

Natural Gas in Mexico: Past, Present and Future

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@garcialcocer

Introduction - Guillermo García Alcocer

Mexican economist with ~30 years of experience in the energy and finance sector developing regulations that promoted the deployment of large-scale renewable projects and the liberalization of gasoline and diesel prices



Academic Background

MSc. Finance – ITAM

BA. Economics – ITAM

Diplomas: Harvard, Oxford and George Washington

Awards & Fellowships

- 1st place, BANAMEX Economics award
- 1st place, ExITAM Research Award
- Member of the Mexican Council of International Affairs (COMEXI)
- 2022 “Top 100 Energy Leaders in Mexico” by Energy and Petroleum Magazine

“Mr. García Alcocer, named to his post by Mexico’s senate in 2016, was a staunch promoter of the liberalization of Mexico’s energy sector.”

The Wall Street Journal, February 27, 2019

Professional Experience

ITAM (2019 – Present)

- VP of Planning
- VP of Institutional Development and Communication
- Microeconomics and regulatory policy professor

Federal Energy Regulatory Commission (2016 – 2019)

- Chairman: hydrocarbon logistics, wholesale electricity market and generation permits regulator

Mexican Ministry of Energy (2006 – 2015)

- Head of exploration and mining of hydrocarbons
- Head of hydrocarbon industrial development
- Chief of Staff to the undersecretary of hydrocarbons

National Retirement Savings Commission (2003 - 2006)

- Deputy Director of Planning
- Coordination and execution of the reengineering and ISO9000 certification process

Mexican Ministry of Finance (1995 – 2003)

- Head of Fiscal Coordination Studies and Incentives
- Advisor to the Head of the Income Policy Unit
- Head of Special Projects Department



STAY
CALM
AND
KEEP
MOVING

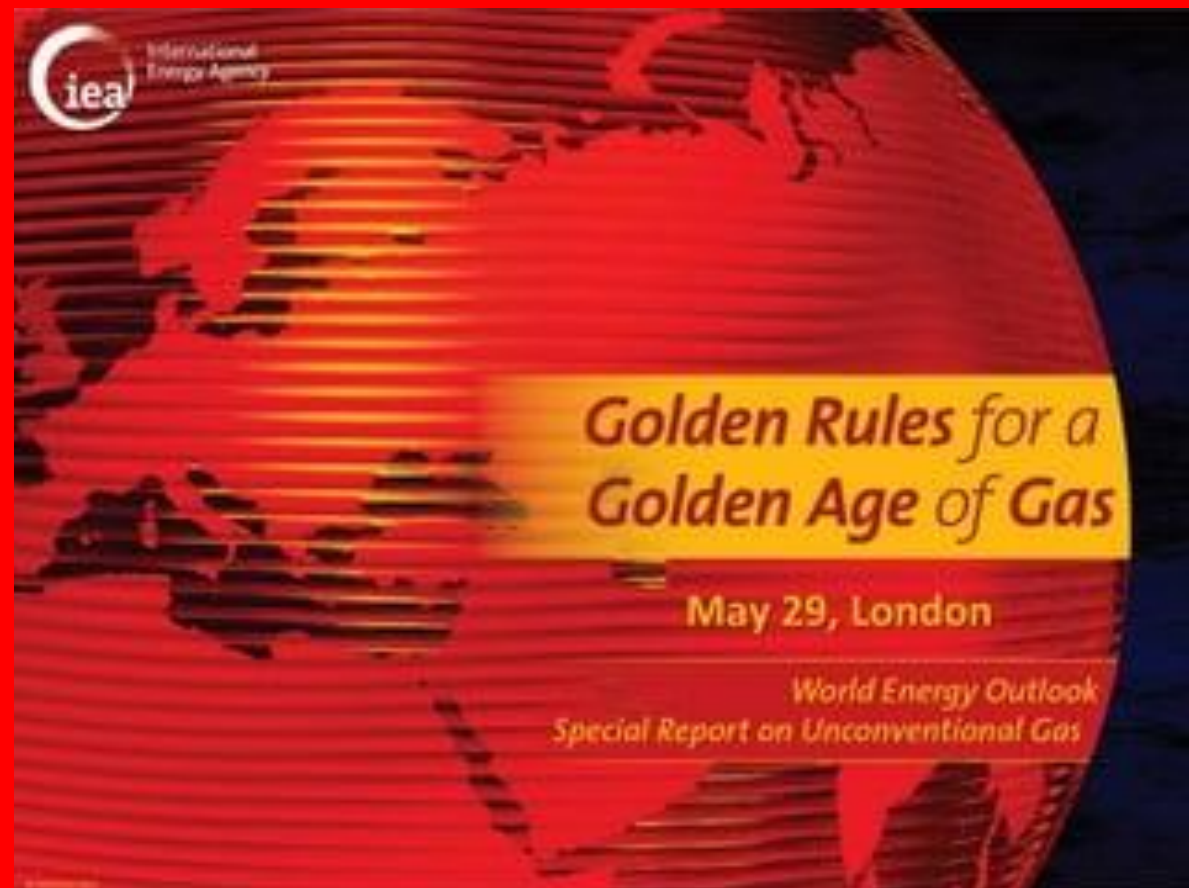


**ARE WE ENTERING
A GOLDEN AGE OF GAS?**

**Special
Report**

WORLD ENERGY OUTLOOK

2011



INSIDE: AN ESSAY ON THE SUBURBANISATION OF THE WORLD

The
Economist

DECEMBER 8TH-12TH 2014

economist.com

Technology Quarterly

Shinzo Abe's last chance

Boost your business with a drone

P.D. James, queen of the sleuths

Our books of the year

Sheikhs v shale

The new economics of oil



**The
Economist**

The 90% economy, revisited

African pop culture goes global

In praise of citizens' assemblies

TikTok and the rise of Frankenfirms

SEPTEMBER 19TH–25TH 2020

21st century power

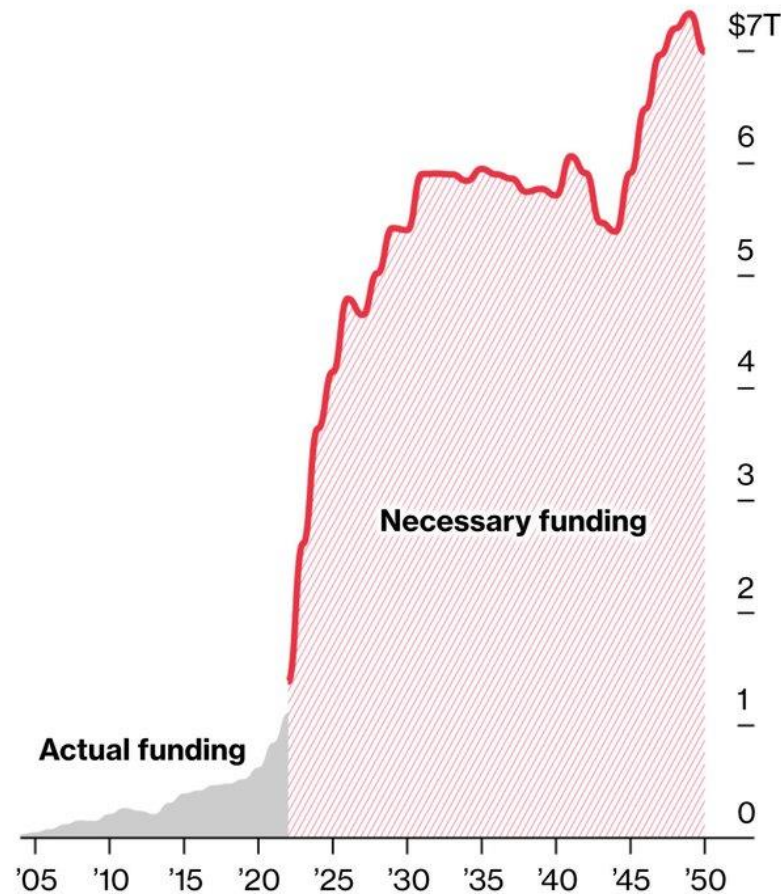
How clean energy will remake geopolitics



The Unfunded Cost of Transition

Funding Shortfall

Investment needed to reach net-zero by 2050

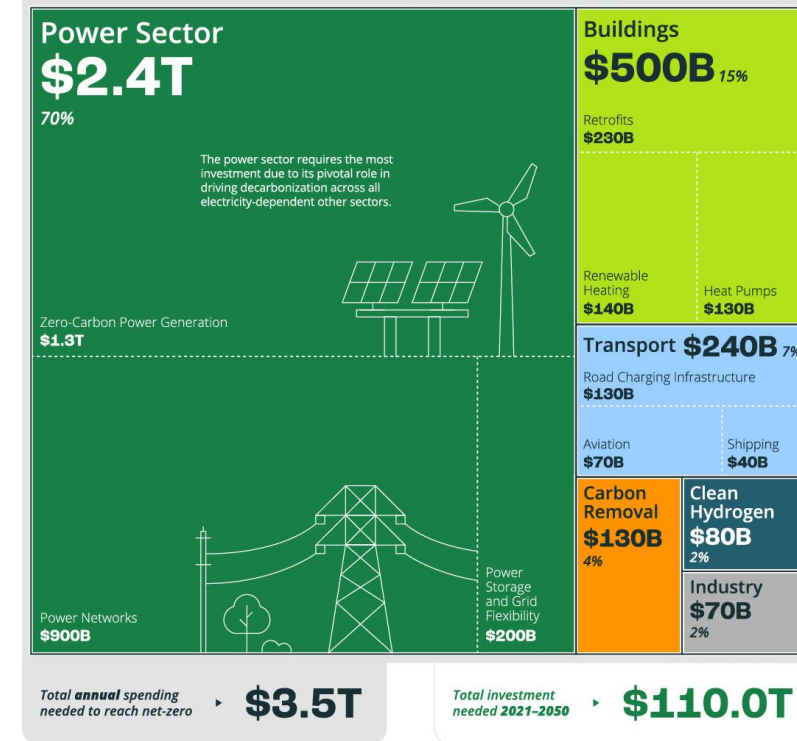


Source: BNEF

The Cost of the Clean Energy Transition

The Energy Transitions Commission estimates that the net-zero transition will cost **\$110T** in global capital investments between 2021 and 2050, averaging **\$3.5T** annually. Here is that sum broken down by sector.

Average Annual Capital Investment Needed Worldwide
2021–2050, USD



In 2022, global investment in the clean energy transition totaled **\$1.1T**.
To remain on track to net-zero, significant and rapid injections of investment must be made in the above sectors.

Source: Energy Transitions Commission

Numbers may not total 100 due to rounding. All figures are in real 2021 U.S. Dollars.

Decarbonization Channel

Powered by



In partnership with

motivepower

Visual Capitalist

**The
Economist**

How the pandemic ends

Latin America's growth opportunity

Will there be a wage-price spiral?

More threats to free speech

OCTOBER 16TH- 22ND 2021

The energy shock



Big Trouble in Natural Gas (2012-2013)

From **January 2012 to June 2013**, **35 critical alerts** occurred in national territory.



Pemex limited the natural gas volumes used by the manufacturing sector.



