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Mexico's Oil and Gas Sector: Background, Reform Efforts, and Implications for the United States

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Summary

The future of oil and natural gas production in Mexico is of importance for both Mexico's economic growth, as well as for U.S. energy security, a key congressional interest. Mexico is a top trade partner and the third-largest crude oil supplier to the United States. Mexico's state oil company, *Petroleos Mexicanos* (Pemex) remains an important source of government revenue even as it is struggling to counter declining oil production and reserves. Due to an inability to meet rising demand, Mexico has also significantly increased natural gas imports from the United States. Still, gas shortages have hindered the country's economic performance.

On December 20, 2013, Mexican President Enrique Peña Nieto signed historic constitutional reforms related to Mexico's energy sector aimed at reversing oil and gas production declines. On August 11, 2014, secondary laws to implement those reforms officially opened Mexico's oil, natural gas, and power sectors to private investment. As a result, Pemex can now partner with international companies that have the experience and capital required for exploring Mexico's vast deep water and shale resources. Leftist parties and others remain opposed to the reforms.

The energy reforms transform Pemex into a "productive state enterprise" with more autonomy and a lower tax burden than before, but make it subject to competition with private investors. They create different types of contracts for private companies interested in investing in Mexico, including production-sharing and licensing; allow companies to post reserves for accounting purposes; establish a sovereign wealth fund; and create new regulators. In December 2014, the Mexican government announced the terms of part one of Round 1, under which shallow-water offshore exploratory blocks available for public bidding would be auctioned. On July 15, 2015, Mexico's Energy Ministry announced that only 2 of the 14 blocks available were awarded to successful bidders. The government has altered the terms of the second round of bidding on September 30, including lowering the amount of upfront investment required by companies to bid and increasing the size of the blocks available, in order to attract more interest.

The U.S. Congress has legislative and oversight interests in examining the implications of Mexico's oil and natural gas reforms on U.S. hydrocarbon imports and exports, bilateral trade and investment, and economic conditions in Mexico. In December 2013, Congress approved the U.S.-Mexico Transboundary Hydrocarbons Agreement (P.L. 113-67), which aims to facilitate joint development of oil and natural gas in part of the Gulf of Mexico. The 114th Congress is likely to consider legislative proposals to speed up energy infrastructure development, including cross-border natural gas pipelines, as was approved by the House on January 21, 2015 (H.R. 161). Congress may also consider proposals to revise U.S. crude oil export policy. See also CRS Report R43442, *U.S. Crude Oil Export Policy: Background and Considerations*, by Phillip Brown et al.

The opening of Mexico's oil and natural gas sector could expand U.S.-Mexico energy trade and provide opportunities for U.S. companies involved in the hydrocarbons sector, as well as infrastructure and other oil field services. If these reforms accelerate growth and investment in Mexico (as the government has stated), they could also benefit North American competitiveness. Industry analysts maintain that the reforms are generally well-designed, but that the way they are implemented will likely determine their impact. The success of the reforms may also depend on trends in global oil prices. Should oil prices remain at current levels, shale resources and other unconventional fields may not be feasible to develop at this time.

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Introduction

The United States has a strong economic interest in ensuring energy security, bolstering exports, and reducing barriers to U.S. trade and investment. The United States also has a national security and an economic interest in ensuring that Mexico, a key ally and top trade partner with which the United States shares a nearly 2,000 mile border, is economically vibrant and politically stable.[1] U.S.-Mexico energy trade and cooperation plays an important role in achieving those goals. Energy cooperation has become a priority of bilateral economic cooperation under the U.S.-Mexico High Level Economic Dialogue as well as a focus of trilateral research, planning, and coordination among the energy secretaries of the United States, Canada, and Mexico.[2]

U.S. policymakers are closely monitoring the implementation of the December 2013 constitutional reforms and August 2014 implementing laws that, among other things, allow Mexico's *Petroleos Mexicanos* (Pemex) to partner with international companies and other industry entrants to boost Mexican production. Hailed by many analysts as the most significant economic reform undertaken by Mexico since its entrance into the North American Free Trade Agreement (NAFTA) in 1994, the energy reforms are expected to boost investment, growth, and eventually oil and gas production in the country. The reforms also opened Mexico's electricity sector to private generators, although that is not addressed in this report.[3] If power sector reforms can help reduce Mexico's high electricity costs, then Mexico's manufacturing sector—a dynamic sector that is highly integrated with U.S. industry—should become more competitive.[4]

There is a danger, however, that the Mexican government may have oversold the benefits of the reforms. Investors initially appeared to have maintained interest in Mexico's energy sector despite declines in oil prices, but the results of Mexico's first round of public bidding announced in July 2015 proved disappointing.[5] At a House hearing held on July 23, 2015, witnesses cited the limited size and production potential of the blocks offered, the high minimum bid required, and investors' concerns about corruption and insecurity as possible reasons for the lack of interest in the tender.[6] Mexico has sought to assuage those concerns prior to the September 30 bidding round that will include nine large shallow-water production blocks.[7]

This report provides an overview of Pemex and the content and prospects for Mexico's energy reforms, before discussing specific issues facing Mexico's oil and gas industry. It then examines the U.S.-Mexico energy relationship through the lenses of trade and energy cooperation. It

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[1] For background, see CRS Report R42917, *Mexico: Background and U.S. Relations*, by Clare Ribando Seelke, and CRS Report RL32934, *U.S.-Mexico Economic Relations: Trends, Issues, and Implications*, by M. Angeles Villarreal.

