- **Route:** Edinburg, Texas – Burgos Terminal
- **Project:** 1 polyduct
- **Diameter and length:** 10 inches and 2.57 km (1.6 mi) in Mexico
- **Will transport:** naphtha, LP gas, natural gas liquids, jet fuel, gasoline, and diesel



CRE also grants permits for transportation of petroleum products by means other than pipeline, such as railways



Baja California Railroad, S.A de C.V.

Permit: PL/20174/TRA/OM/2017

Destinations: Tecate, and Tijuana, Baja California.

Will import over **40 million liters of fuels per month**¹

Ferromex

Ferrocarril Mexicano, S. A. de C. V.

Permit: PL/12953/TRA/OM/2015

Destinations: Guadalajara, Jalisco; Chihuahua, Chihuahua; Piedras Negras, Coahuila de Zaragoza; Nogales, Sonora, Mexicali, Baja California, and Manzanillo, Colima.

Kansas City Southern de México, S.A. de C.V.

Permit: PL/12952/TRA/OM/2015

Destinations: Puebla, Puebla; Distrito Federal; Cadereyta Jiménez, Nuevo León; Tampico y Ciudad Madero, Tamaulipas; Lázaro Cárdenas, Michoacán; Durango, Durango; Minatitlán y Coatzacoalcos, Veracruz; Salina Cruz, Oaxaca; Ciudad Valles, San Luis Potosí, Tula de Allende, Hidalgo, as well as Salamanca and Irapuato, Guanajuato.

In the first quarter of 2017, for the first time, Pemex started importing diesel and gasoline by train

At the end of **August 2017**, Kansas City started a trial phase for receiving the **first fuel shipments in its rail terminal in San Luis Potosí**

Investment: 1.5 billion dollars



Línea Coahuila Durango, S.A. de C.V.

Permit: PL/13373/TRA/OM/2016

Destinations: Durango, Durango.



FERROSUR, S. A. DE C. V.

Permit: PL/12954/TRA/OM/2015

Destinations: Veracruz and Coatzacoalcos, Veracruz.



Ferrocarril del Istmo de Tehuantepec, S.A. de C.V.

Ferrocarril del Istmo de Tehuantepec, S. A. de C. V.

Permit: PL/13551/TRA/OM/2016

Destinations: Valladolid and Mérida, Yucatán

Storage plan for hydrocarbons K'eri (5 rail port)

- **First Rail port:** Aguascalientes
- **Investment:** 900 million pesos
- **Volume:** will request permit for 220,000 barrels
- **Influence Zone:** Zacatecas, San Luis Potosí, and Aguascalientes

Gasoline and diesel storage is a business line which is showing a significant growth



Investment: 1.2 billion dollars

1 Combustibles de Oriente, S.A. de C.V.

- Capacity: 5,607 bls.
- Investment: 107.33 million pesos
- Location: Matamoros, Tamaulipas

2 Hydrocarbon Storage Terminal, S.A.P.I. de C.V.

- Capacity: 280,500 bls.
- Investment: 1,073.4 million pesos
- Location: Acolman, Estado de México

3 Interport FTZ S.A. de C.V.

- Capacity: 270,000 bls.
- Investment: 1,277.5 million pesos
- Location: San Luis Potosí, San Luis Potosí

4 Gas Natural del Noroeste S.A. de C.V.

- Capacity: 240,000 bls.
- Investment: 380.3 million pesos
- Location: San José I., Guanajuato

5 Orizaba Energía, S. de R.L. de C.V.

- Capacity: 2,310,000 bls.
- Investment: 2,308.8 million pesos
- Location: Caoba, Veracruz

6 VOPAK México, S.A. de C.V.

- Capacity: 415,000 bls.
- Investment: 787.1 million pesos
- Location: San Juna de Ulua, Veracruz

7 Hidrocarburos del Sureste, S.A. de C.V. (Distribución)

- Capacity: 450,000 bls.
- Investment: 766.1 million pesos
- Location: Progreso, Yucatán.

8 Comercializadora Larpod, S. A. de C. V. (Distribución)

- Capacity: 11,007 bls.
- Investment: 19.2 million pesos
- Location: Puerto Madero, Chiapas

9 Olstor Services, S.A. de C.V.

- Capacity: 42,500 bls.
- Investment: 814.3 million pesos
- Location: Lagos de Moreno, Jalisco

10 Invex Infraestructura 4, S.A.P.I. de C.V.

- Capacity: 1,260,000 bls.
- Investment: 5,681 million pesos
- Location: Tuxpan, Veracruz

11 F. Ruiz e Hijos, S.A. de C.V.

- Capacity: 2,500 bls.
- Investment: 4.5 million pesos
- Location: Cuauhtémoc, CDMX

12 Comisión Federal de Electricidad

- Capacity: 266,000 bls.
- Investment: 126 million pesos
- Location: Manzanillo, Colima

13 Gas Natural del Noroeste S.A. de C.V.

- Capacity: 1,080,000 bls.
- Investment: 5,682 million pesos
- Location: Escobedo, Nuevo León

14 P&S Oil and Gas TAR, S. de R.L. de C.V

- Capacity: 210,000 bls.
- Investment: 606 million pesos
- Location: Jocotitlán, Edo. De México

15 Avant Energy Midstream II, S. de R.L. de C.V

- Capacity: 1,000,265 bls.
- Investment: 2,311 million pesos
- Location: Altamira, Tamaulipas

16 Baja California Energy Translogistics, S.A.P.I de C.V

- Capacity: 200,000 bls.
- Investment: 724 million pesos
- Location: Mexicali, B.C.S

17 Grupo R Terminals

- Capacity: 300,000 bls.
- Investment: 1,125 million pesos
- Location: Reynosa, Tamaulipas



● Projects in evaluation of CRE

● Storage permits granted

○ Pipelines

● CFE power stations with available capacity for investment

● Pemex Storage Terminal

Several investors have announced new storage and distribution projects of gasoline and diesel



Expected investment: 754 million dollars

1

Bulkmatic de México/Kansas City Southern de México (Distribution)

- Capacity: 690,00 bls.
- Investment: 49 million dollars
- Location: Salinas Victoria, Nuevo León

2

Bulkmatic de México (Distribution)

- Capacity: 700,000 bls
- Investment: 49 million dollars
- Location: Tula, Hidalgo

3

Bulkmatic de México (Distribution)

- Capacity: 300,000 bls
- Investment: 45 million dollars
- Location: Hermosillo, Sonora

4

Gas Natural del Noroeste S.A. de C.V.

- Capacity: 330,000 bls.
- Location: Atotonilco de Tula, Hidalgo

5

Gas Natural del Noroeste S.A. de C.V.

- Capacity: 1,400,000 bls.
- Location: Tuxpan, Veracruz

6

IEnova

- Capacity: 500,000 bls.
- Investment: 60 million dollars
- Location: Puebla, Puebla

7

IEnova

- Capacity: 800,000 bls.
- Investment: 60 million dollars
- Location: CD.MX

8

IEnova/Valero

- Capacity: 1,400,000 bls.
- Investment: 155 million dollars
- Location: Nuevo Puerto de Veracruz

9

Glencore

- Capacity: 600,00 bls.
- Investment: 42 million dollars
- Location: Dos Bocas, Tabasco

10

Glencore

- Capacity: 1,500,00 bls.
- Investment: 120 million dollars
- Location: Tuxpan, Veracruz

11

Gracoil S.A. de C.V.

- Capacity: 1,383,000 bls.
- Location: San Juan del Río, Querétaro

12

Invex

- Capacity: 1,200 bls.
- Location: Valle de México, Hidalgo

13

Combustibles ENERMEX, S.A de C.V

- Capacity: 1,040,000 bls
- Location: Axapusco, Estado de México

14

K'eri

- Capacity: 224,000 bls.
- Investment: 45 million dollars
- Location: Aguascalientes, Aguascalientes

15

Transcanada, Sierra Oil & Gas y Grupo TMM

- Capacity: 90,000 bls
- Location: Estado de México

16

Ministry of Communications and Transport (SCT)

- Capacity: 8 tanks
- Investment: 16.9 million pesos
- Location: Lázaro Cárdenas, Michoacan

17

Cabo Fuels Las Torres, S.A. de C.V.