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



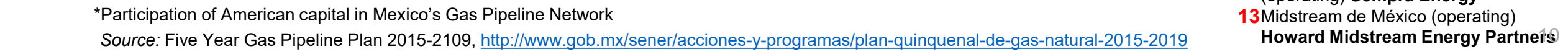
The impact of natural gas shortage on the manufacturing sector and the national GDP **was quantified** *



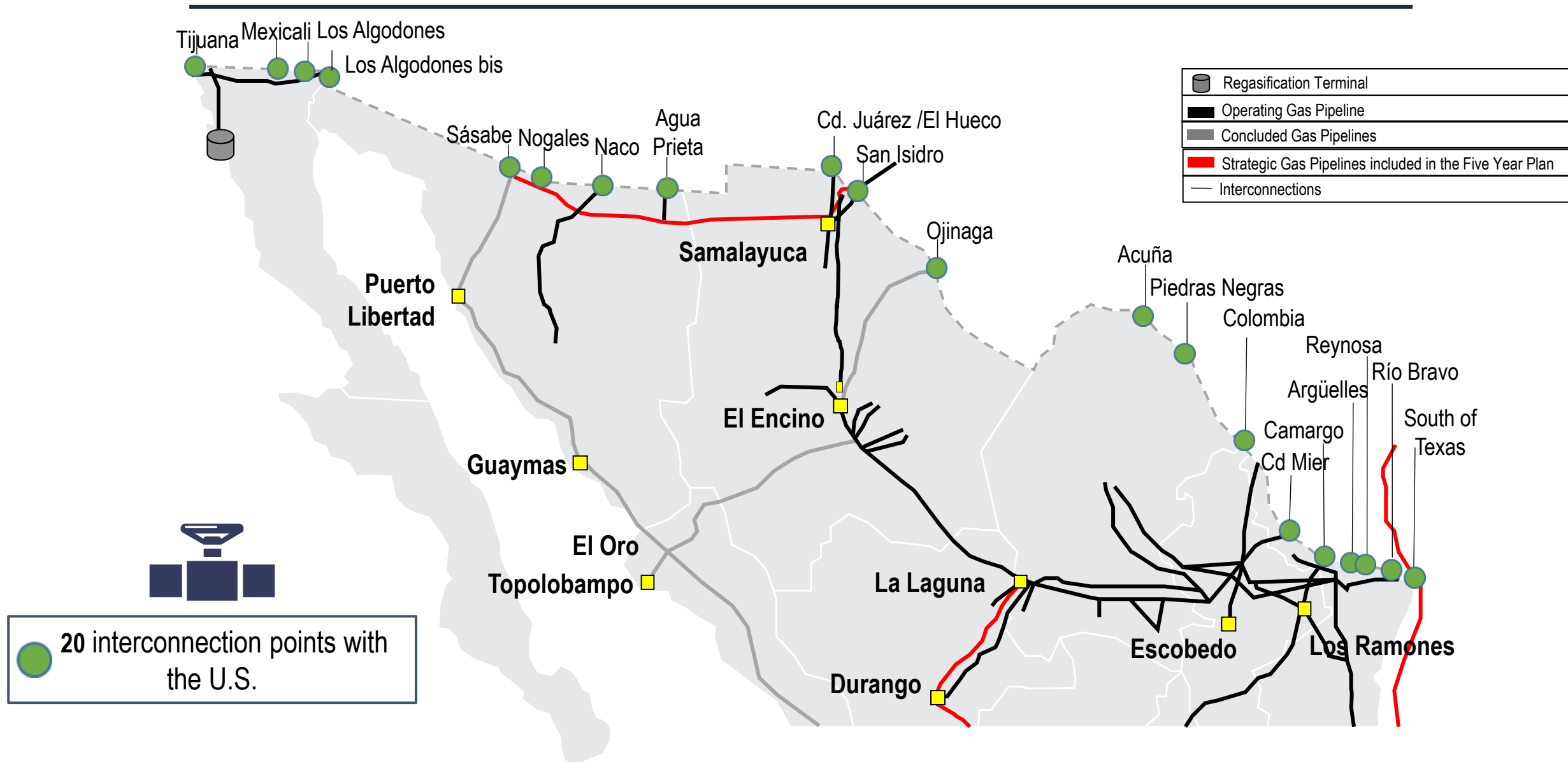
Estimate:
Shortage of natural gas reduced the GDP annual growth rate by 0.28 percentage points in the second quarter of 2013



BANCO DE MÉXICO



Natural Gas Integration Between Mexico and the U.S.



Geographic Areas of Natural Gas Distribution*

Total
investment**

1,847
Million dollars

Pipeline
network

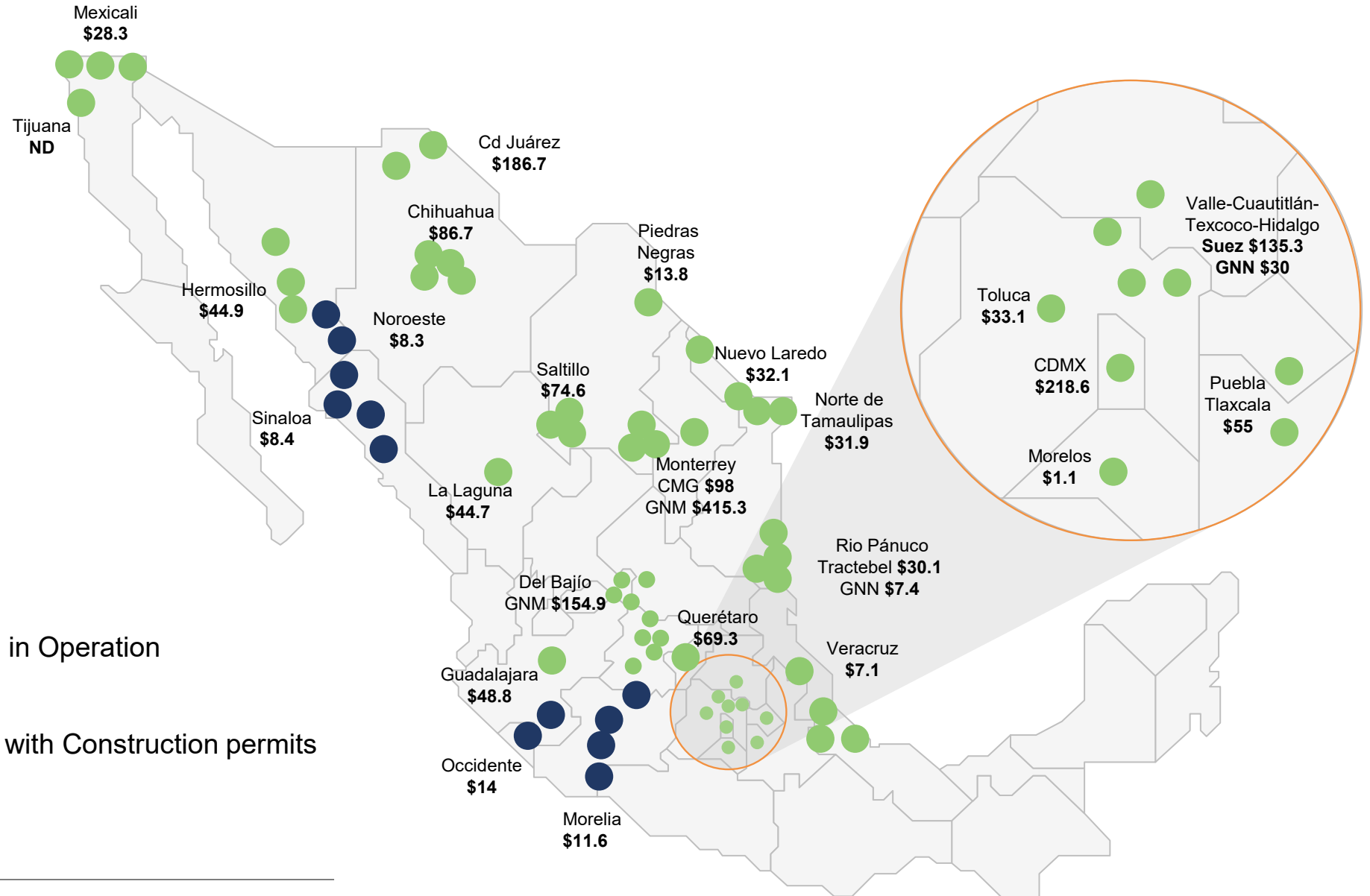
52,818
kilometers



Geographic Areas in Operation



Geographic Areas with Construction permits

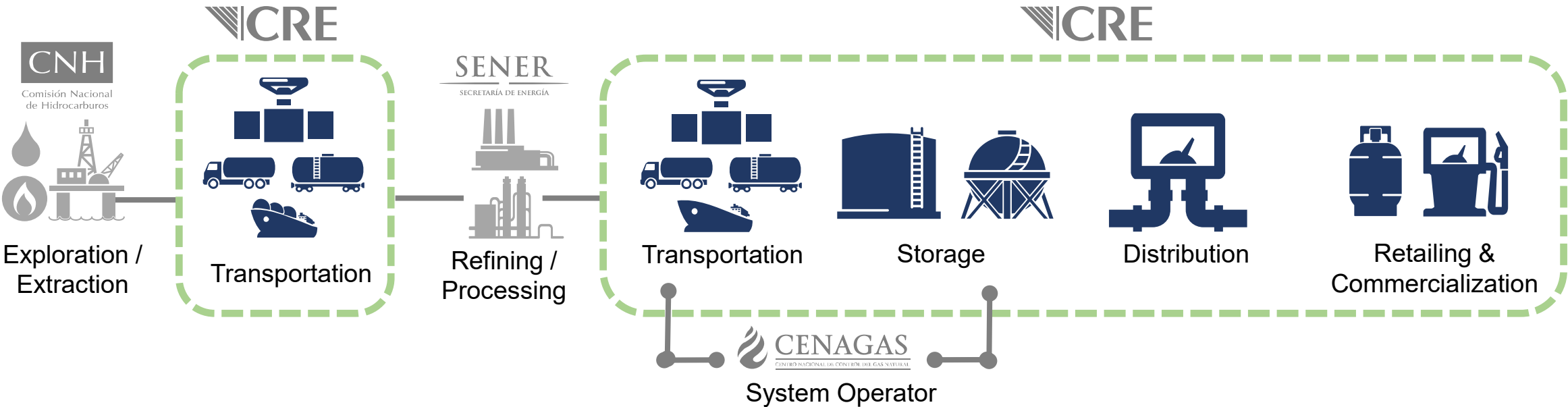


*/ Units in million dollars (USD)

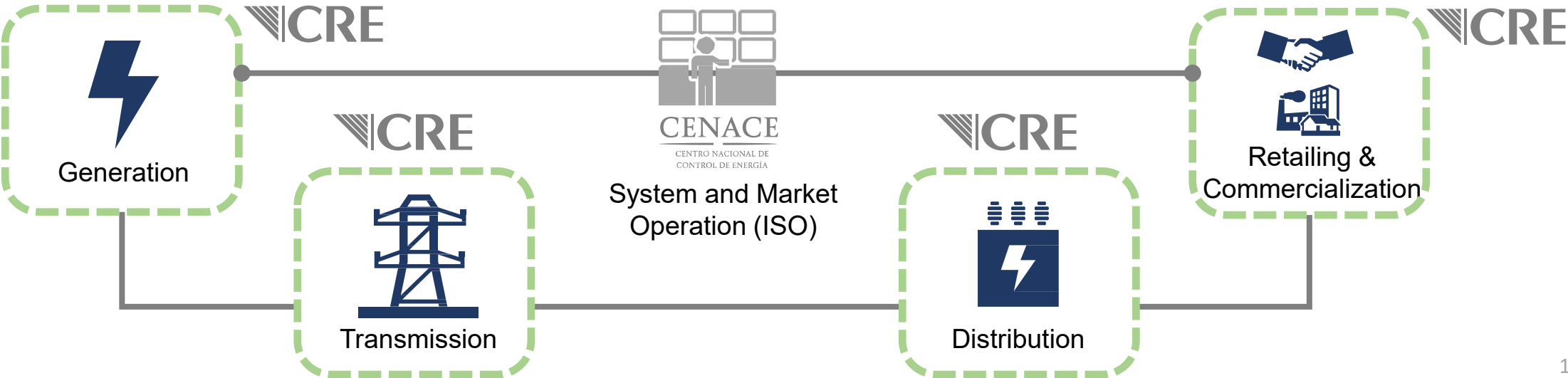
**/ Investment corresponds to Geographic Areas in Operation. Geographic Areas with Construction permits estimate an investment of 42.3 million dollars.