[2] The U.S.-Mexico High-Level Economic Dialogue (HLED) is a cabinet-led initiative launched in 2013 to advance economic cooperation. The White House, Office of the Press Secretary, "Joint Statement: United States-Mexico High Level Economic Dialogue," January 6, 2015. The North American energy ministers met for the first time on December 15, 2014. They pledged to share data, develop best practices for unconventional hydrocarbons development, and modernize regional energy infrastructure.

[3] Lisa Viscidi and Paul Shortell, *A Brighter Future for Mexico: The Promise and Challenge of Electricity Reform, Inter-American Dialogue*, June 2014, http://www.thedialogue.org/uploads/IAD9603_MexicanEnergyFINAL.pdf.

[4] David H. Petraeus, Robert B. Zoellick, and Shannon K. O'Neil, *North America: Time for a New Focus*, Council on Foreign Relations, Independent Task Force Report No. 71, October 2014, available at http://www.cfr.org/north-america/north-america/p33536. Hereinafter CFR, October 2014.

[5] Laurence Iliff, "Oil Majors Show Early Interest in Mexico Bidding Round," *Wall Street Journal*, January 20, 2015;

[6] U.S. Congress, House Committee on Foreign Affairs, Subcommittee on the Western Hemisphere, *Pursuing North American Energy Independence: Mexico's Energy Reforms*, 114th Cong., 1st sess., July 23, 2015.

[7] Dwight Dyer, "New Terms on Mexico's Oil Bids Will Try to Soften the Blow," *El Daily Post*, September 17, 2015.

concludes by suggesting several oversight issues for Congress related to what the enactment of energy reform might portend for Mexico's economic development, the U.S. energy matrix, and bilateral or North American energy cooperation.

Pemex: A Brief History and Pre-Reform Status Report

Foreign investment in Mexico's oil industry has had a tumultuous history.[8] After oil was discovered in Mexico at the turn of the 20th century, foreign investors—primarily from Britain and the United States—played a significant role in helping the country become the world's second-largest oil producer by the early 1920s. However, political unrest during and after Mexico's bloody revolution (1910-1920) and the country's 1917 constitution, which established national ownership of all hydrocarbons resources, caused investment in Mexico's oil and natural gas sectors to gradually decline. By the 1930s, reduced foreign investment had resulted in dramatic declines in production levels, and fraught relations between U.S. oil companies and successive post-revolutionary presidents had damaged U.S.-Mexican relations. Tensions culminated in President Lázaro Cárdenas' historic 1938 decision to abandon efforts to mediate a bitter labor dispute between Mexican oil workers and foreign companies and instead follow through on his threat to expropriate all U.S. and other foreign oil assets in Mexico.

Upon its creation in 1938, Pemex became a symbol of national pride and a rallying point around which Cárdenas and what became the Institutional Revolutionary Party (PRI)—the party of President Enrique Peña Nieto—united a disparate Mexican society against foreign intervention. Oil remains deeply tied to Mexican nationalism. Nevertheless, Pemex continued to pursue service contracts with some U.S. oil companies until the practice was definitively outlawed by a 1958 regulatory law implementing Article 27 of the constitution.[9] From then on, Pemex retained a monopoly over Mexico's oil and natural gas sector and the Mexican Finance Ministry kept tight control over the company's finances and management.

In 2013, 75 years after its founding, Pemex found itself facing significant challenges. Pemex had its heyday in the late 1970s following the discovery of the huge shallow water Cantarell oil field, but the company's long-term performance had been hindered by a number of factors. For years, Pemex sustained itself on the revenue produced from its relatively easy-to-exploit shallow water fields without investing the capital necessary to replace those reserves with new fields or even maintain its infrastructure. Pemex had a high percentage of losses, low worker productivity, and facilities that are in significant need of repair; 37 people were killed in January 2013 after an explosion occurred at one of the company's offices in Mexico City.[10] In part because of the Mexican government's heavy tax demands, Pemex had operated at a loss since 1998 and significantly increased its debt burden. Until recently, the government had also prevented the company from reinvesting its profits into maintenance and new exploration.[11] Pemex's pension

[8] For an overview of Mexico's oil industry from 1901 through the 1970s, see George Grayson, *The Politics of Mexican Oil* (Pittsburgh, PA: University of Pittsburgh Press, 1980).