- Capacity: 7,296 bls.
- Investment: 1.21 million dollars
- Location: La Paz, Baja California Sur

18

TP TERMINAL

- Capacity: 1,570 bls
- Location: Manzanillo, Colima

19

Monterra Energy

- Capacity: 560,000 bls
- Investment: 54 million dollars
- Location: Topolobampo, Sinaloa

20

Monterra Energy

- Capacity: 660,000 bls
- Investment: 57 million dollars
- Location: Guaymas, Sonora

21

Howard Energy

- Investment: 100 million dollars
- Location: Nuevo Laredo, Tamaulipas

22

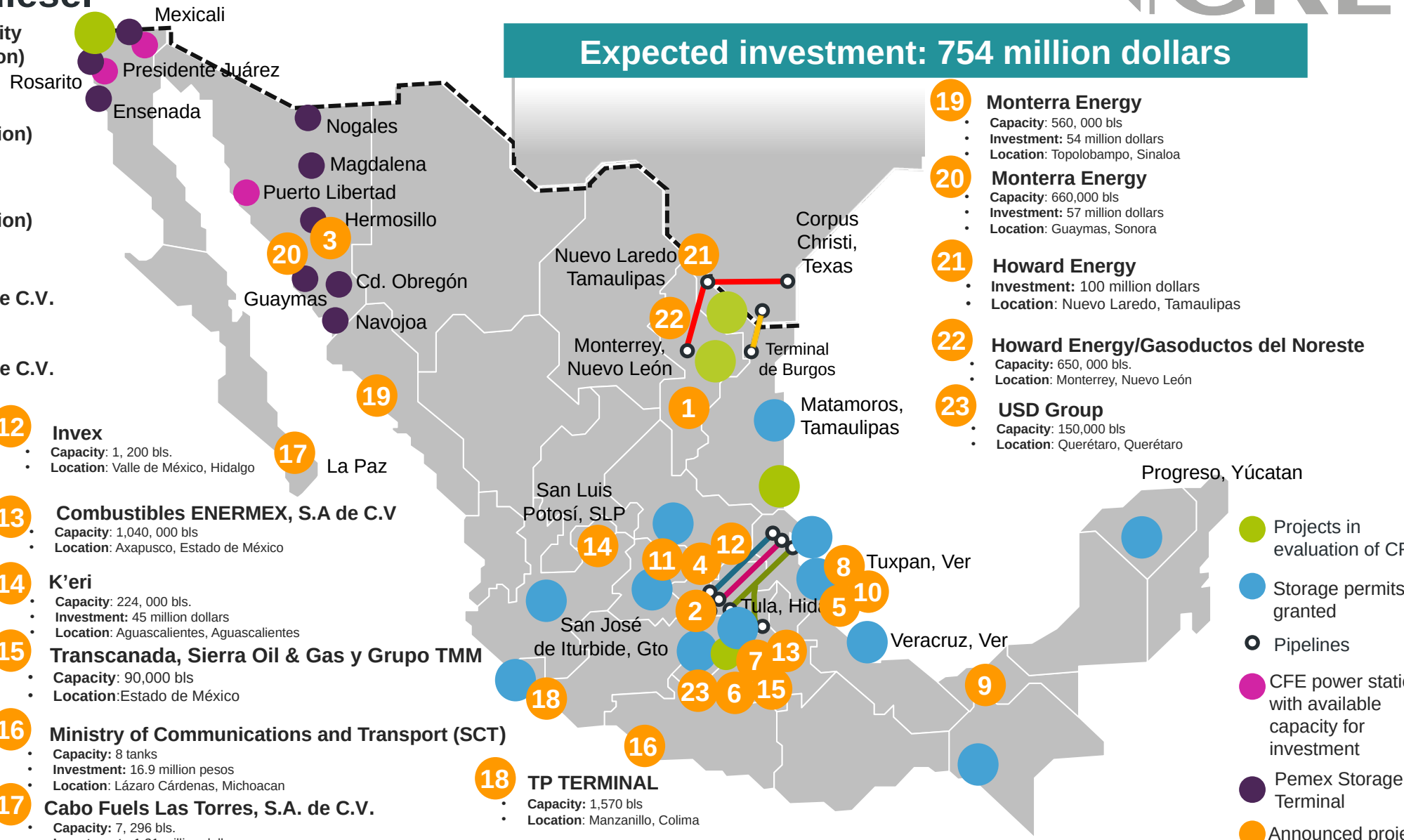
Howard Energy/Gasoductos del Noreste

- Capacity: 650,000 bls.
- Location: Monterrey, Nuevo León

23

USD Group

- Capacity: 150,000 bls
- Location: Querétaro, Querétaro



- Projects in evaluation of CRE
- Storage permits granted
- Pipelines
- CFE power stations with available capacity for investment
- Pemex Storage Terminal
- Announced projects

Furthermore, the new business environment allows greater competition and differentiation in product supply, services and retail prices at gas stations in Mexico



Investment: 1 million dollars per new station
(if the current situation doubles, there would be 12 billion dollars)

There are 11,735 gas stations in Mexico.
Of which, CRE has identified 2,083 (18% of total) that operate under 29 new brands

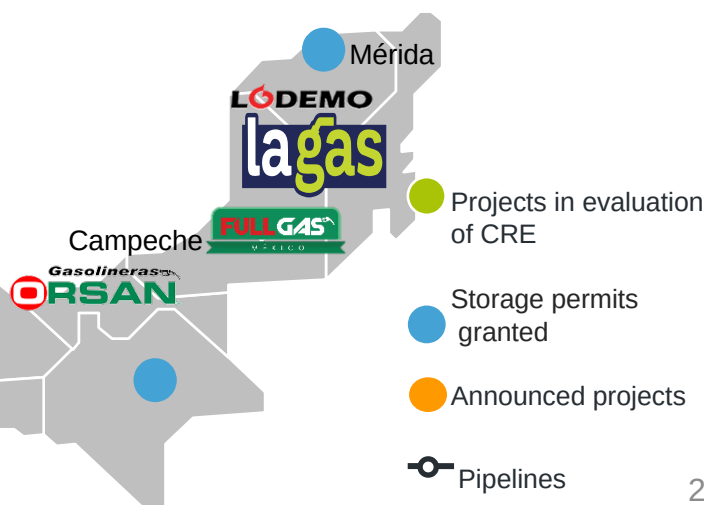
	395		83		10
	250		64		6
	214		61		5
	198		59		5
	140		38		3
	124		31		3
	122		25		2
	114		20		2
	90		13		



Announcement of competitors



On August 2017, Andeavor-ProFuels imported the first tank truck of 100% Andeavor (Tesoro) fuels for retail in Arco Gas Stations



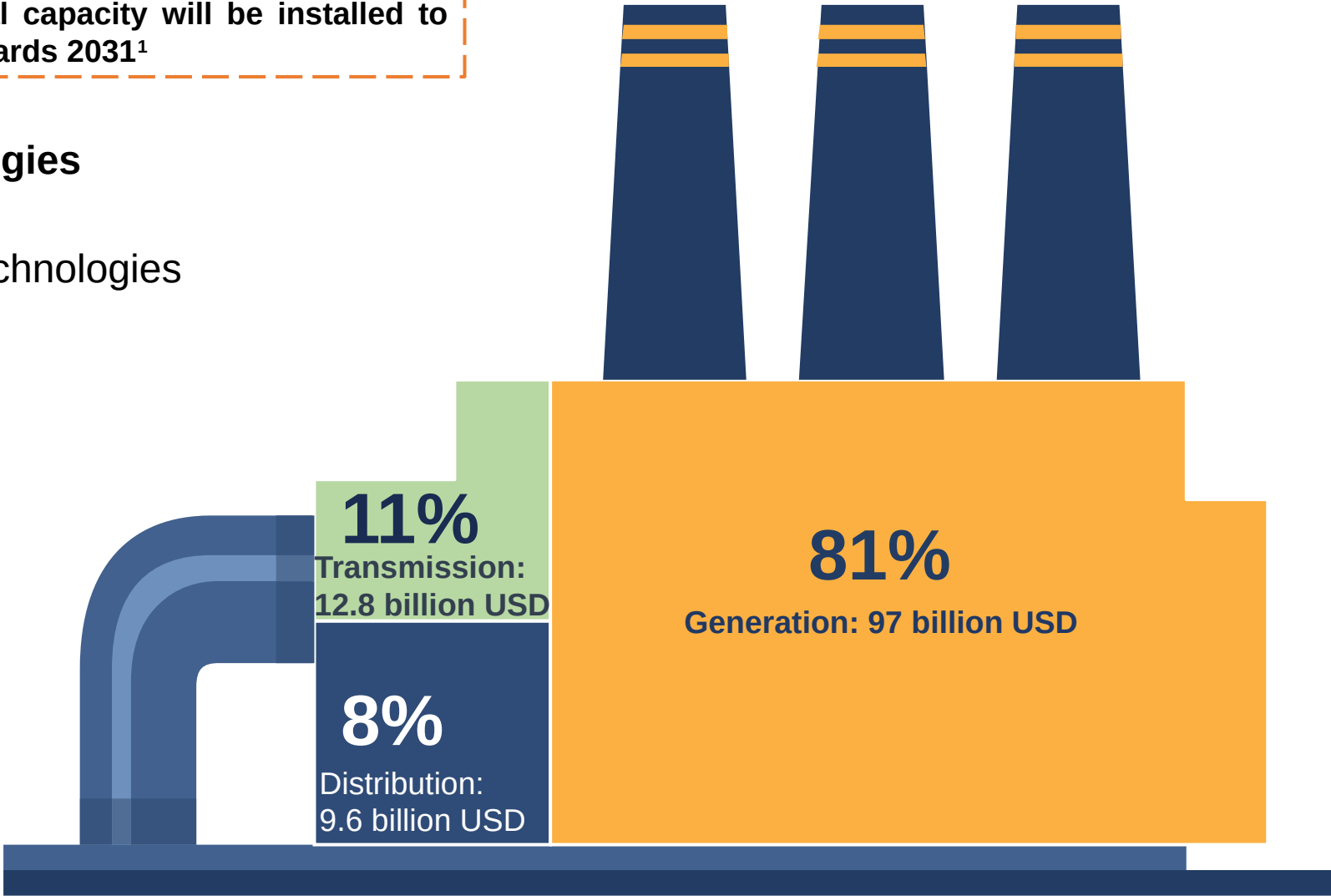
Power sector planning from 2017-2031 is essential to boost Mexico's economic competitiveness



An estimated **55,840 MW** of additional capacity will be installed to meet Mexico's electricity demand towards 2031¹