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

Hydrocarbons



Electricity



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.



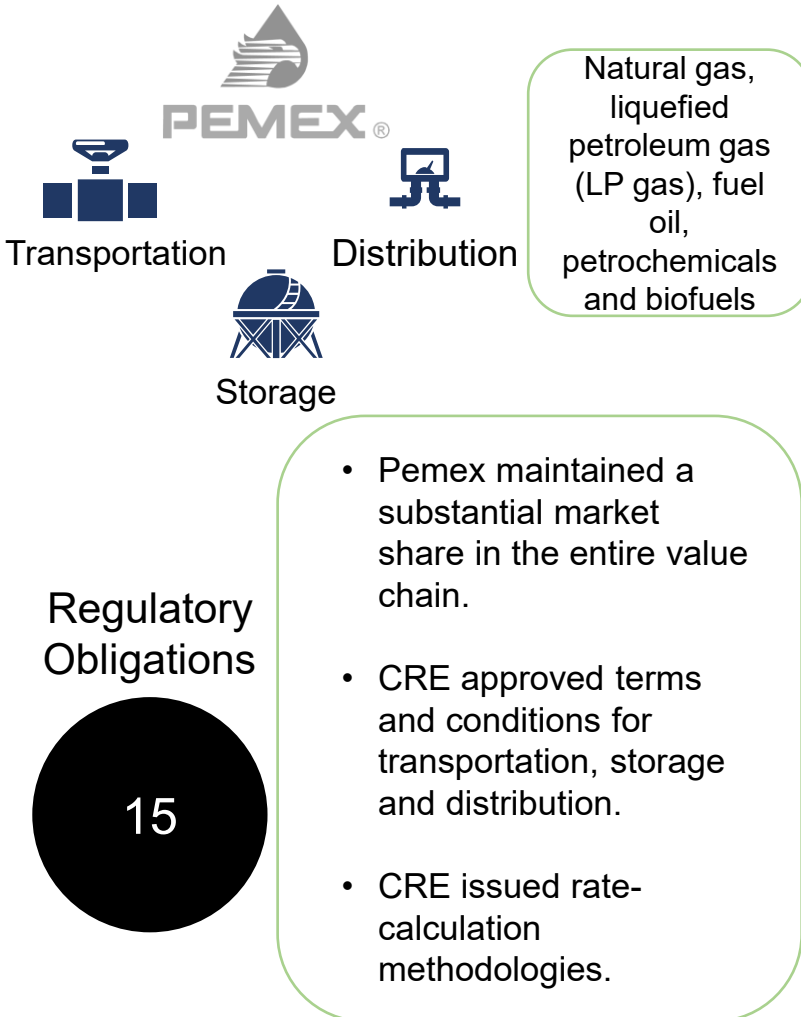
NERC

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

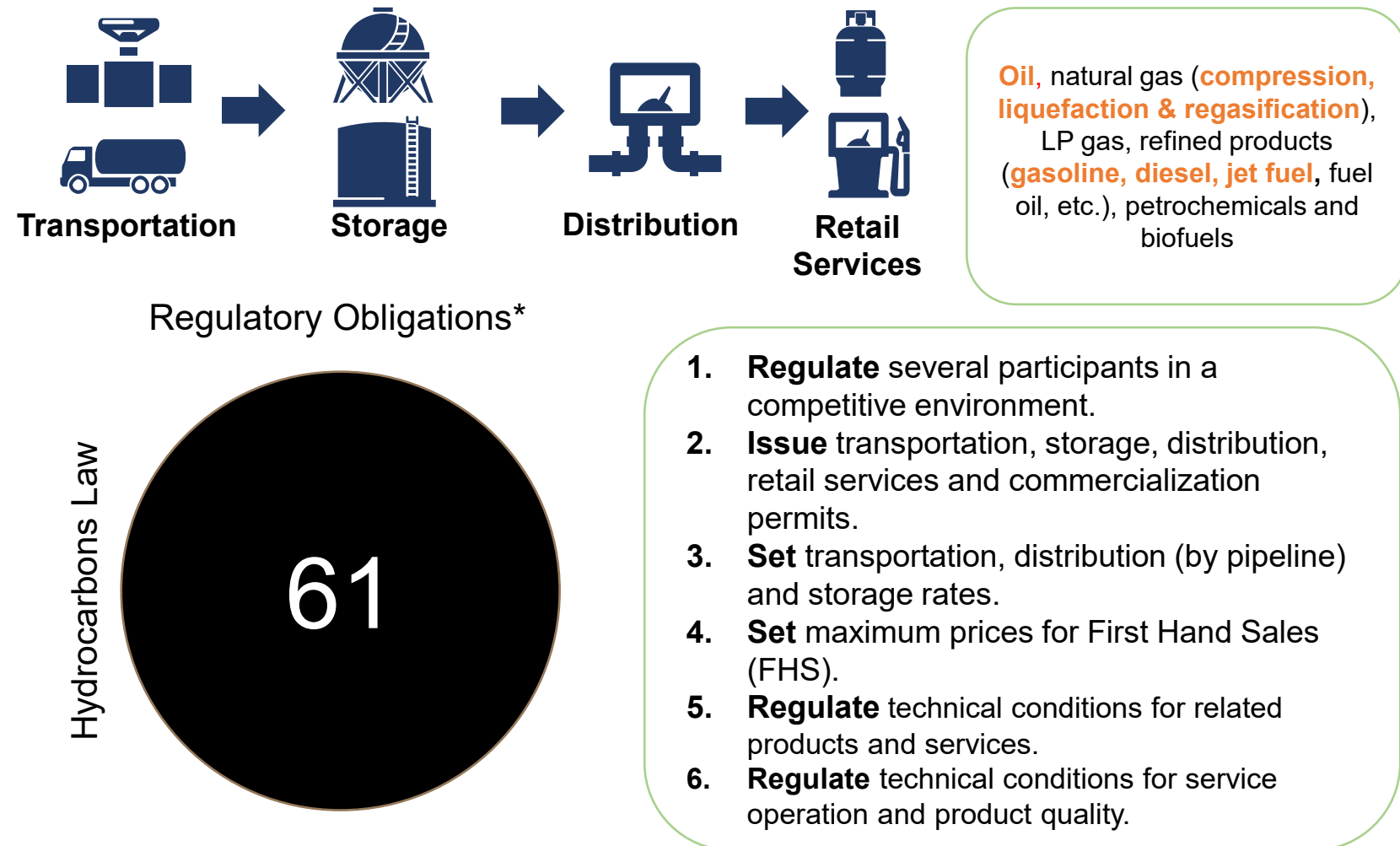
"Mexico's Grid Code includes 10 NERC standards in the Baja California Region"

CRE's regulatory powers in the hydrocarbons sector

Monopolistic Industry Model (1995/2008-2012)



Open Industry Model (2013/2014 - onwards)



* The Energy Regulatory Agencies' Law comprises 54 additional regulatory obligations.

The 2013 energy reform laid the foundations for an open and competitive natural gas market



- 1. Enhance**
natural gas
availability
throughout the
country



- 2. Separate**
pipeline transportation
from natural gas
commercialization



- 3. Establish**
non-discriminatory open
access and pipeline
capacity reserve
conditions

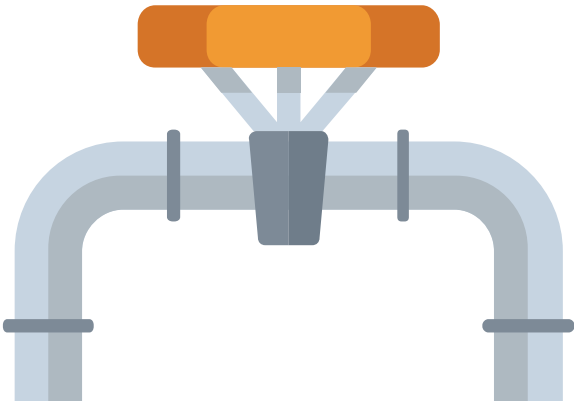


- 4. Issue**
asymmetric regulation
for high market
concentration and in
case of price
distortions)



- 5. Publish**
volumes, prices, discounts,
locations and trade information
for retailing and
commercialization

On June 2nd, 2016, **CRE simplified processes**, by exempting from conducting open seasons to applicants for natural gas pipeline permits , when the development of the project:

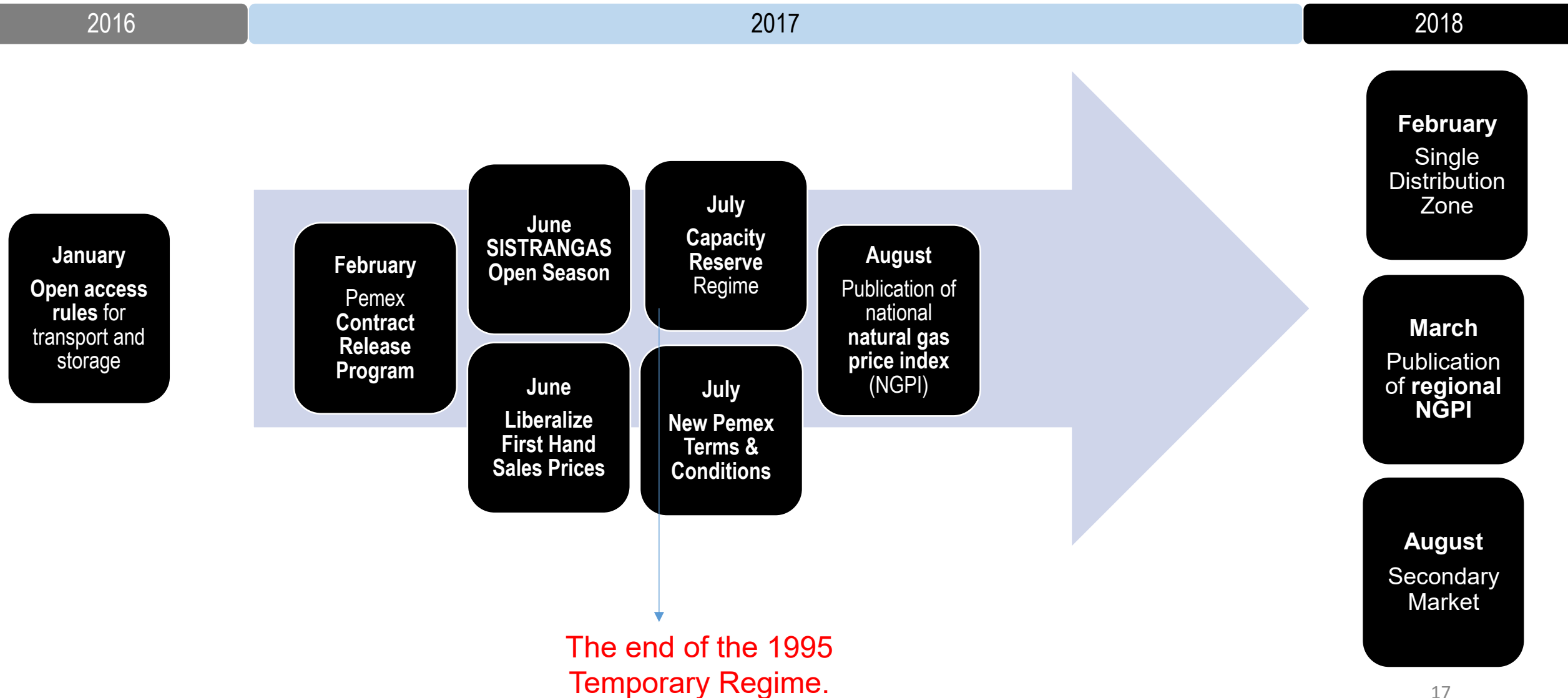


- 1** Doesn't exceed
a 1000 meters
length;

- 2** It is not located
in an industrial
park; or

- 3** There are no
potential users
interested.

During 2016, 2017 and 2018, the Commission made strategic decisions in order to enhance the competitiveness and robustness of the natural gas market.



February '17

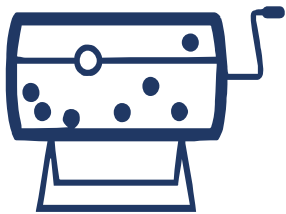
Pemex
Contract
Release
Program

Gas Contract Release Program (February, 2017)

The 70% that
will be subject
to assignment
is chosen

The 30% that
stays with
Pemex is
chosen

Public Act



Feb 1st, Pemex transferred around 30% of total volume.

All users were able to:



Accept offers from third-party
marketers and sign contracts
with the one they choose
from the start of the Program



Stay
with Pemex
(permanence
format)

All marketers were be able to:



Offer conditions at least
equal to those currently
agreed with Pemex



Search &
Negotiate
with users

Pemex had to:



Freeze Current
Conditions



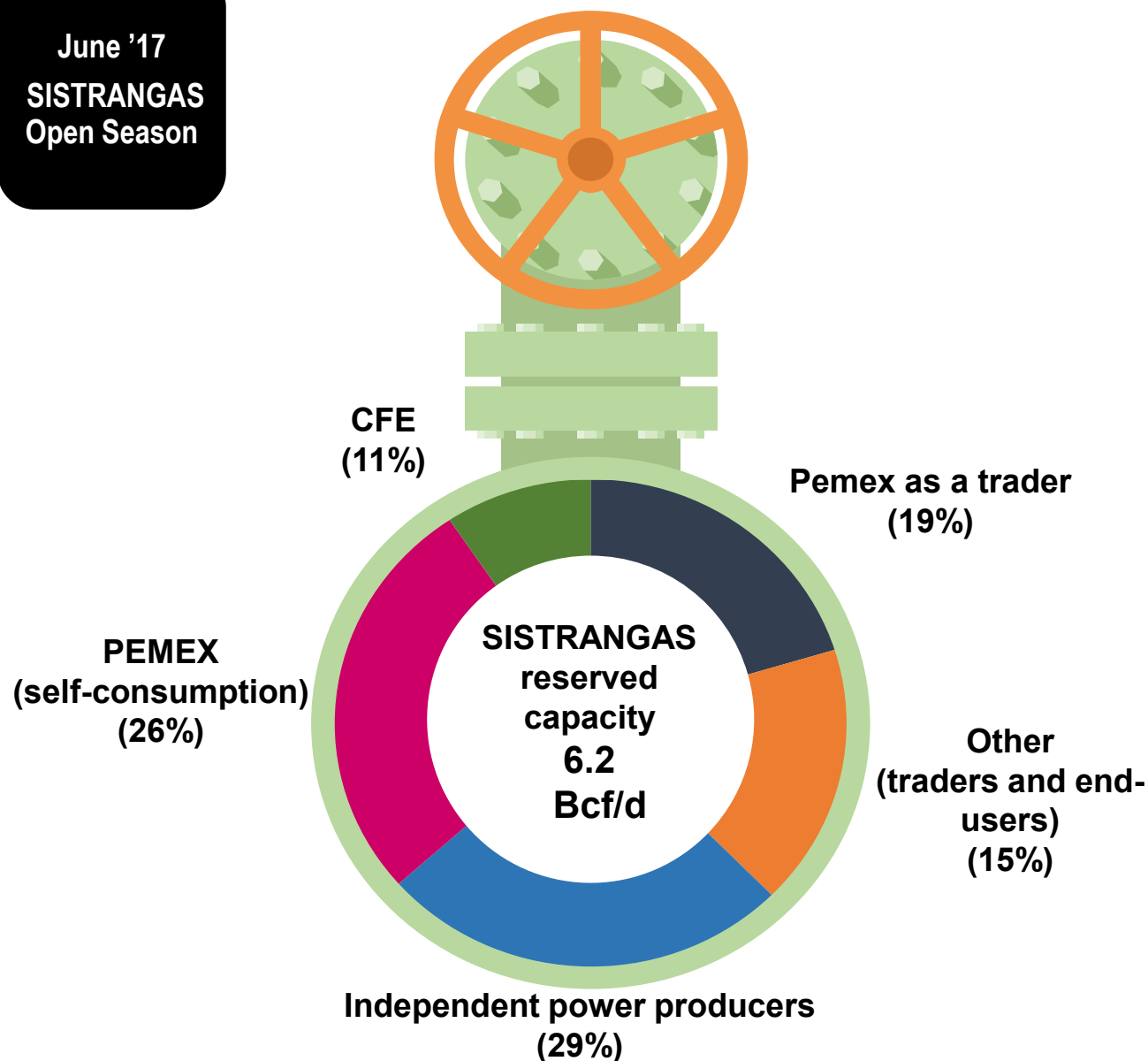
Establish a non-
onerous exit clause in
all your contracts



Have a standard
marketing contract

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

June '17
SISTRANGAS
Open Season



- ✓ 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 2017, **Pemex released 32.16% of its total trading volume** associated to its client portfolio

The elimination of Ciudad Pemex price contributed to the mitigation of gas shortages in the south of the country and generated conditions for increased supply by new agents in the region

June '17
Liberalize
First Hand
Sales Prices



Alternative sources of gas

Short term



LNG physical swap with the Center region: PEMEX is reducing the injection of gas produced in the South to the Center of the Country, compensating this with more LNG imports to the Center region.



Domestic production by agents different from PEMEX: as a result of CNH rounds, there are 23 producers different from Pemex, 12 of whom are in the South region (some are already producing).

Medium term



Modifying SISTRANGAS flows so that imported gas can flow all the way to the South (6-12 months implementation)



Supply by land of **liquified** or **compressed natural gas**



Additional production resulting from future CNH Rounds and increased PEMEX production resulting from higher first-hand sales prices

CRE approved the beginning of the Capacity Reserve Regime and of the new Terms and Conditions for PEMEX sales on July 1st, 2017 (price was free but T&C were kept regulated)

July '17
Capacity
Reserve
Regime

July '17
New Pemex
Terms &
Conditions

Benefits



The separation of natural gas molecule sales and transportation was completed, essential element of the Energy Reform



Alternative sources of natural gas are being promoted



More opportunities are being created for the participation of agents different from PEMEX

The beginning of the Capacity Reserve Regime was successful, without any interruption of supply across the country and with interesting results in terms of competition already becoming evident.

On August 2017 CRE started publishing the National Natural Gas Price Index (NGPI) and on March 20 2018, the NGPI for six regions.

August '17

Publication of
national
natural gas
price index
(NGPI)

March '18

Publication
of regional
NGPI

The NGPI is an average weighted by volume price, that includes the monthly sales reported by gas traders in the Mexican market. **It reflects the invoiced prices in the previous month.**



National and regional indexes built from the information monthly reported by traders of Natural Gas



It is a non mandatory **reference price**



The methodology is based on the **best international practices**

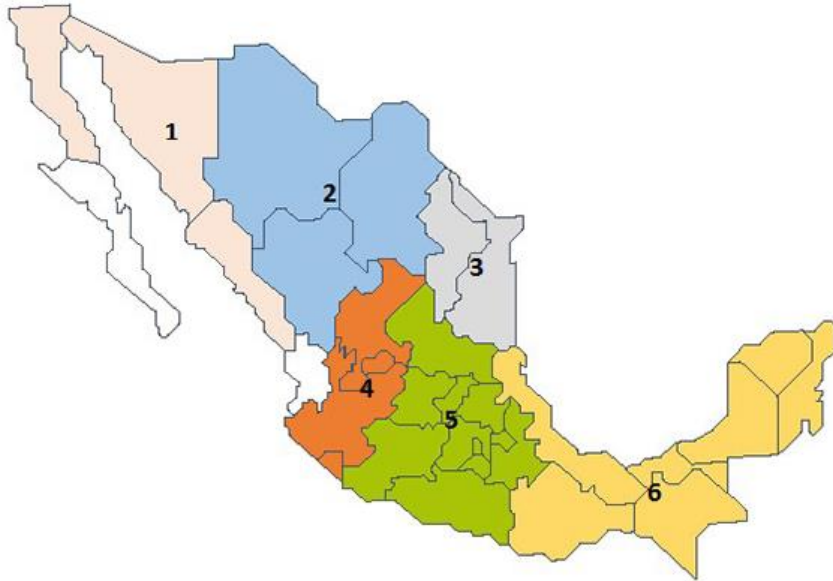
Vision of the future



Indexes published by the Commission will be transitory.
In the future, it is expected that the private agencies will be able to provide price indexes

National and Regional Price Index

CRE Pricing Regions for Natural Gas



Region	States
Region 1	Baja California, Sonora and Sinaloa
Region 2	Chihuahua, Coahuila and Durango
Region 3	Nuevo León and Tamaulipas
Region 4	Aguascalientes, Colima, Jalisco and Zacatecas
Region 5	Mexico City (Federal District) Estado de México, Hidalgo, Guanajuato, Guerrero, Michoacán, Morelos, Puebla Querétaro, San Luis Potosí, and Tlaxcala
Region 6	Campeche, Chiapas, Oaxaca, Quintana Roo, Tabasco, Veracruz and Yucatán