[9] Article 27 of Mexico's 1917 constitution gives the Mexican government exclusive legal authority to exploit, distribute, and process hydrocarbons in the country and states that the government may not, per the regulatory law, grant private concessions for their exploitation. Article 28 establishes petroleum and other hydrocarbons as strategic sectors over which the government (public sector) exerts total control.

[10] Adam Thompson, "Rusty Wheels of Pemex Require Much Oiling," *Financial Times*, April 3, 2013.

[11] Reforms passed in 2006 allowed Pemex to fund a portion of its capital investments with earnings rather than through the issuance of new debt. Ognen Stojanovski, "Handcuffed: an Assessment of Pemex's Performance and Strategy," in

liabilities, negotiated by the company's powerful and, for some observers, corrupt workers union, had become an unsustainable drain on its finances.[12] Each year, Pemex had been losing hundreds of millions of dollars due to criminal groups illegally tapping into its pipelines.[13] Pemex's inability to partner with other companies arguably inhibited it from benefitting from new expertise and techniques, particularly in deep water drilling and hydraulic fracturing (fracking).

The Path to Pemex Reform

Proposals for Energy Reform

President Enrique Peña Nieto of the nationalistic PRI assumed the Mexican presidency on December 1, 2012, after 12 years of rule by the conservative National Action Party (PAN). Even though Peña Nieto hailed from the PRI, the party that had nationalized the oil industry and watered down previous PAN-led reform efforts, he campaigned on an economic platform that prioritized allowing Pemex to form joint ventures with private companies. At his inauguration, President Peña Nieto announced a reformist agenda aimed at bolstering Mexico's competitiveness that included energy sector reform.

In order to implement his agenda, President Peña Nieto and leaders of the PRI concluded a "Pact for Mexico" agreement with the PAN and the leftist Party of the Democratic Revolution (PRD) that facilitated the passage of financial, education, telecommunications, and fiscal reforms.[14] Many of those reforms required constitutional changes. As with the other constitutional reforms enacted in 2013, the energy reforms that Peña Nieto proposed in August of that year required a two-thirds vote in the Mexican Congress and approval by a majority of the country's 32 state legislatures. As discussed below, a PRI-PAN alliance enabled the December 2013 approval of constitutional reforms on energy, but led the PRD to leave the Pact for Mexico.

The Peña Nieto Administration's August 2013 energy reform proposal would have removed hydrocarbons from the list of strategic sectors that can only be developed by the government and allowed Pemex to form "profit-sharing"[15] partnerships with international companies in exploration and production. The reform would also have allowed Pemex to sign agreements with private companies for transporting oil and gas, refining, and producing petrochemicals. In secondary legislation, the President pledged to introduce reforms to give the company budget autonomy, improve its transparency, and change its fiscal structure, among other measures.

The PAN put forward deeper reforms than the PRI that would permit private concessions in upstream and downstream[16] operations and production-sharing agreements between Pemex and private companies. Former PAN President Felipe Calderón tried to enact far-reaching energy

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Oil and Governance: State-owned Enterprises and the World Energy Supply, ed. David G. Victor, David R. Hults, and Mark C. Thurber (Cambridge University Press, Cambridge: UK, 2012).

[12] Thompson, op. cit.

[13] Patrick Corcoran, "Oil Theft Is Big Business for Mexican Gangs," *InSight Organized Crime in the Americas*, March 20, 2012.

[14] For information on the reforms in English, see http://reformas.gob.mx/en/reforms.

[15] Under this scenario, private companies receive a percentage of the remaining revenue earned once exploration and production costs have been recovered, but would not own a share of production.

[16] Upstream refers to the exploration, development, and production phases of oil and natural gas production. Midstream refers to the transportation of the resource, and downstream refers to the refining and marketing of the resource. Natural gas does not need to be refined, so downstream in that sector relates to the marketing of natural gas.

reforms in 2008, but his proposal was watered down by the PRI-led Congress.[17] The PAN also sought to establish a strong regulatory body and a sovereign wealth fund to support social needs. Some PAN legislators reportedly conditioned their support for energy reforms on the PRI backing political reforms, which were also approved in December 2013.

The PRD vigorously opposed allowing private involvement in Pemex. Instead the PRD proposal focused on reforming the company while simultaneously granting it greater budget autonomy and a less onerous tax burden. Past and present PRD party leaders joined forces to oppose the PRI and PAN versions of energy reform.

Key Provisions of the December 2013 Constitutional Reforms[18]

In the end, the reforms approved by the Mexican Congress[19] and a majority of state legislatures and then signed into law by President Peña Nieto on December 20, 2013, bore most in common with the PAN proposal, but contain elements of all three parties' energy reform propositions.