-  **63% clean technologies**
-  **37% conventional technologies**


119.5
Billion dollars
in the next 15 years



1/ Programa de Desarrollo del Sistema Eléctrico Nacional (PRODESEN) 2017-2031

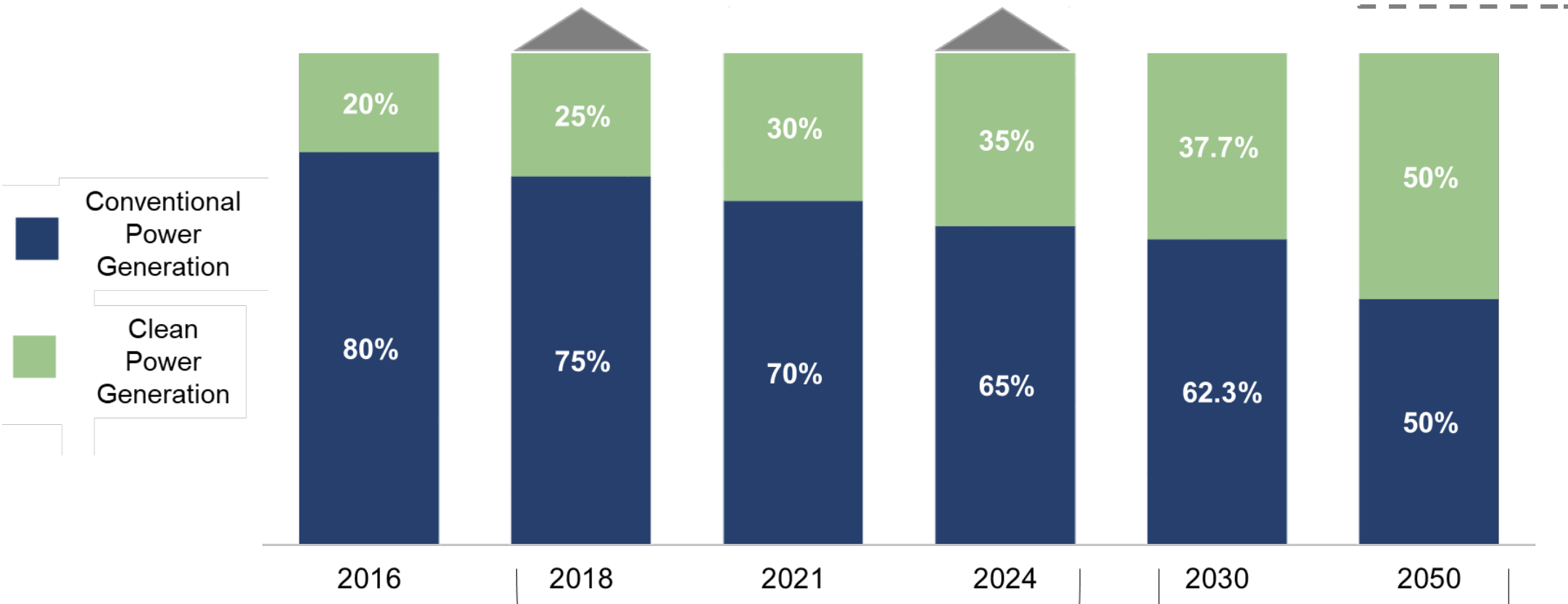
The Mexican law establishes clean power generation targets



The First and Second Long-Term Auction will contribute to Mexico's clean energy generation by 1.9% and 3% starting in 2018 and 2019, respectively.

With the Third Long-Term Auction it will be possible to achieve the established goal for 2024

Renewables have surpassed coal last year to become the **largest source of installed power capacity in the world.**



Energy Transition Law

Transition Strategy to Promote the Use of Cleaner Fuels and Technologies

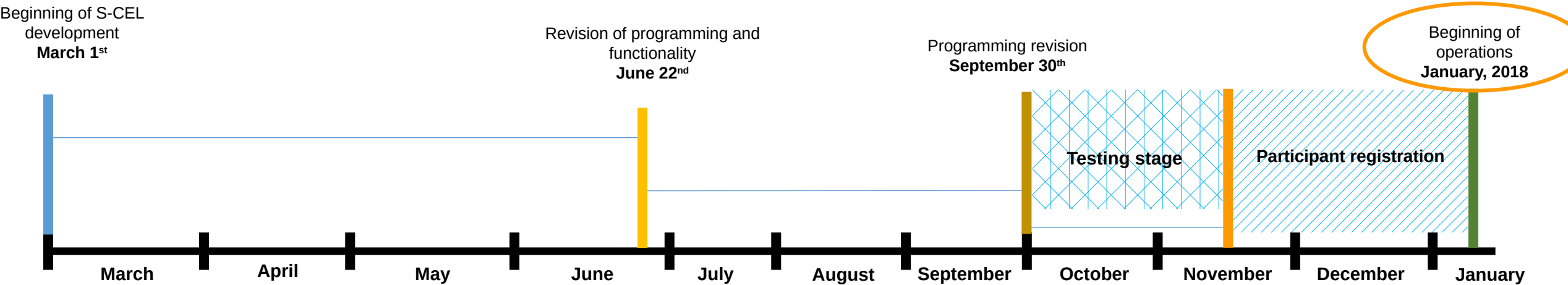
CRE is currently developing a system (S-CEL) to issue, register, track, trade and retire Clean Energy Certificates. The S-CEL aims to ensure compliance among industry players, so Mexico can achieve its national clean energy goals



CRE is working to incentivize the use of renewable energy sources, **with the support of the US Agency for International Development (USAID)**



The S-CEL will begin operations in **January 2018**



Clean Energy Certificates **foster investment** and electricity generation based on carbon-free technologies, **reducing greenhouse gas emissions**

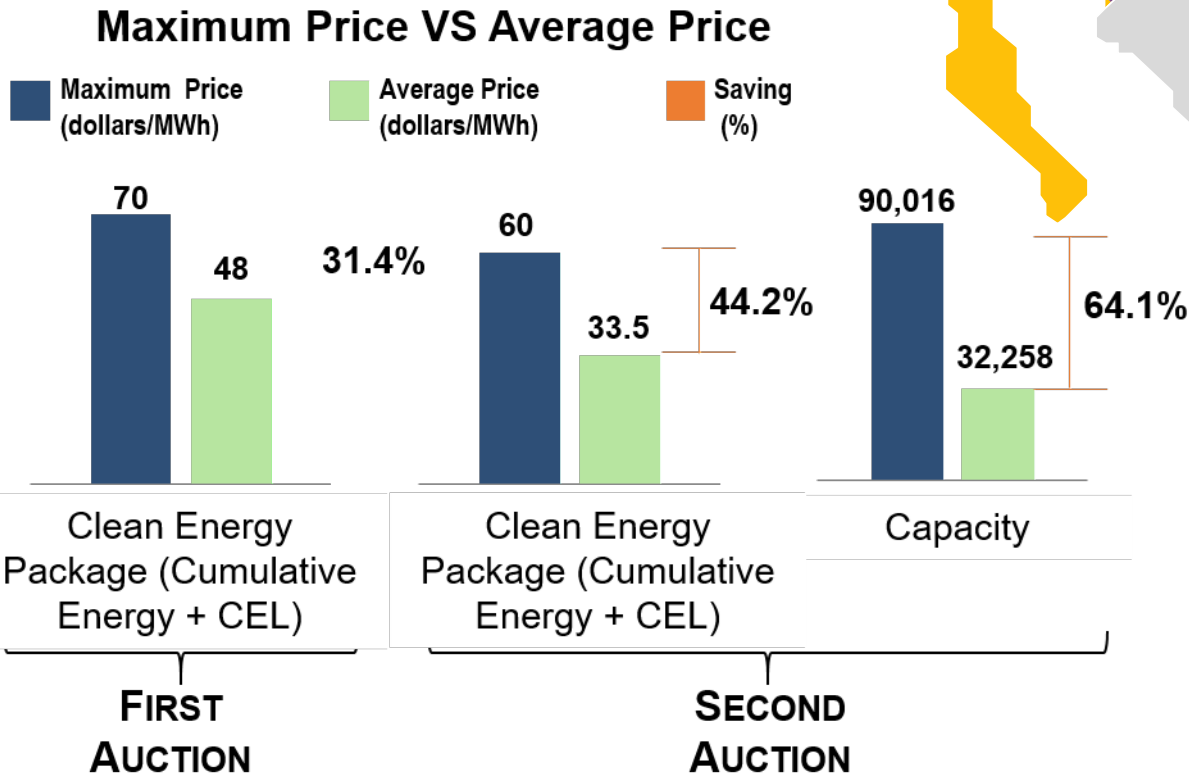
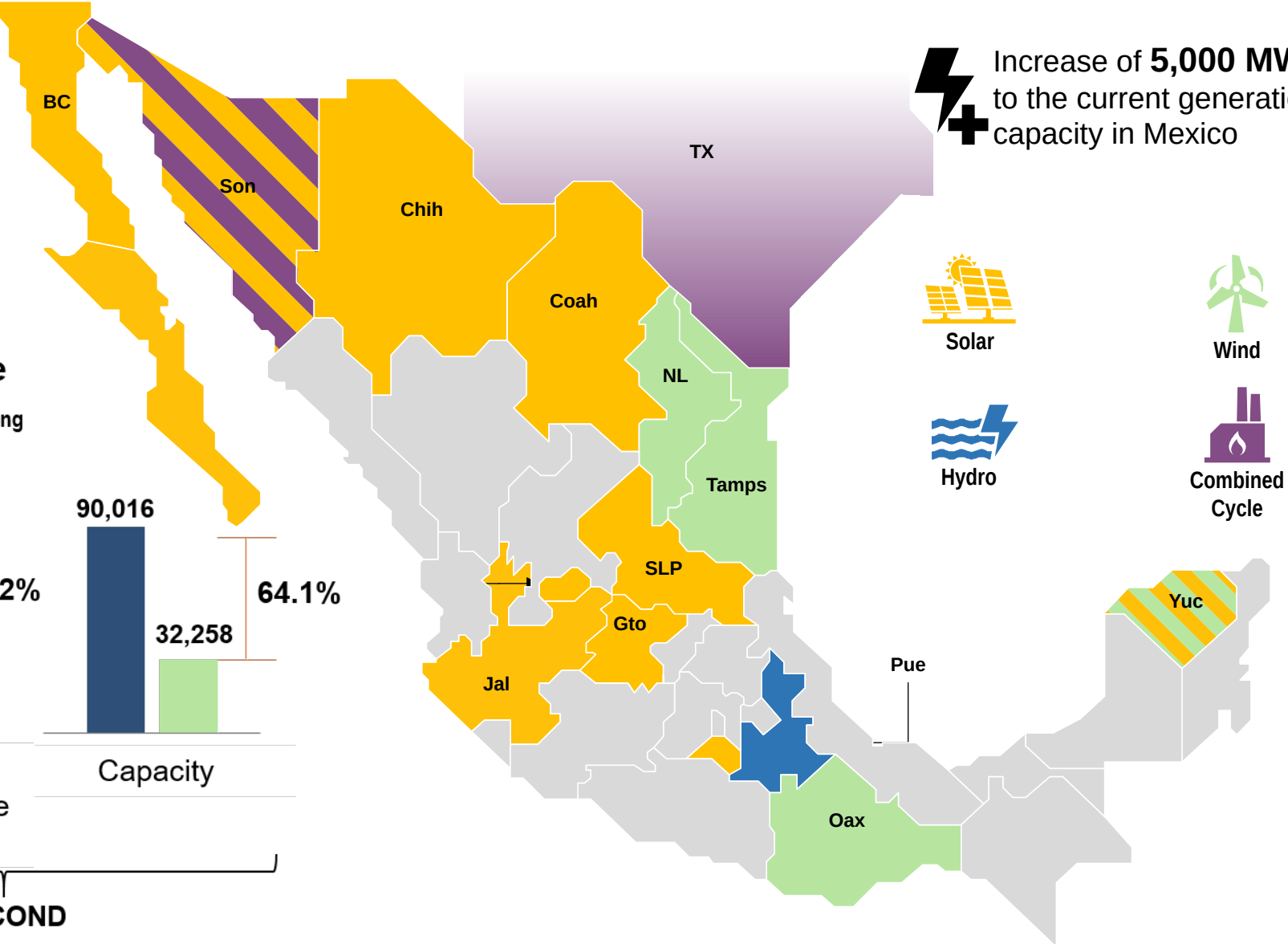
As a result of the two Long-Term Auctions, 15 states will benefit from the development of new clean energy projects in Mexico