Source: Comisión Reguladora de Energía

GOBIERNO DE MÉXICO									
Trámites Gobierno									
Tipo	Año	Mes	Índice (MXN/GJ)	Índice (USD/MBtu)	Tipo de cambio	Número de Comercializadores	Transacciones reportadas	Transacciones atípicas	Volumen comercializado total (GJ)
IPGN	2023	Agosto	53.5774	3.3318	16.966	28	350	9	231380727.90
Región I	2023	Agosto	69.7864	4.3398	16.966	9	36	1	46616699.80
Región II	2023	Agosto	45.7411	2.8445	16.966	10	50	2	28646850.60
Región III	2023	Agosto	48.6789	3.0272	16.966	12	44	2	45244145.00
Región IV	2023	Agosto	45.0100	2.7990	16.966	12	45	1	18564790.70
Región V	2023	Agosto	53.5197	3.3282	16.966	17	146	6	68984127.50
Región VI	2023	Agosto	49.3698	3.0701	16.966	8	29	1	23324114.40

Exportar a excel

Mostrando del 1 al 7 de 7 registros

Anterior 1 Siguiente

[Nota Metodológica](#)

- El índice nacional hace referencia al Índice de Referencia Nacional de Precios de Gas Natural al Mayoreo (IPGN).
- Por transacción, se deberá entender el reporte mensual que remite el comercializador respecto a su volumen y precio promedio facturados de sus ventas mensuales.
- Las transacciones atípicas son aquellas que tienen datos de precio y/o volumen que se encuentren tres desviaciones estándar separados del promedio de los datos reportados.
- Región I:** Baja California, Sonora, y Sinaloa; **Región II:** Chihuahua, Coahuila y Durango; **Región III:** Nuevo León y Tamaulipas; **Región IV:** Aguascalientes, Colima, Jalisco y Zacatecas; **Región V:** Ciudad de México, Estado de México, Hidalgo, Guanajuato, Guerrero, Michoacán, Morelos, Puebla, Querétaro, San Luis Potosí y Tlaxcala; **Región VI:** Campeche, Chiapas, Oaxaca, Quintana Roo, Tabasco, Veracruz y Yucatán.
- El 22 de marzo de 2018, la Comisión Reguladora de Energía, actualiza la información de febrero de 2018, con información adicional reportada por los comercializadores.

In February 2018, the Commission established the whole territory as a Single Distribution Zone

February '18

Single
Distribution
Zone



Licenses for local distribution **do not grant any kind of exclusiveness to permit holders**, so the coexistence of several distributors at the same region is allowed.



Flexibility is granted to the development of the distribution activity, according to the natural growth of the demand.



Geographical zones that still have **exclusivity are temporarily preserved**, until it expires.



Competition is promoted in order to increase service quality of natural gas supply.



Distinction between transportation and distribution systems based on the pipeline pressure threshold of 21 Kg/cm²

In August 2018 the Commission approved changes to the regulation of the secondary market of capacity and to simplify open seasons procedures, applicable to all permit holders

Secondary market

August '18
Secondary
Market



Users will have more freedom with the capacity release, since **they will be able to freely agree based on market conditions** without intervention of the permit holder



The interests of the permit holder are protected because **the income from its tariff is granted as established on the original contract**



The option to **release capacity through the permit holder is maintained**

Open seasons



The proposal to **simplify the Open Seasons Process** includes:

- The approval of a general simplified standardized process of the Terms and Conditions applicable to all permits
- In case there aren't any changes to the process approved to make an Open Season, **a notification to the Commission prior to the open season will be enough to conduct the process**
- **The development of a web platform** to show all Open Seasons

Some Favorable Results of the 2013 Reform and Subsequent Regulation



Natural Gas Transportation Infrastructure in Mexico

- ✓ The country's gas pipeline network grew by more than 60% compared to 2012.



Capacity reservation at Sistrangas

- ✓ More than 40% of the transport capacity in SISTRANGAS came to be reserved by agents other than Pemex and CFE (marketers, PIE and other end users).



Marketing

- ✓ The number of marketers reporting business transactions has grown:
 - 14 July 2017
 - 28 August 2023
- ✓ The number of reported transactions has grown:
 - 101 in July 2017
 - 350 in August 2023

Pipelines renegotiation: good for everybody

 **REUTERS**

WorldBusinessMarketsBreakingviewsVideoMore

COMMODITIESAUGUST 27, 2019 / 7:18 AM / UPDATED 4 YEARS AGO

Mexico expects to save \$4.5 billion after pushing firms to rework pipeline contracts

By Dave Graham5 MIN READf

MEXICO CITY (Reuters) - Mexico's government said on Tuesday it had persuaded companies to waive "significant" profits from natural gas pipeline deals signed under the previous administration after renegotiating the contracts to save taxpayers \$4.5 billion.



Mexico's President Andres Manuel Lopez Obrador (C), Mexico's Finance Minister Arturo Herrera (L), Federal Electricity Commission (CFE) Manuel Bartlett, Mexican tycoon Carlos Slim (2nd R) and Business Coordinating Council (CCE) Carlos Salazar applaud after reaching a deal with companies to renegotiate the terms of natural gas pipeline contracts signed under the previous administration, at National Palace in Mexico City, Mexico August 27, 2019. Press Office Andres Manuel Lopez Obrador/Handout via REUTERS

Regulatory decisions against open access and competition in commercialization

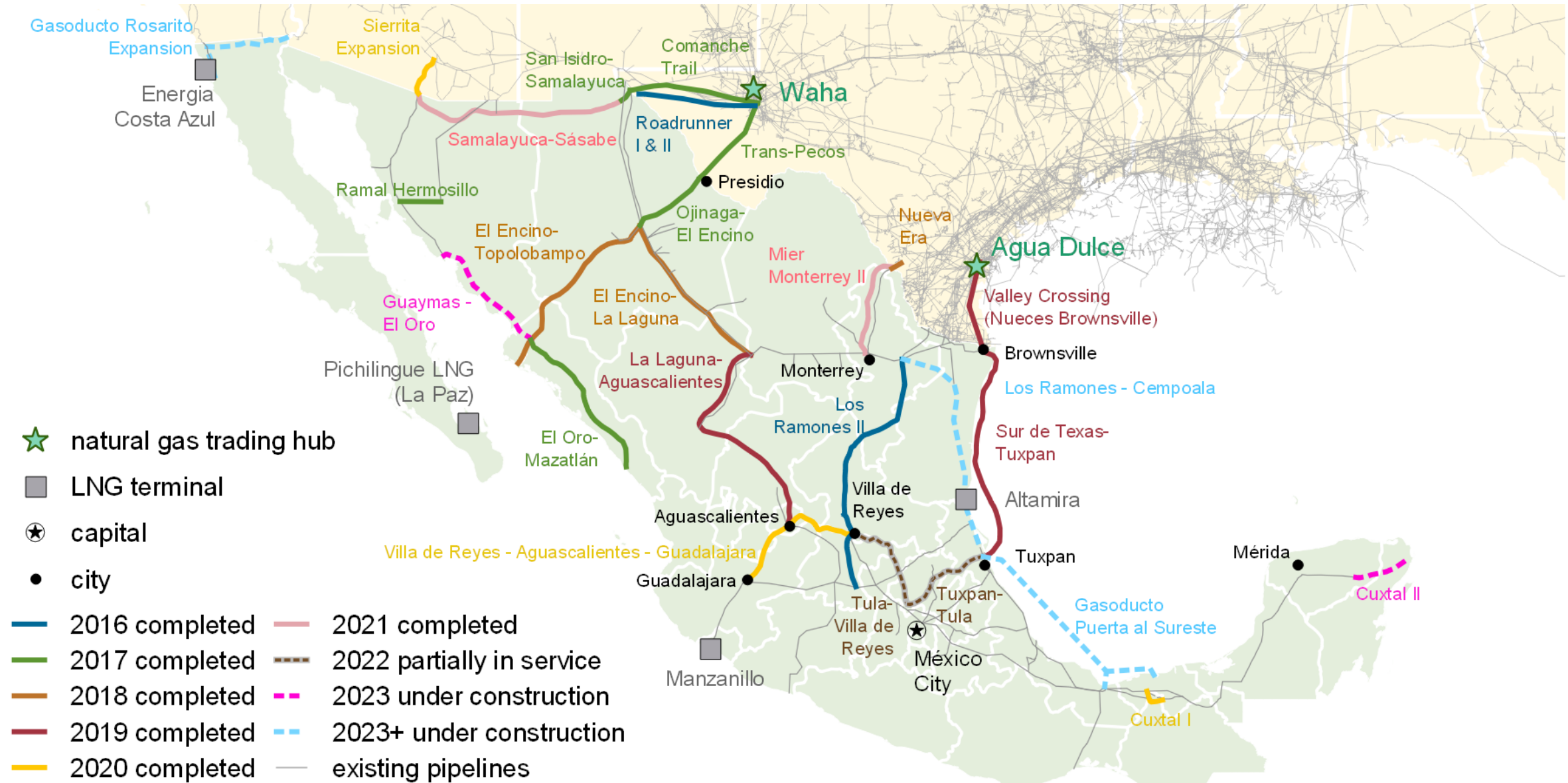
- CRE RES/163/2022, issued on February 4, 2022
 - It eliminates the restriction previously imposed on Pemex and CFE to use capacity allocated in the EPE Round for natural gas marketing activities.
- Official Letter SENER.100/195/2022, issued by SENER on June 13, 2022
 - It establishes that natural gas users, in order to have the transport service through SISTRANGAS, must prove a gas purchase contract with Pemex or CFE. Was declared unconstitutional by the Supreme Court.
- In response to these decisions, various mechanisms have been activated to challenge the regulation:

Multiple Indirect
Amparos

Constitutional
Controversy filed by
COFECE

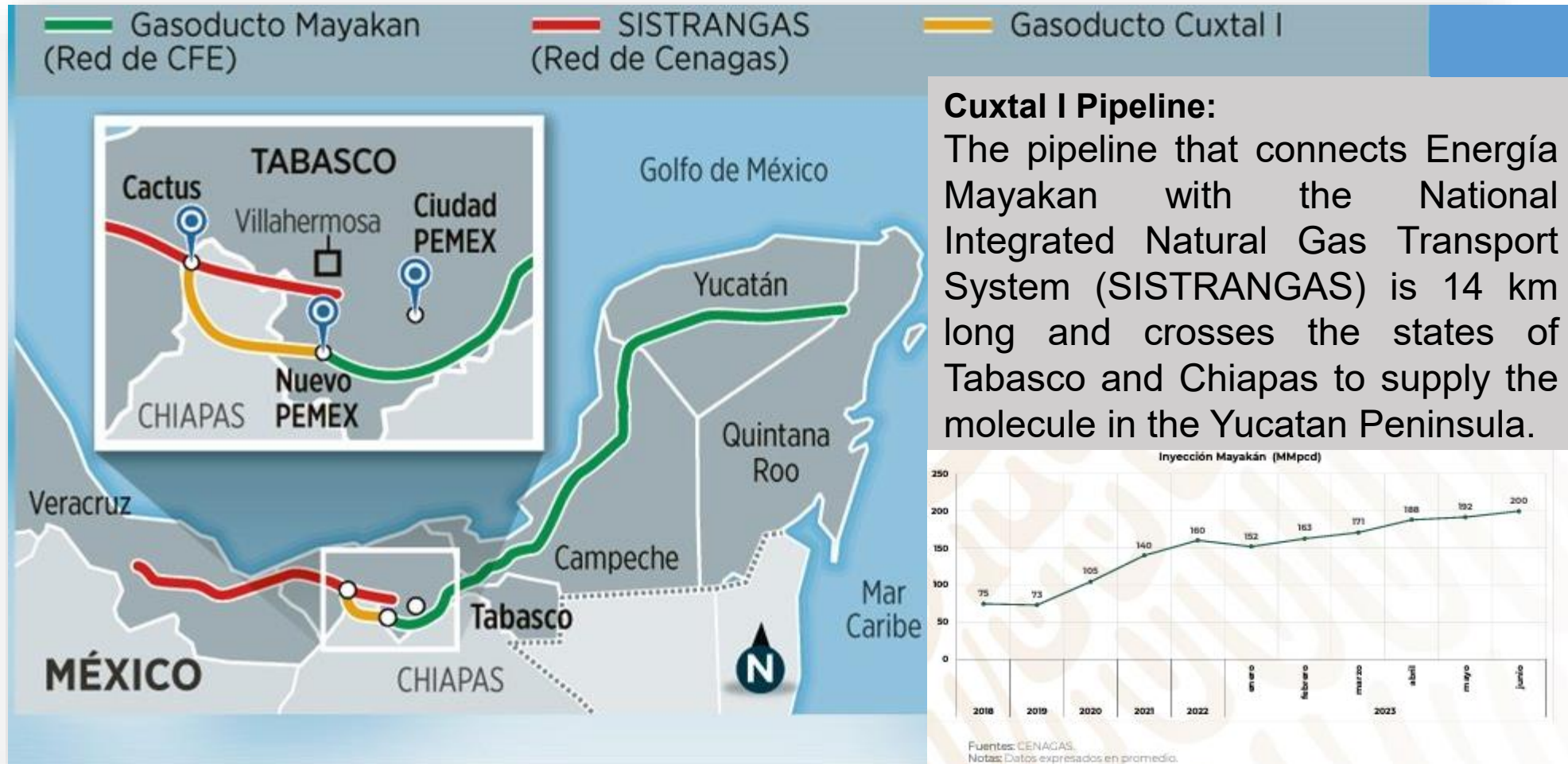
USMCA Consultation
Request

Natural gas infrastructure (2023)



Source: EIA, <https://www.eia.gov/todayinenergy/detail.php?id=60120>

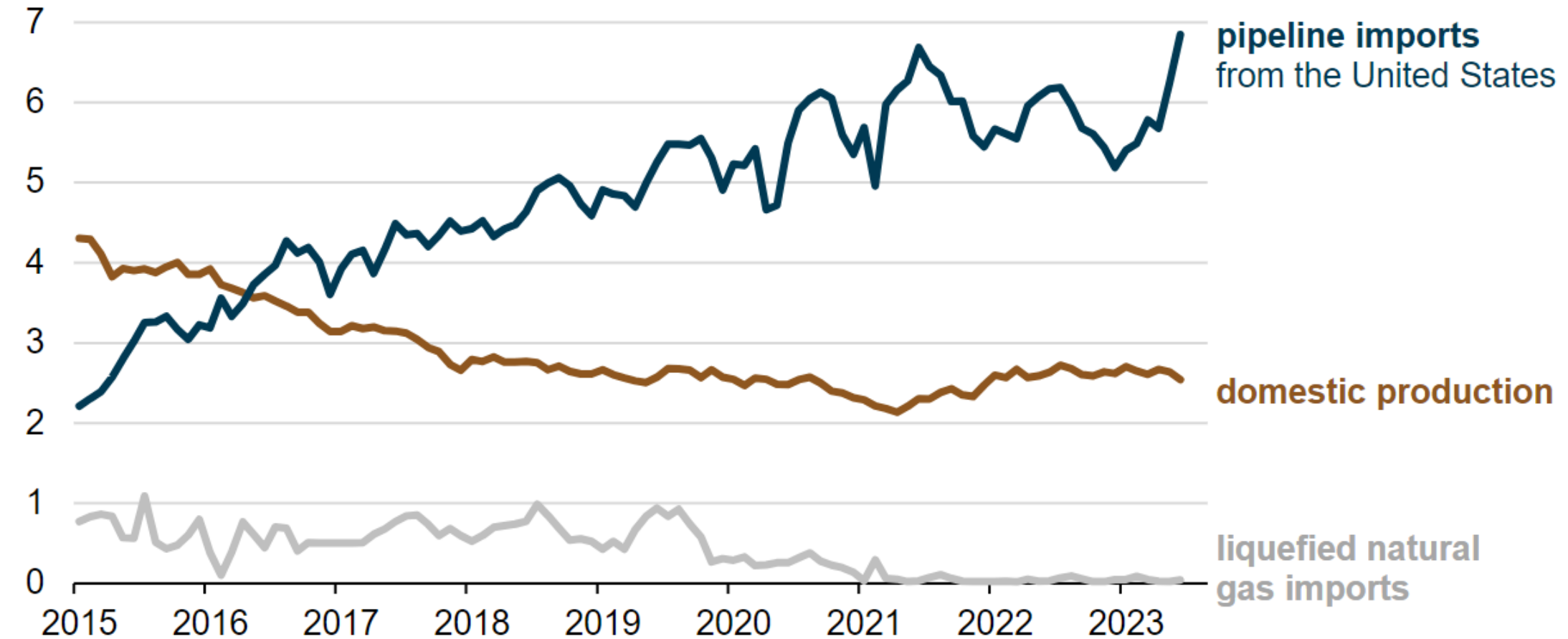
Making New Connections



Production and imports (2015-2023)

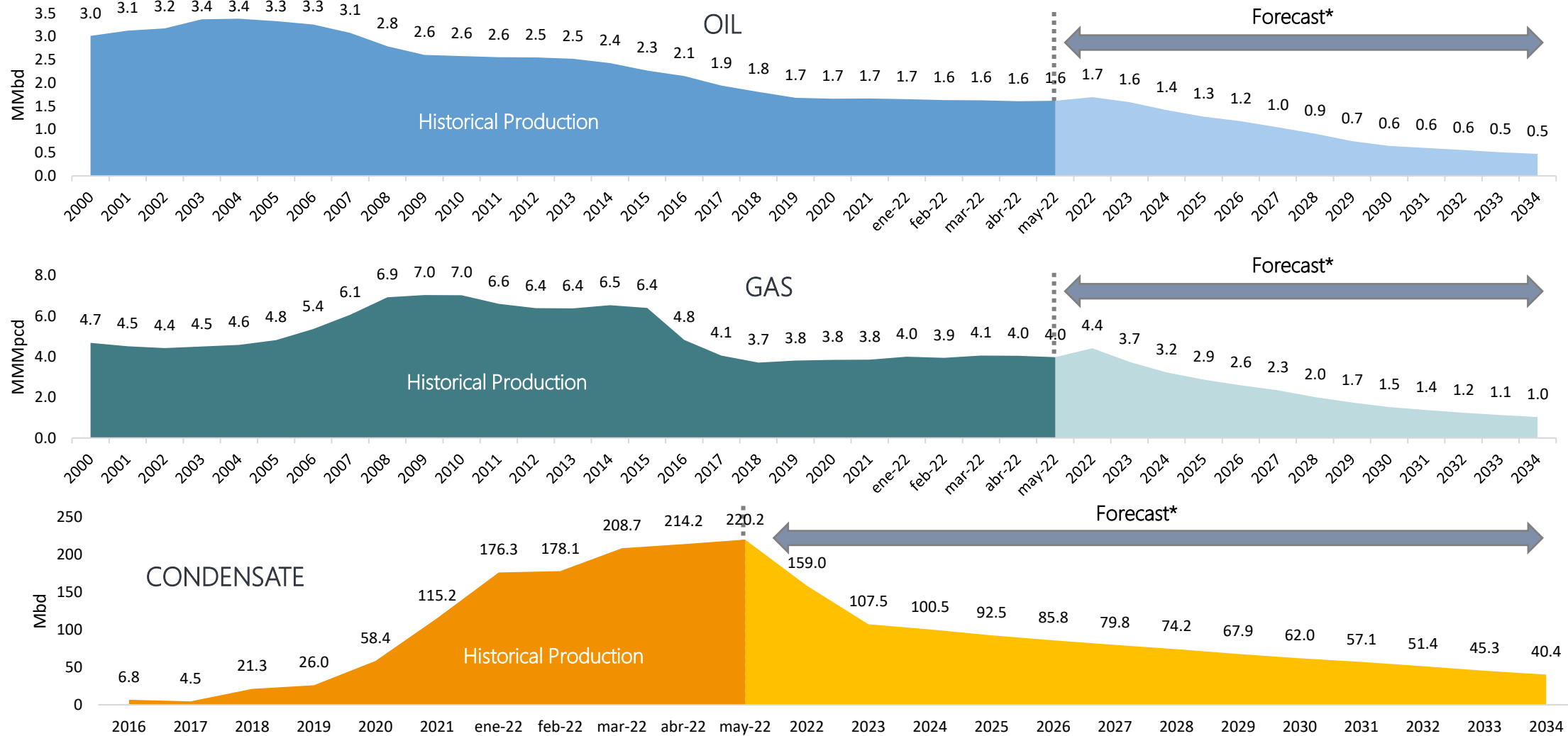
Mexico monthly natural gas supply by disposition (Jan 2015–Jun 2023)

billion cubic feet per day (Bcf/d)



Data source: Wood Mackenzie

Mexico production performance (2000-2022) and forecast* (2022-2034)