Key elements of the reforms include

- Maintaining state ownership of subsoil hydrocarbons resources, but allowing companies to take ownership of those resources once they are extracted and to book reserves for accounting purposes;
- Creating four types of contracts for exploration and production: service contracts (companies are paid for activities done on behalf of the state), profit-sharing contracts, production sharing contracts, and licenses (enabling a company to obtain ownership of the oil or gas at the wellhead after it has paid taxes);
- Opening refining, transport, storage, natural gas processing, and petrochemicals sectors to private investment;
- Transforming Pemex into a productive state enterprise with an autonomous budget and a board of directors that does not include union representatives;
- Strengthening four federal entities with regulatory roles in the hydrocarbons industry (the Ministries of Energy and Finance, the National Hydrocarbons Commission or CNH, and the Energy Regulatory Commission) and creating a National Agency for Industrial Safety and Environmental Protection; and
- Establishing a sovereign wealth fund, the Mexican Petroleum Fund for Stabilization and Development, to be managed by the Central Bank. (See **Figure 1** below.)

[17] President Calderón originally proposed measures that would have allowed Pemex to enter into joint ventures with foreign companies in exploration and production, and permitted private companies to build and operate refineries, pipelines, and storage facilities in Mexico. Calderón's proposal prompted strong resistance from the PRD and was significantly watered down by the PRI in the Mexican Congress. Nevertheless, the final legislation brought private sector experts into Pemex's management structure, created an independent National Hydrocarbons Commission (CNH) to advise the company, and added greater flexibility to its procurement and investment processes. Most significantly, the 2008 reforms permit Pemex to create incentive-based service contracts with private companies.

[18] David L. Goldwyn, *Mexico Rising: Comprehensive Energy Reform at Last?* Atlantic Council, December 2013, http://www.atlanticcouncil.org/images/publications/Mexico_Rising.pdf.

[19] The reforms were approved by the Mexican Senate on December 11, 2013 (95-28) and the Chamber of Deputies on December 12, 2013 (354-134).

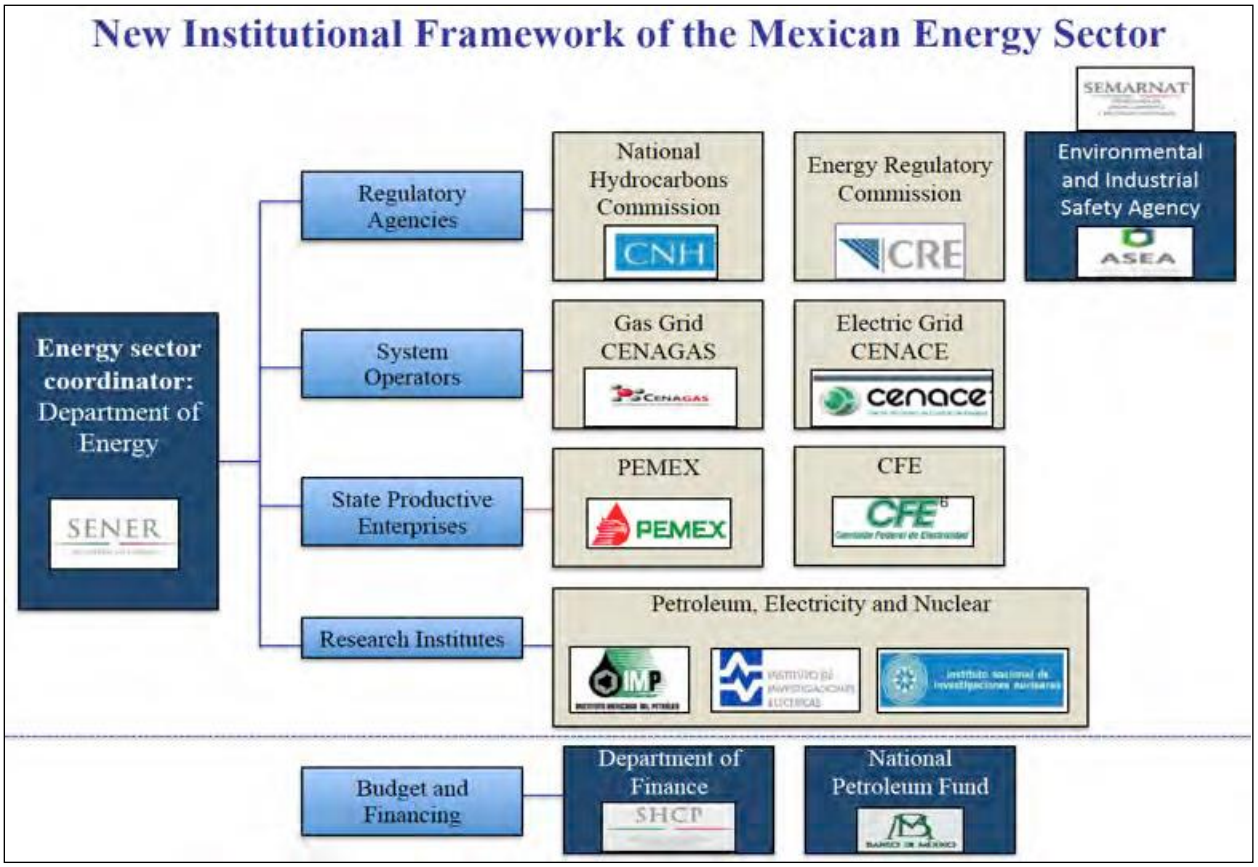
Secondary Laws Approved in August 2014[20]