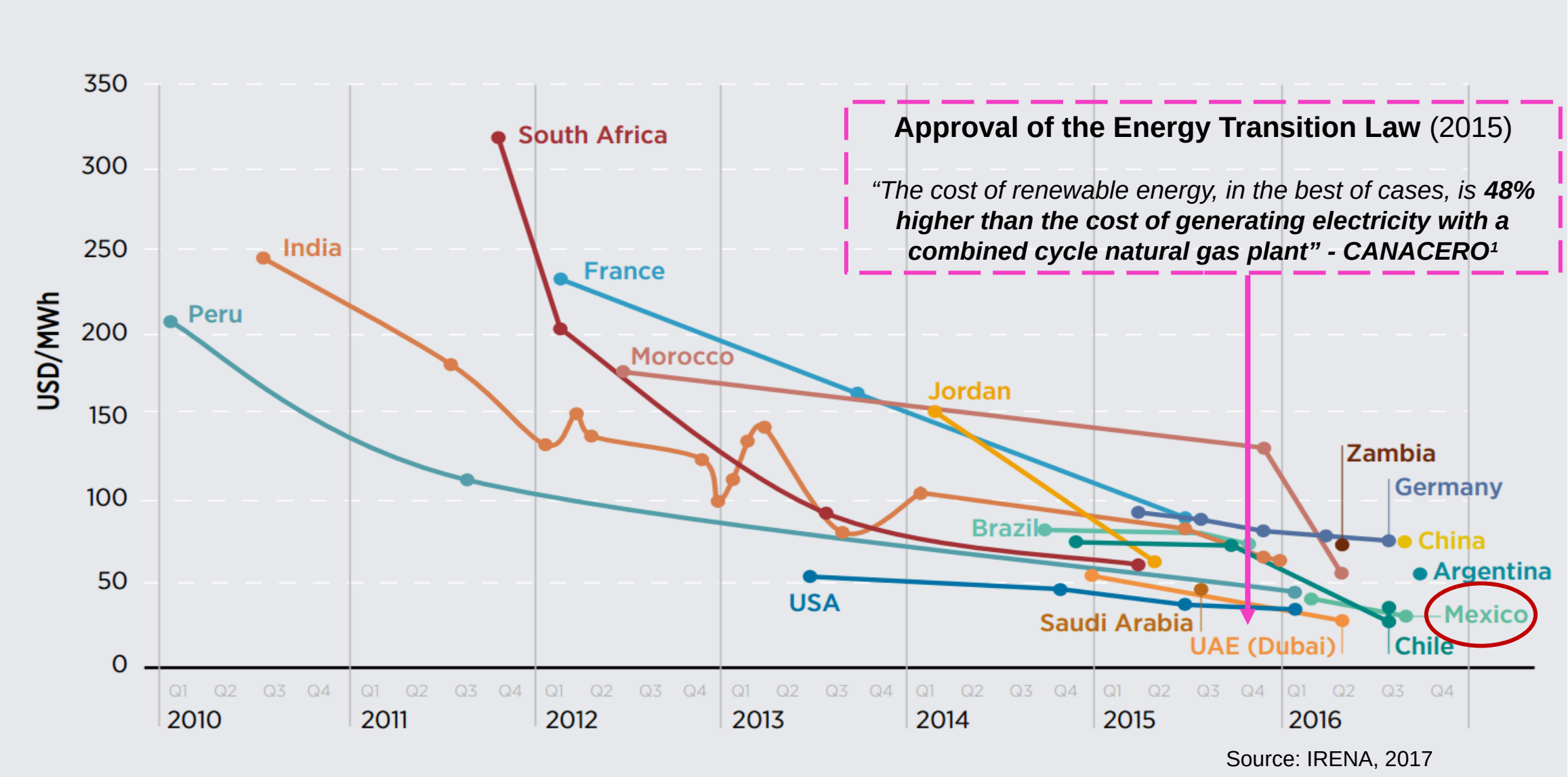

34 companies
from more than 10
countries, including
Mexico


6.6 billion
of investment in the
coming years

 Increase of **5,000 MW**
to the current generation
capacity in Mexico



Evolution of average solar prices in auctions, January 2010 - September 2016



1/ CANACERO (2015). Recovered from: <https://www.elcontribuyente.mx/noticia/1110/-ley-de-transicion-energetica-afectara-inversiones-dice-ip>

The bidding rules for the Third Long-Term Auction and the call for the First Mid-Term Auction were published in May and August, respectively

Third Long-Term Auction

For the first time, **different buyers** others than CFE are able to participate in this process



Clearinghouse (filter)

Only companies that prove a solid credit quality can buy



It will be possible to buy 3 products:

Energy, Certificates of Clean Energy and Capacity



3 companies have applied to be participants as buyers, and **50** as suppliers

According to the Ministry of Energy (SENER), with the Third Auction, the **goal of 35% generation from clean energy in 2024 will be achieved**

CFE's buying offer: Energy: 5.5 million MWh/year Clean Energy Certificates: 5.5 million Capacity: 1,288 MW/year

Final Ruling: November 22, 2017

First Mid-Term Auction

The Mid-Term Auction will **reduce vulnerability towards mid-term price volatility**



Buyers and suppliers

Will be able to execute contracts of electrical coverage for **3 years maximum**



It will be possible to buy 2 products:

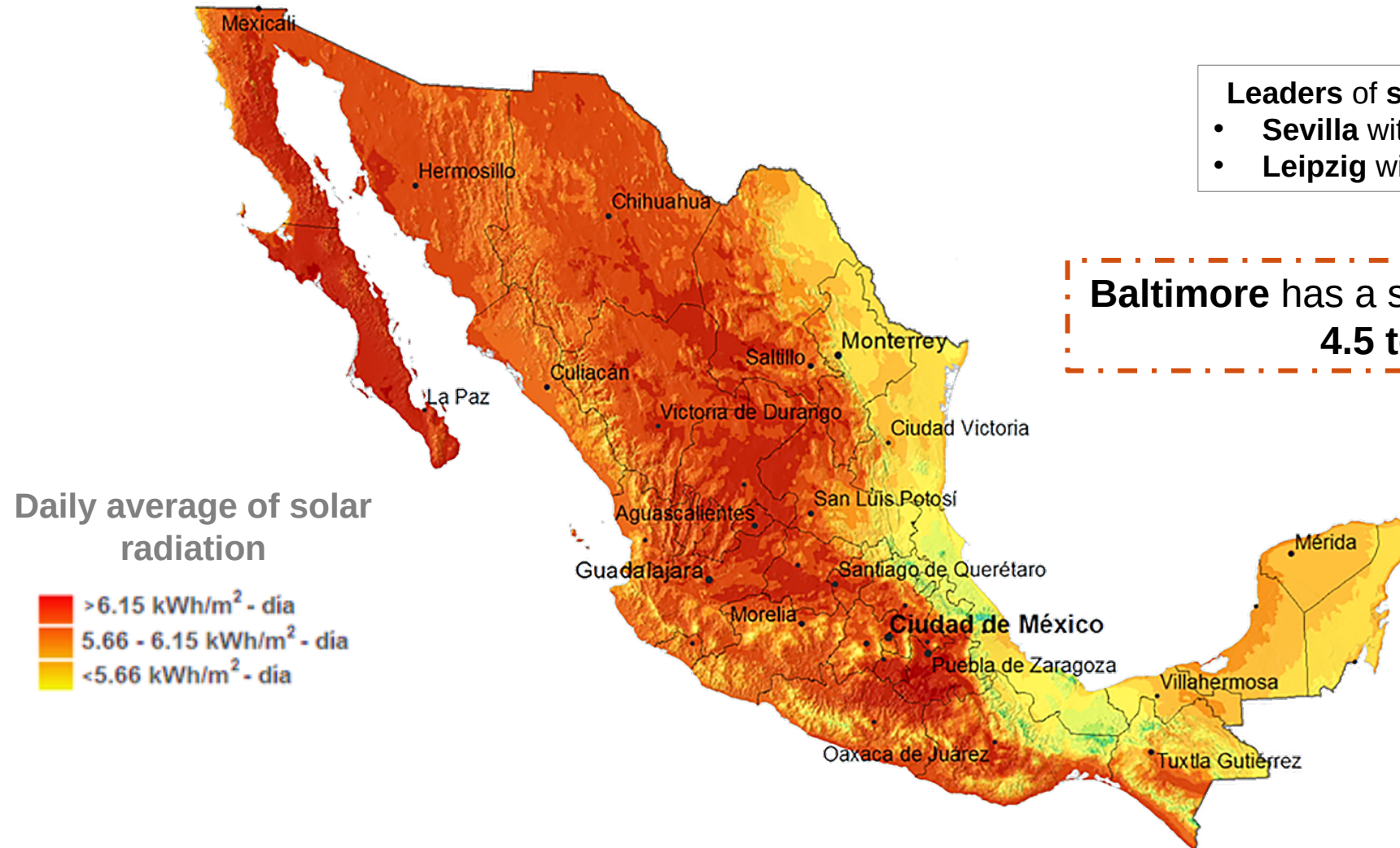
Energy and Capacity



The offered energy, will be set by the stakeholders, **according to their commercial strategies and needs**

Final Ruling: February, 2018

Mexico has a significant, constant and highly predictable renewable potential: a medium annual irradiation of approximately 5.5 kWh/m² per day



Leaders of solar capture in Europe*:

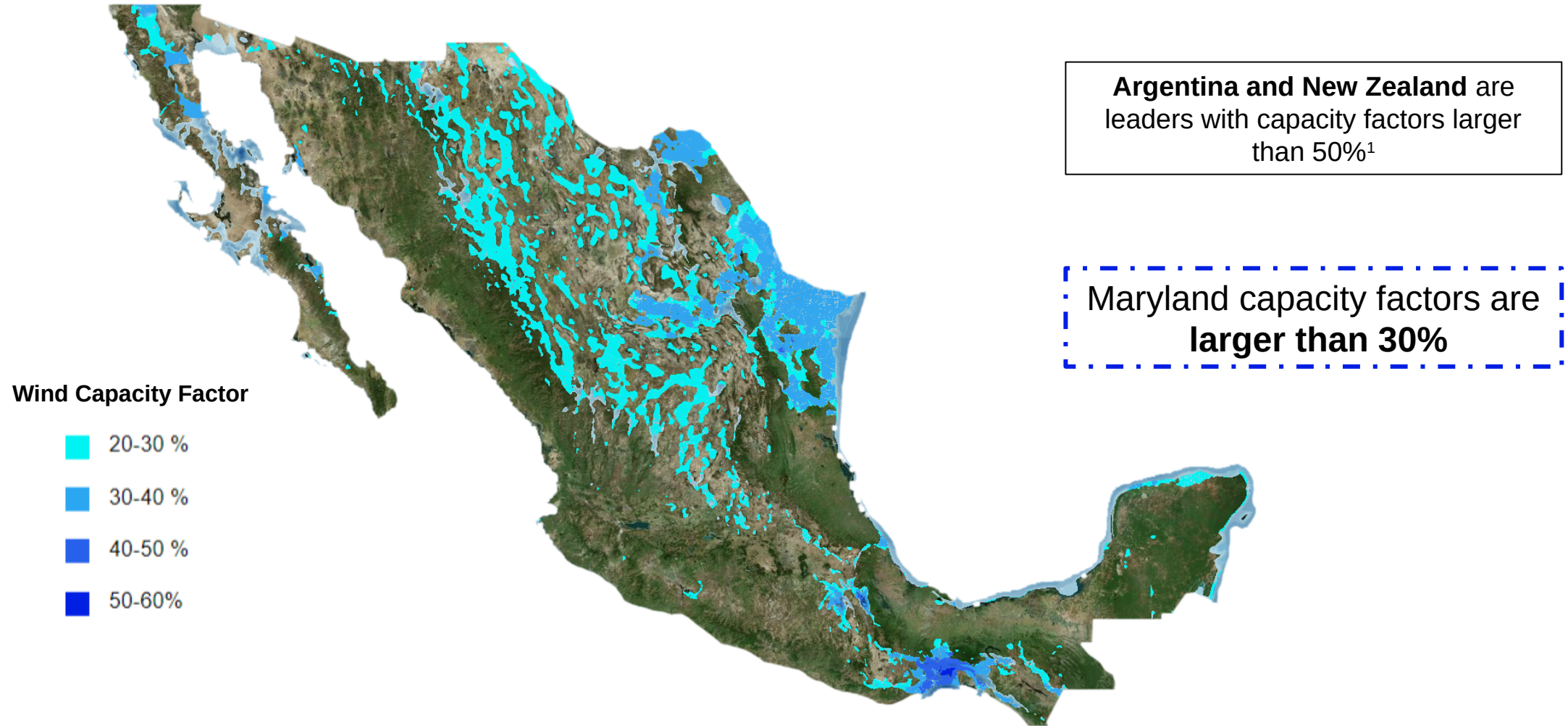
- **Sevilla** with 4.7 kWh/m²
- **Leipzig** with 2.7 kWh/m²

Baltimore has a solar capture potential of:
4.5 to 5 kWh/m²

*Source: Sistema Geográfico de Información Fotovoltaica de la Comisión Europea

Source: SOLARGIS. Recovered from: <http://solargis.com/products/maps-and-gis-data/free/download/mexico>

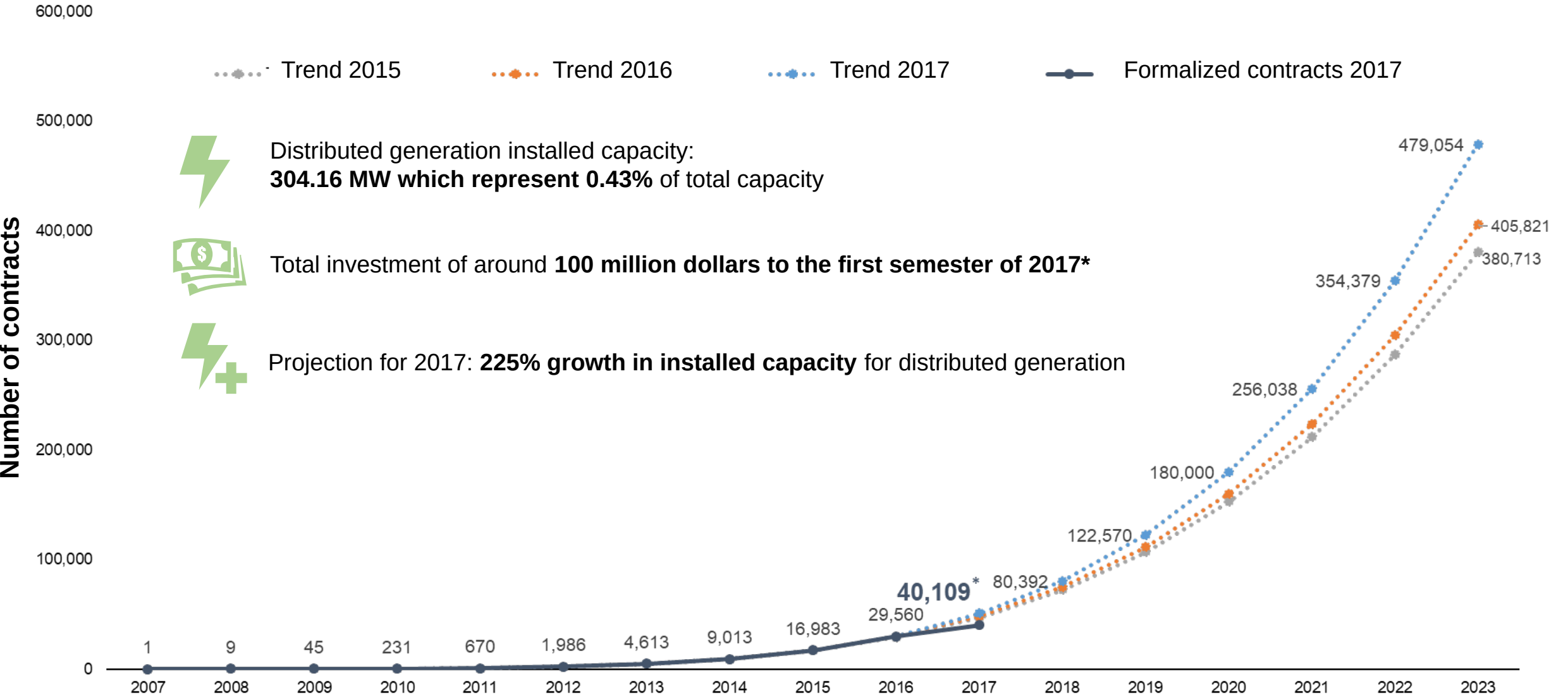
The capacity factor of a wind farm is measured based on the percentage it operates to its maximum capacity in a year. Mexico has competitive wind capacity factors ranging from 20% to 50%