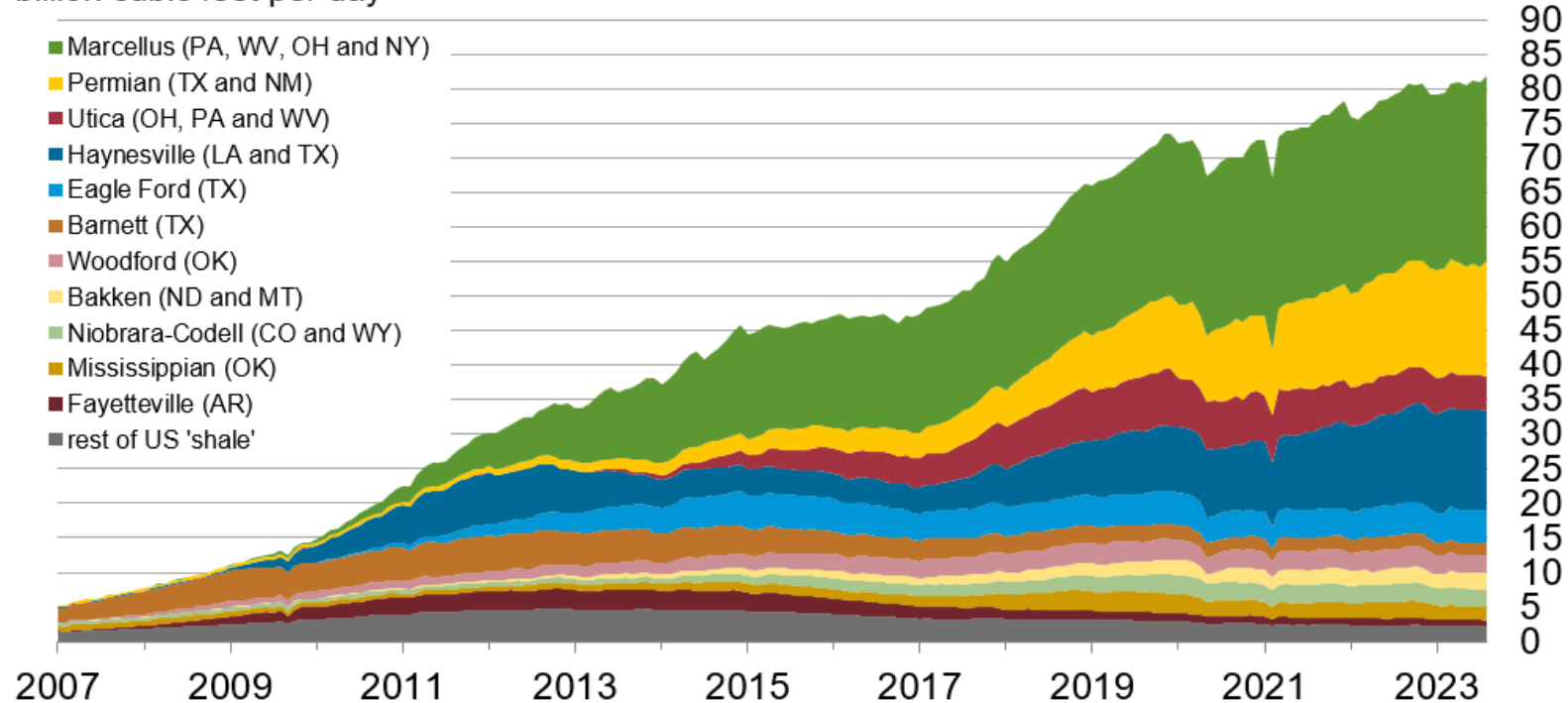
*Pronósticos con base en Planes de Desarrollo Aprobados

Unidades: Millones de barriles diarios (MMbbl)/Miles de Millones de pies cúbicos diarios (MMMpcd)/Miles de barriles diarios (Mbd).

Sistema de información de Hidrocarburos - <https://sih.hidrocarburos.gob.mx/>

Meanwhile, the U.S. natural gas production is growing

Monthly dry shale gas production billion cubic feet per day



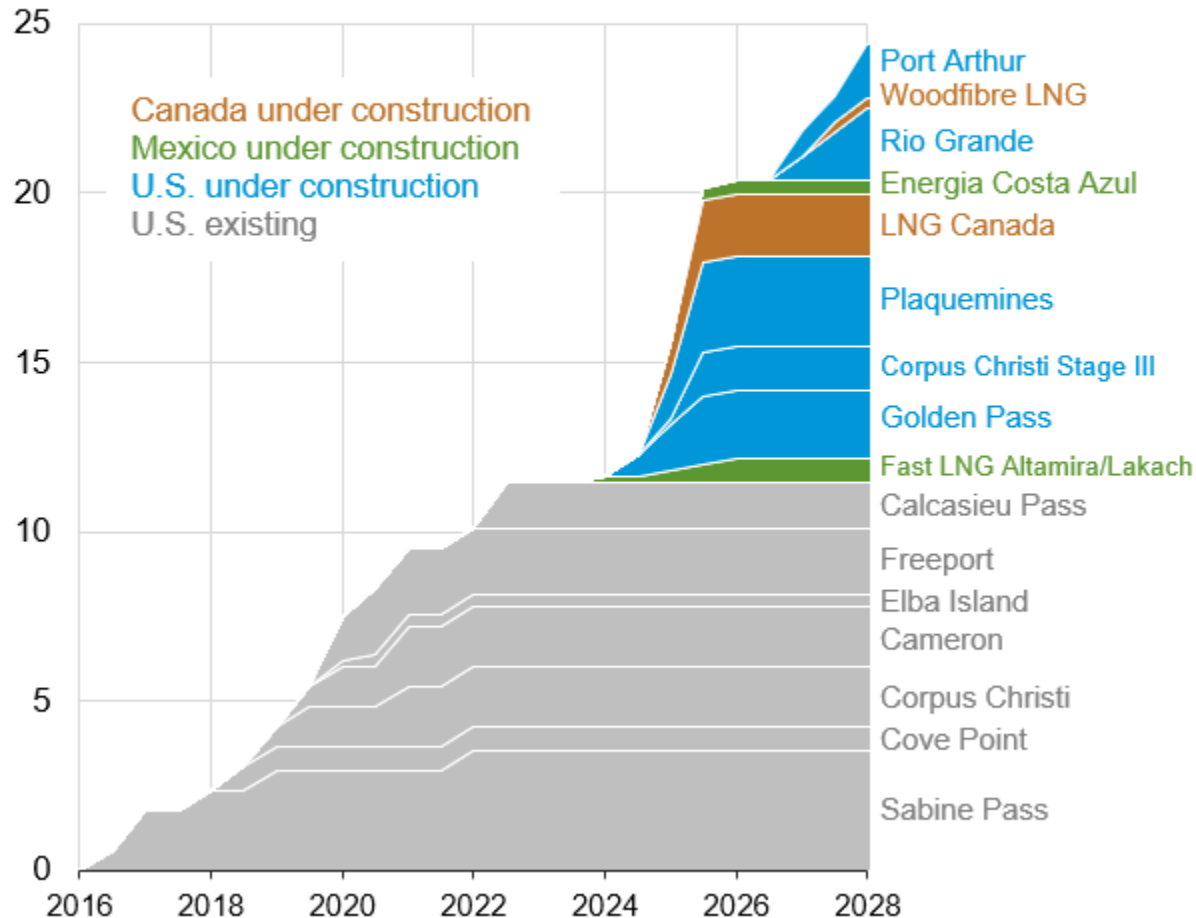
Data source: Enverus

Note: EIA derived these tight oil estimates from Enverus state administrative data. Data are through August 2023. These data are not survey data. State abbreviations indicate the primary states where the plays are located. In addition, EIA has improved its play and well identification methods, which has altered production volumes at various plays and has shifted classification of some wells from tight to other non-tight categories. Because EIA has changed the geologic model it uses to determine formation-level production of the three main oil-producing formations in the Permian Basin—Wolfcamp, Spraberry, and Bonespring—current and historical volume estimates have changed.

PA=Pennsylvania, WV=West Virginia, OH=Ohio, NY=New York, TX=Texas, NM=New Mexico, LA=Louisiana, OK=Oklahoma, ND=North Dakota, MT=Montana, CO=Colorado, WY=Wyoming, AR=Arkansas

LNG Exports of U.S. natural gas, more integration

North America liquefied natural gas export capacity by project—existing and under construction (2016–2027)
billion cubic feet per day



Source: <https://www.eia.gov/naturalgas/weekly/#itn-tabs-0>

Mexico. Three projects with a combined LNG export capacity of 1.1 Bcf/d are currently under construction.

- Fast LNG Altamira consists of three units, each with a capacity to liquefy up to 0.18 Bcf/d. The first unit will be located offshore and the other two units will be installed onshore at the Altamira LNG regasification terminal. These units will be supplied by natural gas from the United States delivered via the Sur de Texas-Tuxpan pipeline. The first LNG exports from the offshore unit are expected in December 2023, and LNG exports from the onshore units are expected in 2025.
- The Fast LNG Lakach unit (capacity 0.18 Bcf/d) will be installed offshore of Veracruz, Mexico, at the nearby Lakach natural gas field. First LNG exports are expected in 2026.
- The Energia Costa Azul LNG export terminal is located at the site of the existing LNG regasification terminal in Baja California, western Mexico. The LNG export capacity will be 0.4 Bcf/d for Phase 1 (under construction) and 1.6 Bcf/d for Phase 2 (proposed). The export terminal will be supplied with natural gas from the Permian Basin in the United States.

LNG Exports of U.S. natural gas, more integration

Construction Update

First FLNG unit is installed & has achieved First Gas⁽¹⁸⁾



Our timeline



FID⁽³¹⁾

March 2021



COD⁽¹⁾

December 2023



1.4 MTPA production volume
provides incremental supply
to fulfill downstream needs



**Constructed in less than
½ the time** of traditional
liquefaction projects



**Fastest LNG
development project**
on record

Lakach deep water project (and LNG) failed

Proyecto de perforación en aguas del Golfo se cancela

Pemex y NFE no lograron convenio

8 noviembre, 2023

Por **La Jornada Veracruz**

Agencias

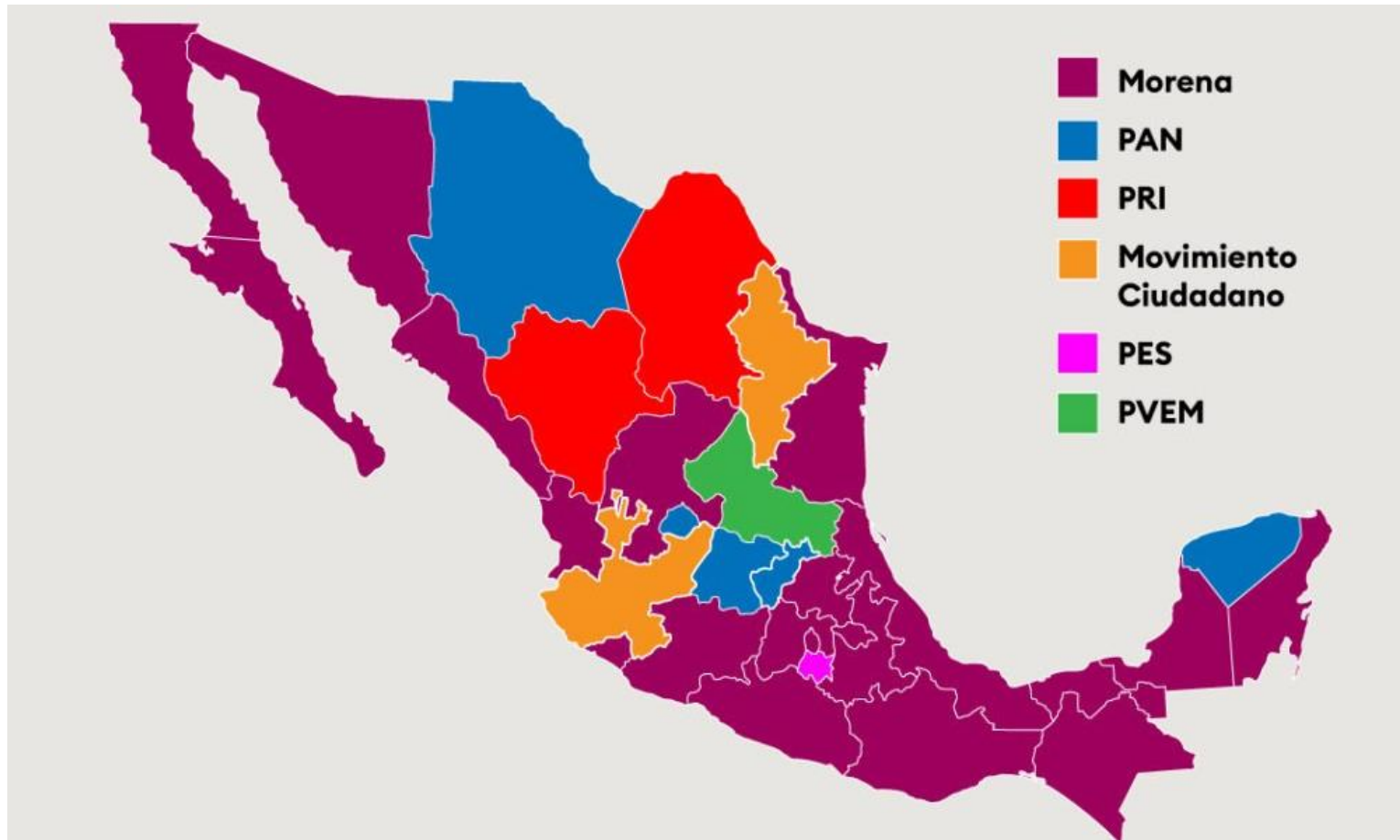


Comparte



The local dimension of public decisions

Mexico's political map
2023



Source: <https://www.forbes.com.mx/un-estado-mas-para-morena-asi-queda-el-mapa-politico-de-mexico-este-2023/>

Public-Private Partnerships (PPP)

E&C Energy & Commerce
54.469 seguidores
5 horas • 🌐

CFE, Carso y Semptra construirán gasoducto entre Sonora y BC

La **Comisión Federal de Electricidad** (CFE), Carso Energy y **Semptra Infraestructura** anunciaron la intención de construir un gasoducto entre Sonora y Baja California.