While the constitutional reforms outlined the broad contours of Mexico's oil and gas reform, many details were left to be defined in secondary laws needed to implement those reforms. Those laws had to pass Congress by a simple majority and technically had to be enacted within 120 days of the signing of the energy reforms (December 20, 2013). However, due to a variety of factors, including the PAN's internal elections held in May 2014, the Mexican Congress did not consider the energy laws until a special section convened in July. The Senate and Chamber of Deputies debated and made minor modifications to the Peña Nieto Administration's original proposals that were then approved with broad support from the PRI, PAN, and smaller parties. Key provisions dealing with the hydrocarbons sector not mentioned above include

- Pemex: is more independent of the state, but must adopt internal reforms; is to pay a tax rate of roughly 65% (rather than 79% now); and is permitted to keep some of its existing fields through a "Round Zero" process as deemed appropriate by the Secretariat of Energy;
- Pemex's monopoly on retail gasoline and diesel sales ends in 2016;
- Companies will pay royalties and taxes varying with the price of oil;
- Companies must respect national content requirements of 25% in 2015, rising to 35% in 2025 (excluding deep water activities);
- Companies may not expropriate land from communities for exploration and development, but rather temporarily occupy land and compensate its owners; and,
- The National Hydrocarbons Commission (CNH) is strengthened and established as a constitutionally coordinated entity to gather and manage information on the energy sector; issue regulations and monitor compliance; and manage the bidding rounds, award contracts, and supervise those contracts.

[20] This section draws from David L. Goldwyn et al., *Mexico's Energy Reform: Ready to Launch*, Atlantic Council, August 2014, available at http://www.atlanticcouncil.org/publications/reports/mexico-s-energy-reform-ready-to-launch.

Figure 1. Mexico's Hydrocarbons Sector



Source: Government of Mexico.

The institutions in charge of Mexico's hydrocarbon industry[21] now include

- **Ministry of Energy (SENER):** develops Mexico's upstream policy; determines areas to be made available and the schedule for public bidding; chooses which of the contract models to apply to which contract; and approves the non-fiscal terms of the contract.
- **Ministry of Finance (SHCP):** determines the fiscal terms to apply to each contract and participates in audits.
- **National Hydrocarbons Commission (CNH):** interfaces with Pemex and private companies, conducts and manages contracts, and oversees the industry.
- **Energy Regulatory Commission (CRE):** grant permits for transportation, storage, distribution, compression, liquefaction, decompression, regasification, marketing, and sale of crude oil, oil products, and natural gas.
- **National Agency for Industrial Safety and Environmental Protection (new):** regulates environmental and safety concerns.
- **National Natural Gas Control Center (CENAGAS):** manages system for gas distribution and storage.

[21] Atlantic Council Fact Sheet, available at http://www.atlanticcouncil.org/images/files/Energy_Reform_Fact_Sheet.pdf.

Round Zero

On August 13, 2014, the Mexican government announced the results of Round Zero a month earlier than had been required by the legislation. The Secretariat of Energy awarded Pemex 83% of Mexico's probable reserves and 21% of its prospective reserves. Pemex had requested to retain 31% of the country's prospective reserves, but its limited capacity to explore and produce in deep water and unconventional areas may be why it was not awarded that large a share.

Even though Round Zero did not open up new fields for private companies to bid on, it did increase the opportunities for private involvement in exploration and production in Mexico. Pemex is in the process of changing some existing service contracts it has with oil companies (as allowed under the 2008 reforms) into profit-sharing contracts, as well as seeking new partners to help it develop some of the other probable and prospective fields. New companies interested in investing in Mexico may first seek to partner with Pemex before submitting independent bids.

Ongoing Developments and Round One

In the past year, Pemex has been undergoing restructuring; all of the regulatory agencies empowered or created by the energy reforms have begun hiring and training their staffs; regulations have been released; and the priorities for the Mexican Petroleum Fund have been defined.[22] U.S. companies are closely watching the degree to which Mexico establishes sound environmental and safety standards, recruits qualified individuals to staff regulatory agencies, fosters transparency, and conducts fair and transparent bidding processes. These efforts have arguably been made more difficult in recent months due to the fact that Mexico's 2015 budget—including funding for those energy-related entities—has been cut by some $8 billion due to declining oil prices (and therefore declining government revenue).[23]

On December 14, 2014, the Mexican government announced the terms under which companies already incorporated in the country could bid on production-sharing contracts to explore 14 shallow-water fields of prospective light crude in the Gulf of Mexico. The Mexican government has maintained that the fields would be profitable even if oil prices were to fall below $50 per barrel; average production costs for Pemex hover around $22/barrel.[24] On July 15, 2015, Mexico's Energy Ministry announced the bidding results. The results have been deemed disappointing by energy analysts, as only 2 of the 14 blocks available were awarded.[25]

While analysts concur that there is still interest in Mexico's remaining "round one" offerings even though oil prices are low, they predict that the government will have to offer more competitive terms in order to garner greater interest. Foreign investment is particularly needed for exploration as Pemex's proposed budget for 2016 is being cut by some 20%.[26] Prior to the upcoming September 30 bidding round for nine large shallow-water production blocks, the government lowered the fees required to bid, announced the terms to be offered, and guaranteed companies

[22] Ibid. Pedro Valenzuela and Duncan Wood, *Mexico's Energy Reform: Entering the Final Phase—The Expert Take*, Woodrow Wilson Center's Mexico Institute, August 13, 2014.