*Source: Ministry of Energy, "Atlas de Zonas con Energías Limpias", 2017: <https://dgel.energia.gob.mx/azel/>

1/ Data recovered from: <http://www.pnas.org/content/106/27/10933/F7.expansion.htm>

In March 2017, CRE issued a new set of regulations fostering the sustainable integration of distributed energy resources nationwide



*Considering an average investment of 1.7 million dollars per MW of installed capacity, according to Bloomberg
1/ Elaborated with information provided by CFE. Preliminary data up to the first semester of 2017

Energy storage can deliver tangible benefits across the energy value chain. Hence, CRE is working along with other institutions towards the development of a storage-friendly market environment in Mexico



Energy Transition Law (2015)
Includes storage as a strategic new technology



The **Market Rules (2015)** and the **Capacity Market Manual (2016)** comprise storage as a generator and contain the requirements for this technology to be considered in the firm capacity market



The market potential in Mexico is estimated in 2,333 MW under a 10 year forecast*



The **Electric System Development Program (PRODESEN) 2015-2029** contains a battery storage project:

- **Project:** Baja California Sur Battery Bank
- **Capacity:** 20 MW
- **Beginning of operations:** 2019



Distributed Energy Resources Regulation (2017)
Includes storage as a figure acknowledged by CRE

On CRE's side, what is needed is a **regulation that recognizes all the services and benefits that storage can bring to the electricity system and that bases its remuneration on that value.**

CRE is currently working with NERC and CENACE to develop shared grid reliability protocols to strengthen energy security on both sides of the border

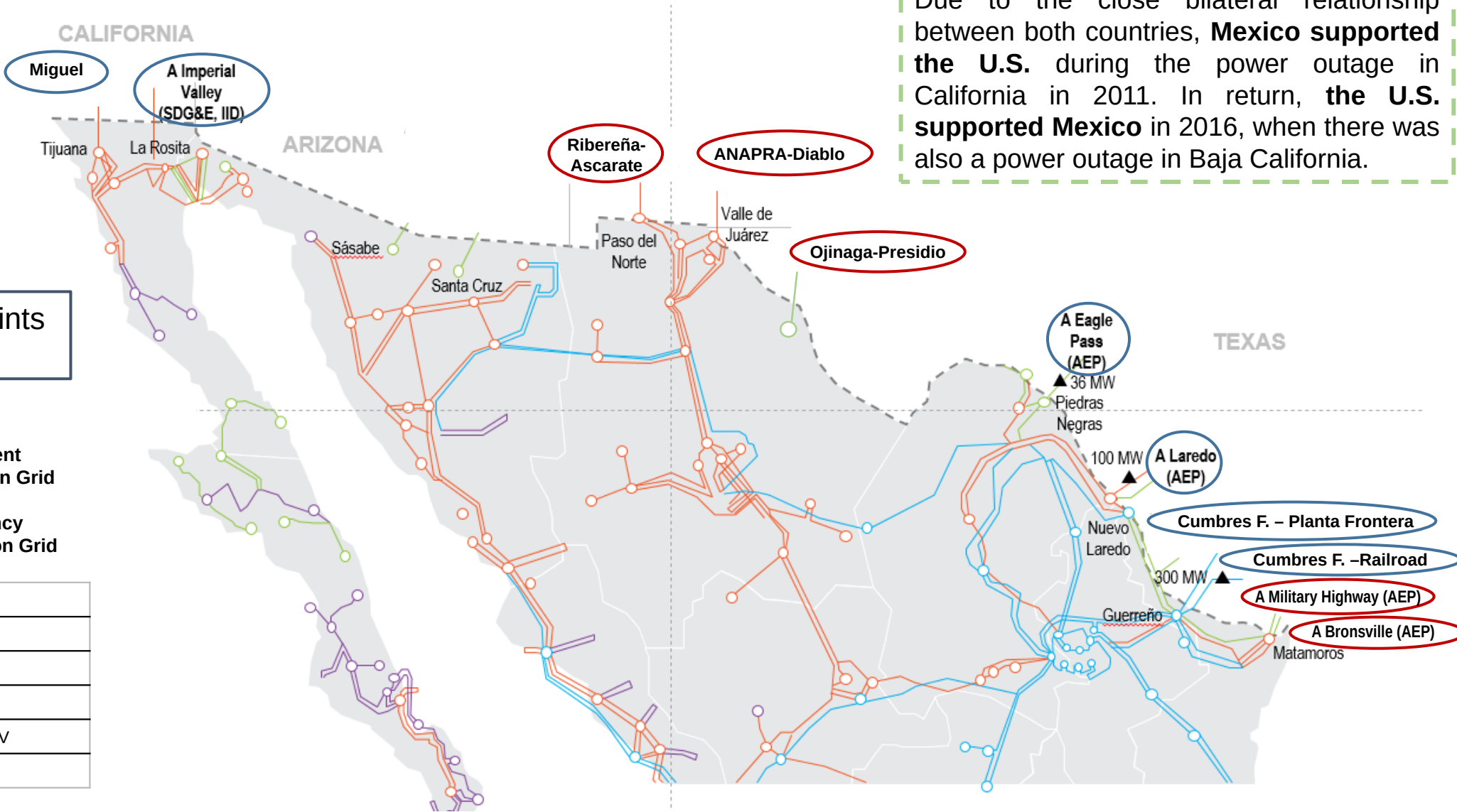
Due to the close bilateral relationship between both countries, **Mexico supported the U.S.** during the power outage in California in 2011. In return, **the U.S. supported Mexico** in 2016, when there was also a power outage in Baja California.



11 interconnection points with the US

- **6** Permanent Transmission Grid
- **5** Emergency Transmission Grid

Voltage	
—	40 kV
—	230 kV
—	115 kV
—	161 kV, 138 kV and <34.5 kV
○	Substation



CRE and NARUC have also work together in the development of capacity building programs. During 2017, the following workshops have taken place:



Workshop on Electricity Tariffs



NARUC and CRE



Mexico City
March 1st - 2nd



Workshop on Electricity Auctions to a delegation from Kenya



NARUC, CRE, SENER
and CENACE



Mexico City
March 6th-10th

Also, CRE's technical staff has participated in NARUC's specialized workshops abroad by sharing best practices, such as:



“Processes and experiences in the determination of natural gas transportation and distribution tariffs in Mexico”



Salaam, Tanzania
October 16th – 18th



VII WORLD FORUM ON ENERGY REGULATION

REGULATING IN A TIME OF INNOVATION

EMPOWERED CONSUMERS, DYNAMIC MARKETS,
AND SUSTAINABLE INFRASTRUCTURE

CANCÚN, MÉXICO

March 20–23, 2018

SAVE THE DATE

www.wfer2018.org



wfer2018



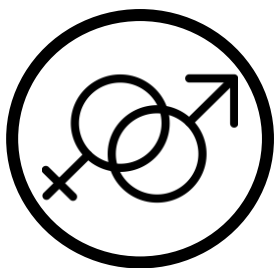
@wfer2018



wfer2018



GOALS



GENDER PERSPECTIVE

To enrich all conversations by streamlining gender perspective in all the Forum's activities, which will include some of the more powerful female voices in the energy sector.



GLOBAL REACH

To present a diverse and multicultural group of experts, making sure every region is represented and both developed and developing perspectives are heard.



SECTORIAL BALANCE

To include in the different sessions key players from diverse backgrounds to discuss how innovations are currently transforming the fundamentals of the entire energy value chain.



**More than 80% of speakers and moderators
have already confirmed**

K²

**KEYNOTE
LECTURES**

P³

**PLENARY
SESSIONS**

C¹⁵

**CONCURRENT
SESSIONS**

H⁴

**HIGH LEVEL COMMISSIONER
ROUND TABLES
(HLCRT)**

TD³

**REGULATORY TRAINING
DAY**



PROGRAM

D0

Tuesday
March 20, 2018
4 activities
9 – 19h

- Registration
- 1st Steering Committee Meeting
ICER- WFER
- Regulatory Training Day
- Welcoming cocktail

D1

Wednesday
March 21, 2018
7 activities
9 -18:30h

- Opening
Welcome address
- Plenary session
- Concurrent sessions I
- Lunch
HLCRT (1-2)
- Concurrent sessions II
- WIE event
- 2nd Steering Committee Meeting
ICER

D2

Thursday
March 22, 2018
7 activities
9-22h

- Plenary session
- ICER award
- Concurrent sessions III
- Lunch
HLCRT (3-4)
- Concurrent sessions IV
- Keynote I
- Gala Evening

D3

Friday
March 23, 2018
5 activities
9-15:30h

- Concurrent sessions V
- Keynote II
- Plenary session
- Closing ceremony
& Farewell reception
- ICER working groups

HLCRT: High Level Commissioner Round Table.