La alianza busca potencializar a la industria de gas natural en la región noroeste de la República y apoyar la seguridad energética del país.

Sigue leyendo: <https://lnkd.in/e24Vsqrs>

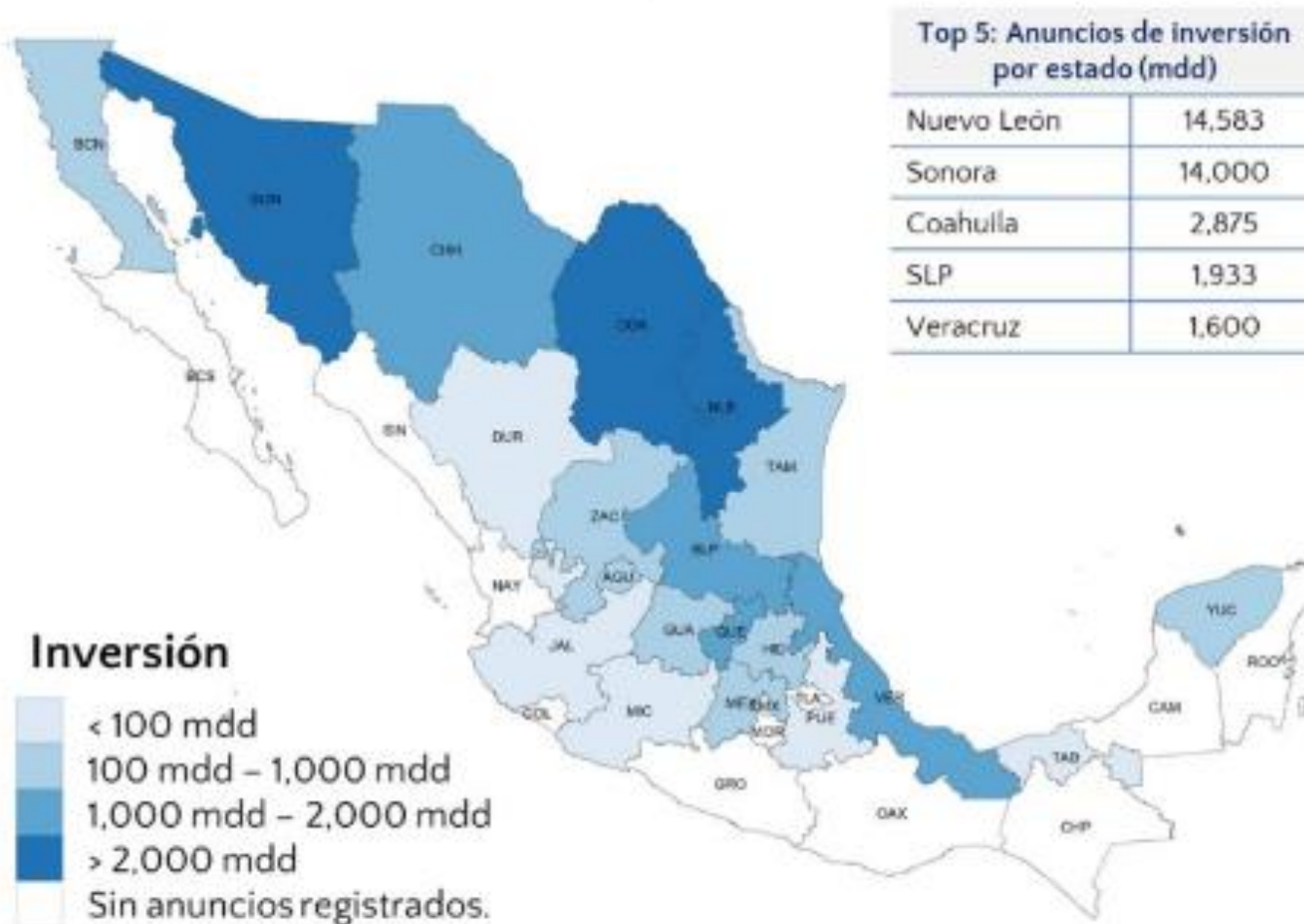
#CFE #CarsoEnergy #SemptraInfraestructura #gasoducto #gasnatural #energynews



Source: https://www.linkedin.com/posts/energyncommerce_cfe-carsoenergy-semprainfraestructura-activity-7031346288428216320-7-H3/?utm_source=share&utm_medium=member_Android, February 14, 2023

Without Natural Gas, Nearshoring Will Be Limited and Regional

Anuncios acumulados de inversión por estado (enero-septiembre (1Q) 2023)



Needs:

- Electricity
- **Natural Gas**
- Water
- Telecommunications (spectrum and fiber optics)
- Communications (roads and rail)
- Human Capital

Friendshoring (Asia) is beating Nearshoring (Mexico)

Percentage of U.S. imports

Country	2017	2023 (Jan-August)	Difference (pp)	Captura %
China	22.0%	14.0%	-8.0	
Mexico	13.0%	15.4%	2.4	29.9%
Vietnam	2.0%	3.6%	1.6	19.6%
Other Asia			4.0	50.5%

70% of the relocation of imports to the U.S. from China took place in Asia, especially Vietnam (Friendshoring).

Fuente: Cálculos propios con base en United States Census.

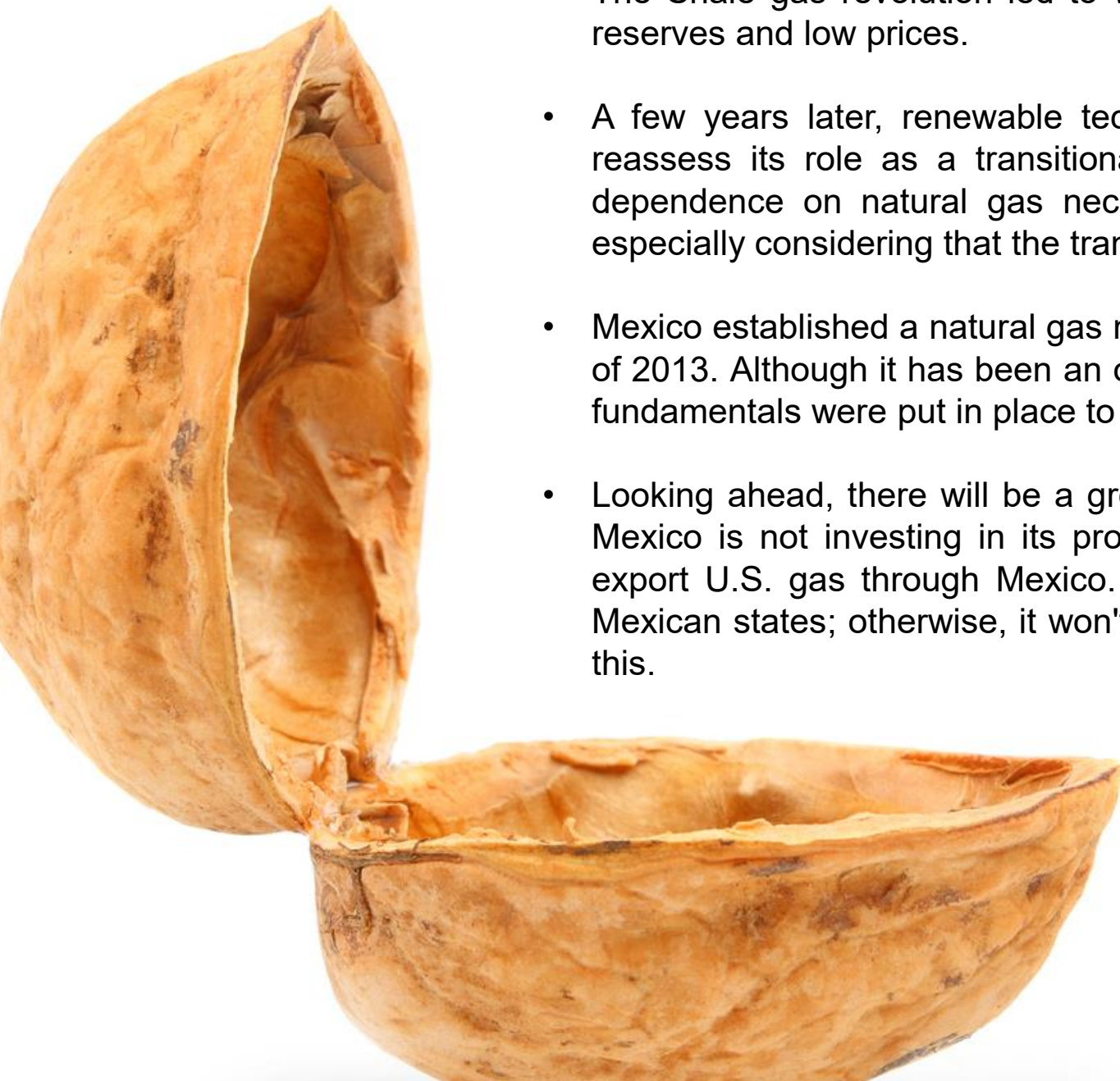
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- The Shale gas revolution led to what was called the golden era of natural gas, with vast reserves and low prices.
- A few years later, renewable technology at low costs emerged, causing natural gas to reassess its role as a transitional fuel. The Russian invasion of Ukraine and Europe's dependence on natural gas necessitated a reevaluation of investments in natural gas, especially considering that the transition is not progressing at the required pace.
- Mexico established a natural gas market starting in 2016, based on the constitutional reform of 2013. Although it has been an open market since 1995, it wasn't until 2016-2018 that the fundamentals were put in place to create a functioning market.
- Looking ahead, there will be a growing reliance on natural gas from the United States, as Mexico is not investing in its production. Additionally, there are projects underway to re-export U.S. gas through Mexico. The opportunity of Nearshoring requires gas in various Mexican states; otherwise, it won't be feasible, and state governments play a crucial role in this.

Natural Gas in Mexico: Past, Present and Future

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