[23] Eric Martin and Brendan Case, "Mexico Cuts Spending Saying Oil Price May Stay Low for Years," *Bloomberg*, January 30, 2015.

[24] Robert Perkins, "Pemex Sees No Price Constraints to Reforms," *Platts Oilgram News*, October 31, 2014.

[25] "First Phase of Mexico's 'Round 1' Oil Concessions Disappoints," *Latin News Daily*, July 16, 2015.

[26] Adam Williams and Andrea Navarro, "Mexico Cuts Oil Spending to Nine-Year Low as Foreign Firms Enter," *Bloomberg Business*, September 9, 2015.

access to arbitration should disagreements with the government arise, among other modifications.[27]

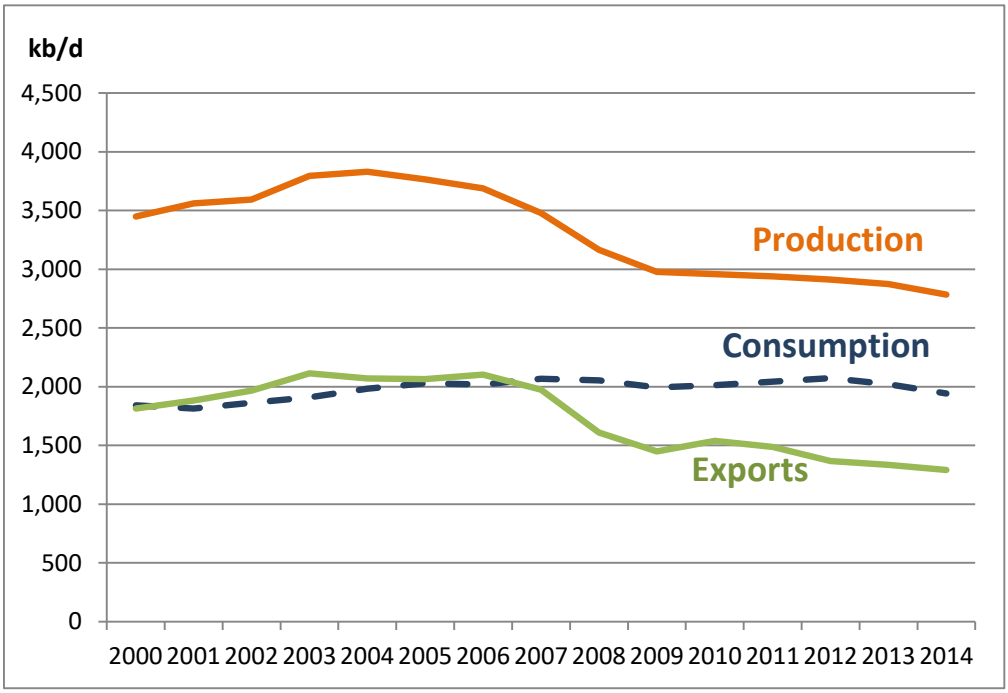
Mexico's Energy Resources

Oil: Attracting a Lot of Interest

Mexico is the world's 10th-largest producer of oil and holds approximately 11.1 billion barrels of oil reserves—the 18th largest in the world.[28] Mexico may also have the 8th-largest tight oil[29] resources globally, about another 13 billion barrels.[30] With these reserves, Mexico has the potential to halt its decade-long decline in oil production.

Figure 2. Mexican Oil Production, Consumption, and Exports

2000-2014



Source: *BP Statistical Review of World Energy 2001-2015*.

Notes: Units = thousand barrel per day (kb/d).

[27] Dwight Dyer, "New Terms on Mexico's Oil Bids Will Try to Soften the Blow," *El Daily Post*, September 13, 2015.