REGISTRATION FEE

Participant	Early registration (nov-dec) 5%		Registration (jan-mar)	
Industry	€ 1200	1425 USD	€ 1265	1505 USD
Regulator/Government/ Academic/NGO	€ 980	1165 USD	€ 1035	1230 USD
Accompanying persons	€ 330	395 USD	€ 345	410 USD
Students	€ 110	135 USD	€ 115	140 USD



Mexico's Energy Regulatory Commission: Challenges and Opportunities in Reforming the Energy Industry

Guillermo I. García Alcocer
Chairman



National
Association of
Regulatory
Utility
Commissioners

November 12th, 2017
Baltimore, Maryland



www.gob.mx/cre



@CRE_Mexico



ComisionReguladoraEnergia

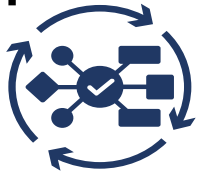


cregobmx



Comisión Reguladora de Energía

Following the recommendations issued by OECD in the report "Driving Performance of Mexico's Energy Regulators", CRE, ASEA and CNH have developed effective communication and coordination mechanisms



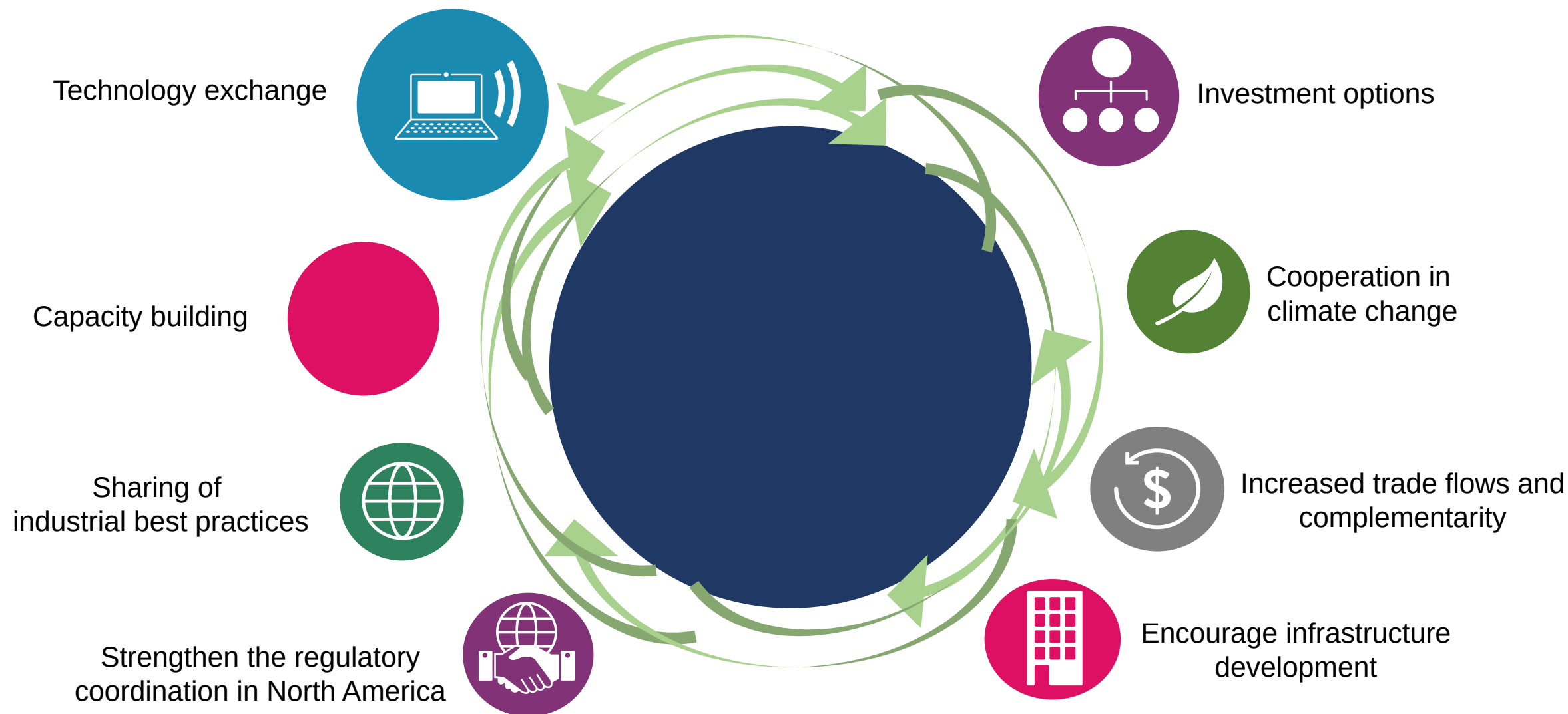
An example; is the creation of the **Energy Sector Regulators System** which has the following strategic objectives:



In this regard, CRE will adopt a "**Life Cycle**" approach that will follow up on the permit projects, in order to:

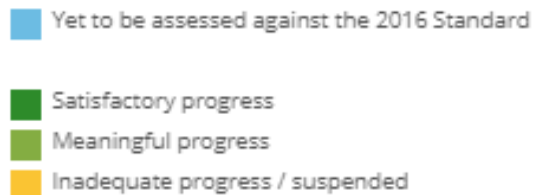


Analysts agree that within a reconfiguration of NAFTA, Mexico and its North American Partners will share the basis for more cooperation in the energy sector



Mexico joined the EITI (Extractive Industries Transparency Initiative) as its 53rd member, reaffirming the Energy Reform's commitment with openness and accountability

53 member countries



Clean Energy Certificates (CEL) promote investment and encourage the generation of clean electricity, reducing greenhouse gas emissions significantly



SENER

SECRETARÍA DE ENERGÍA

- Establishes **requirements and criteria** to acquire and grant CEL



CRE

- Awards and regulates CEL
- Manages the S-CEL platform:
 - The registration of electricity generation and consumption
 - Issuance, transactions, liquidation and cancellation of CEL
 - Compliance of clean energy obligations
- Sanctions



CENACE

CENTRO NACIONAL DE CONTROL DE ENERGÍA

- Operates the **Wholesale Electricity Market**
- (Spot Market / Auctions)
- Secondary CEL Market



Clean Generators (1 MWh = 1 CEL)

- Renewable energies: solar, wind, hydro, geothermal.
- Nuclear energy
- Cogeneration

Compelled Participants

- Suppliers
- Qualified Users
- Isolated Power Supply
- Interconnection Legacy Contracts that are not supplied entirely by clean energies

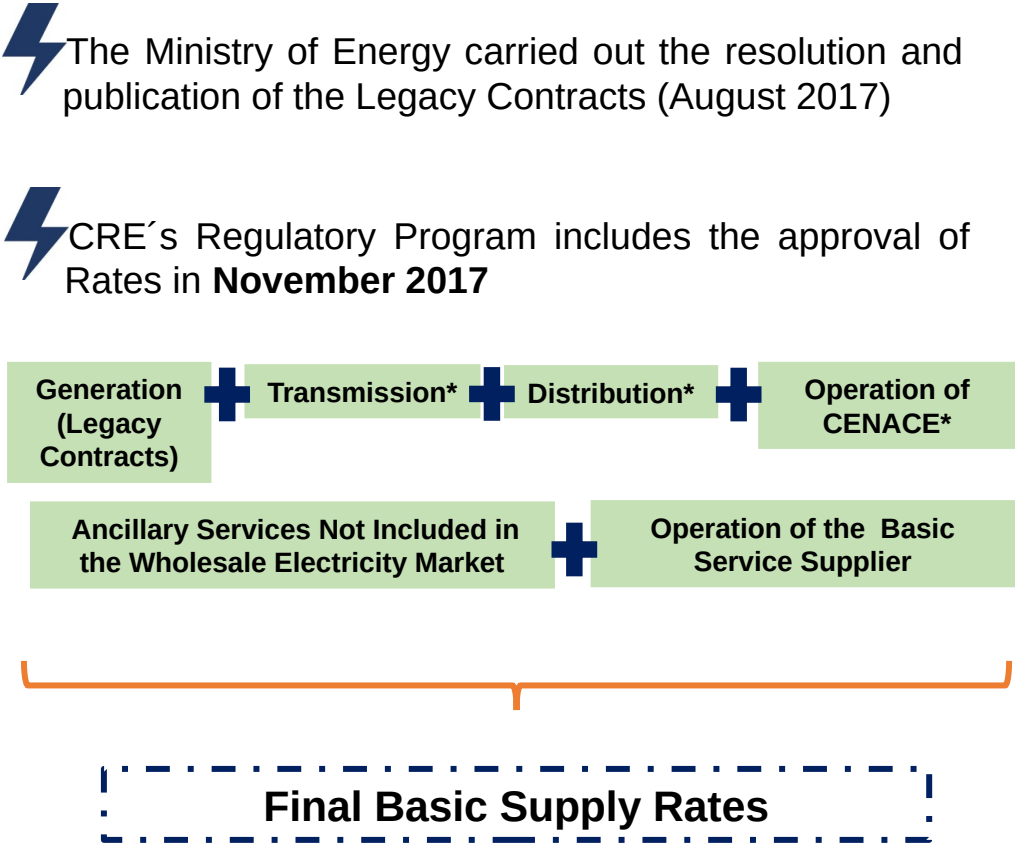
In the short term, CRE has identified three major tasks for the construction of a more robust Wholesale Electricity Market



Clean Energy Certificate Tracking System (S-CEL)

- ⚡ The S-CEL aims to ensure compliance among industry players, so Mexico can achieve its national clean energy goals and international climate commitments
- ⚡ Registration of participants begins in November 2017
- ⚡ It will start operating in January 2018