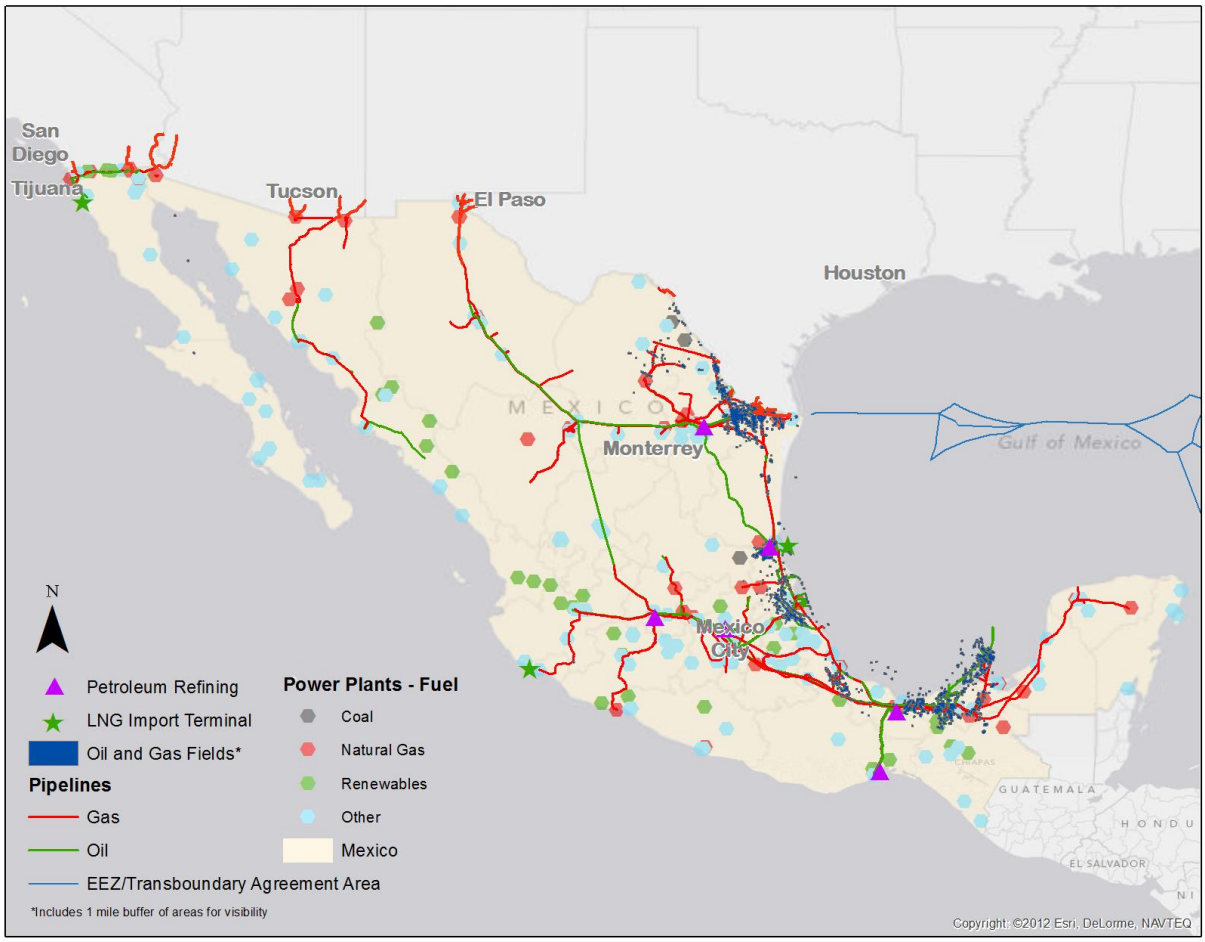
[28] *BP Statistical Review of World Energy*, June 2014, http://www.bp.com/en/global/corporate/about-bp/energy-economics/statistical-review-of-world-energy.html.

[29] Tight oil refers to oil that is trapped in impermeable formations, such as shale or sedimentary rocks, and requires artificial fractures to allow the hydrocarbons to flow.

[30] U.S. Energy Information Administration (EIA), *Technically Recoverable Shale Oil and Shale Gas Resources: An Assessment of 137 Shale Formations in 41 Countries Outside the United States*, Washington, DC, June 10, 2013, p. 10, http://www.eia.gov/analysis/studies/worldshalegas/. Hereinafter: EIA, June 2013.

Mexico's oil production declined by some 20% from 2005 through 2009; production has fallen by roughly 1% per year since that time (see **Figure 2**) due, in part, to aging and inefficient infrastructure (see **Figure 3**).[31]

Figure 3. Mexico Energy Infrastructure



Source: Compiled by CRS using data from IHS, Platts, and Esri. Date: September 2013.

Nevertheless, Mexico lags only behind Russia, the United States, China, and Canada as an important non-OPEC oil producer. Most of Mexico's production (75%) is found offshore in the shallow waters of the Bay of Campeche, which is part of the Gulf of Mexico, and concentrated in two fields—Ku-Maloob-Zaap (KMZ) and Cantarell. KMZ production has been on the rise since 2006, reaching almost 864,000 barrels per day (b/d) at the end of 2013, and has replaced part of Cantarell's decline. Cantarell was once one of the largest producing fields in the world, but started having pressure problems in the mid-1990s. Efforts to reverse the decreasing production were successful for a while and the field reached its peak in 2004 at 2.1 million b/d (63% of Mexico's production). By 2013, Cantarell produced only about 440,000 b/d (17% of Mexico's production).