Basic Supply Rates



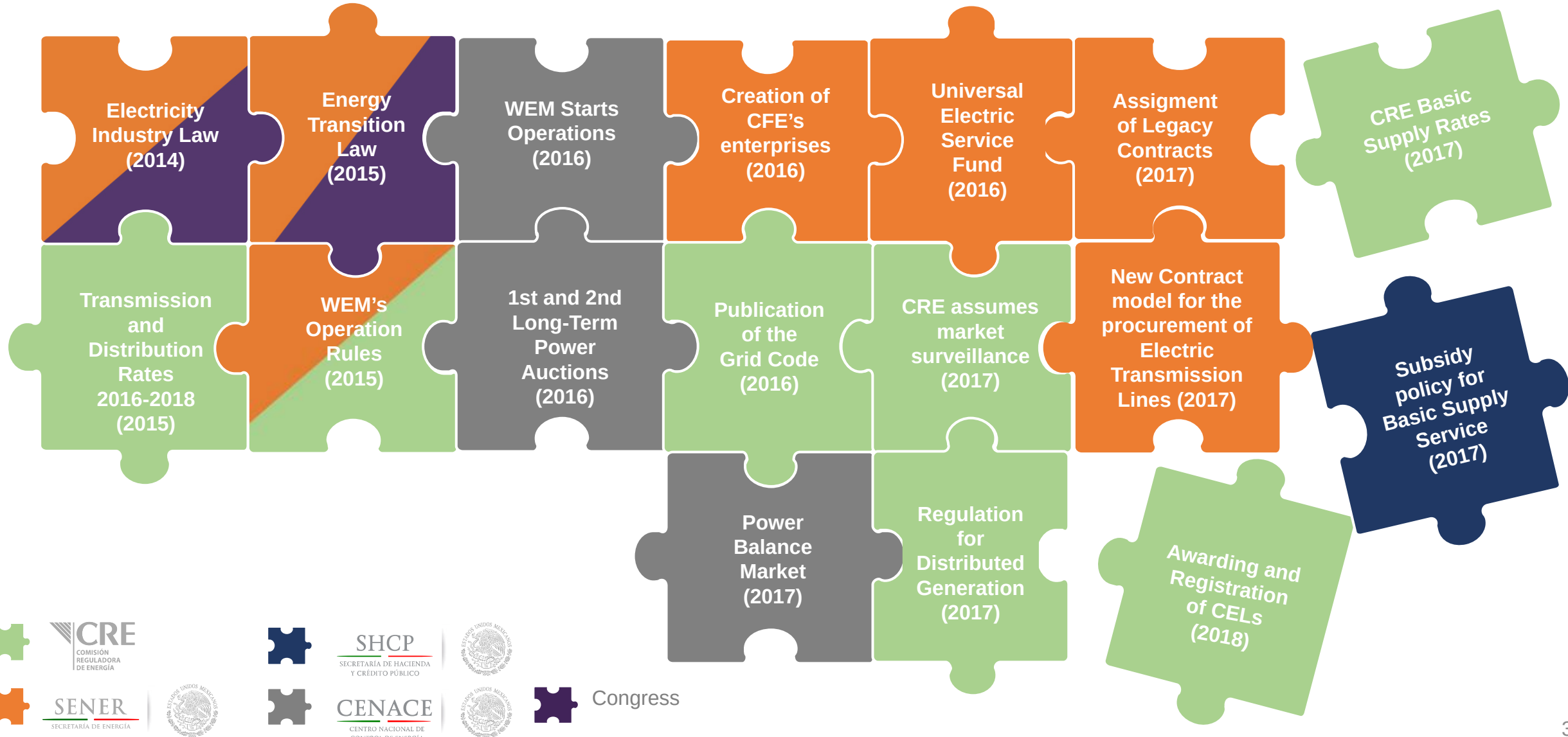
*Rates already approved by CRE

Fourth Long-Term Auction

- 📄 The Ministry of Energy will **transfer powers to CRE** for the realization of **upcoming auctions**
- ⚡ CRE will **review the experience** of the first three auctions to **design and carry out the fourth auction in 2018**

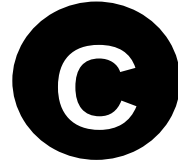


The implementation of the Energy Reform is moving towards the consolidation of a dynamic and competitive Wholesale Electricity Market (WEM)





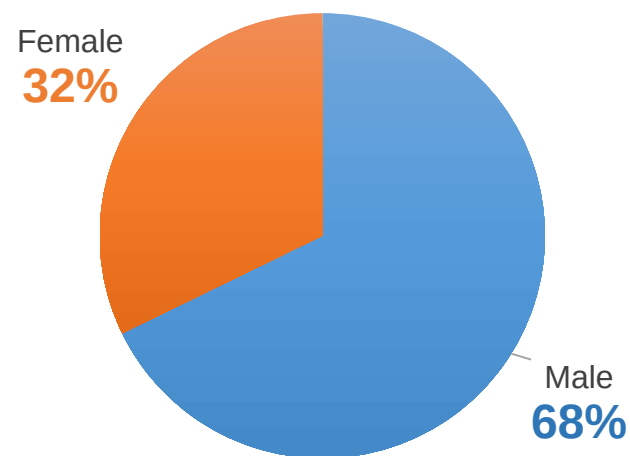
PLENARY
SESSIONS



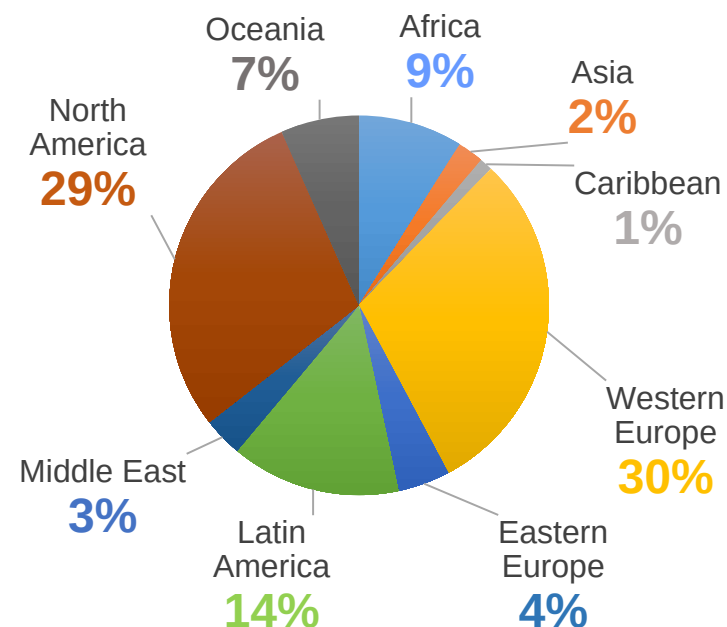
CONCURRENT
SESSIONS

More than 80% of speakers and moderators have already confirmed.

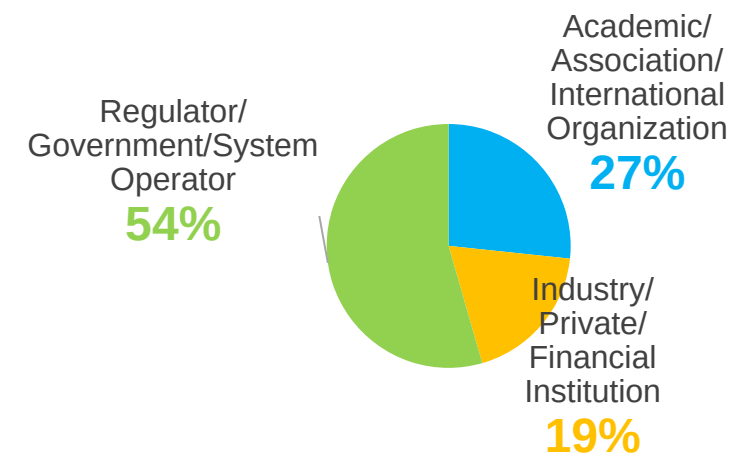
Gender Perspective (%)



Regional Balance (%)



Sectorial Balance (%)





4

ROUND TABLES

15

COMMISSIONERS
PER ROUND TABLE

4M

MODERATORS

By invitation only

RT1: Regulating and monitoring zero-variables-cost power markets of the future

ELECTRICITY

RT2: Regulatory responses to a nascent global LNG Market

GAS

RT3: How are energy regulators dealing with disruptive technologies?

INNOVATION

RT4: Roles and responsibilities of female commissioners in a male-centric industry

GENDER BALANCE

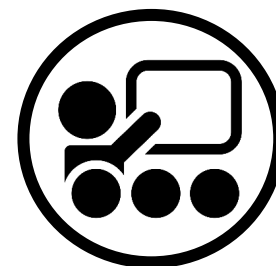


3

TRAINING SESSIONS

90

JUNIOR AND MID-LEVEL STAFF



TOPICS

Training 1.
Basics on
Electricity
Regulation

Training 2.
Basics in Oil
and Gas
Regulation

Training 3.
Basics of
Regulation

Cross theme: **innovation.**

CRE has published online tutorials and initiated a workshop program to explain the application process and issuance of permits. Obtaining a permit is easy, fast and transparent



Workshop

Gas LP
10:00–12:00 hr
Contacto
Aidé Rojas
arojas@cre.gob.mx
5283 1500 ext. 1064

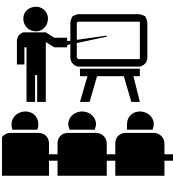
Electricidad
12:00–13:30 hr
Contacto
Erick Vallejo
evallejo@cre.gob.mx
5283 1500 ext. 1141

Petrolíferos
16:00–18:00 hr
Contacto
Ma. Elena Hernández
mhernandez@cre.gob.mx
5283 1500 ext. 6036

Gas Natural
10:30–12:00 hr
Contacto
Danae Burgueño
dburgueno@cre.gob.mx
5283 1500 ext. 3017

November 2017

DOM	LUN	MAR	MIE	JUE	VIE	SAB
1	2	3	4	5	6	7
8		10	11	12	13	14
15	16	17	18*	19	20	21
22	23	24	25	26*	27	28
29	30	31				



Procedures and Online Services
Format for requesting hearings
16 working days, on average, to hold a hearing.

*To be confirmed