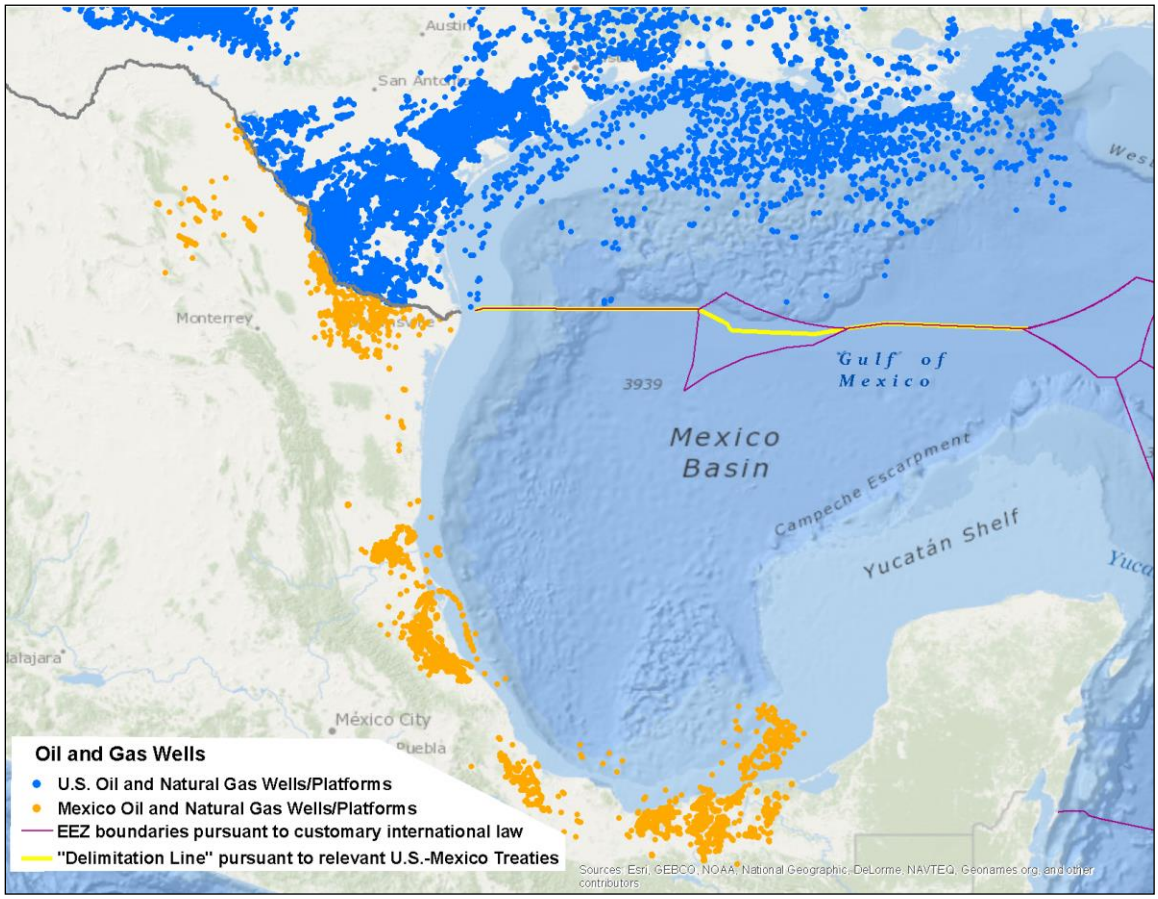
[31] This paragraph draws from: EIA, *Country Analysis: Mexico*, April 24, 2014, available at http://www.eia.gov/countries/cab.cfm?fips=MX.

The U.S. Energy Information Administration (EIA) has estimated that the recently enacted energy reforms could boost Mexico's long-term oil production potential to 3.7 million b/d by 2040 from the 2.9 million b/d produced in 2013. That estimate is 75% higher than the EIA's 2013 forecast for Mexico's long-term oil production that was issued prior to the enactment of energy reforms.[32]

There may also be significant deep water resources in the Gulf of Mexico yet to be discovered. As can be seen below in **Figure 4**, Mexico has undertaken very little activity in its portion of the Gulf of Mexico, particularly compared to the United States, in part because Mexico does not yet have the technical capacity to effectively explore or produce its deep water areas. This is one of the reasons that international companies, particularly those with deep water expertise, are excited about the reforms in Mexico. Additionally, the U.S.-Mexico Transboundary Agreement (see below) may play an important role in raising Mexico's standards of operation in deep water.

Figure 4. U.S./Mexico Oil and Natural Gas Activity Around the Gulf of Mexico

Active Wells and Platforms



Source: Compiled by CRS using data from HSIP Gold 2012 (Platts), IHS 2012 Wells, and Esri.

Note: This map may or may not offer information related to the submerged land tenure systems of the United States or Mexico.

[32] EIA, "Energy Reform Could Increase Mexico's Long-Term Oil Production by 75%," press release, August 25, 2014.

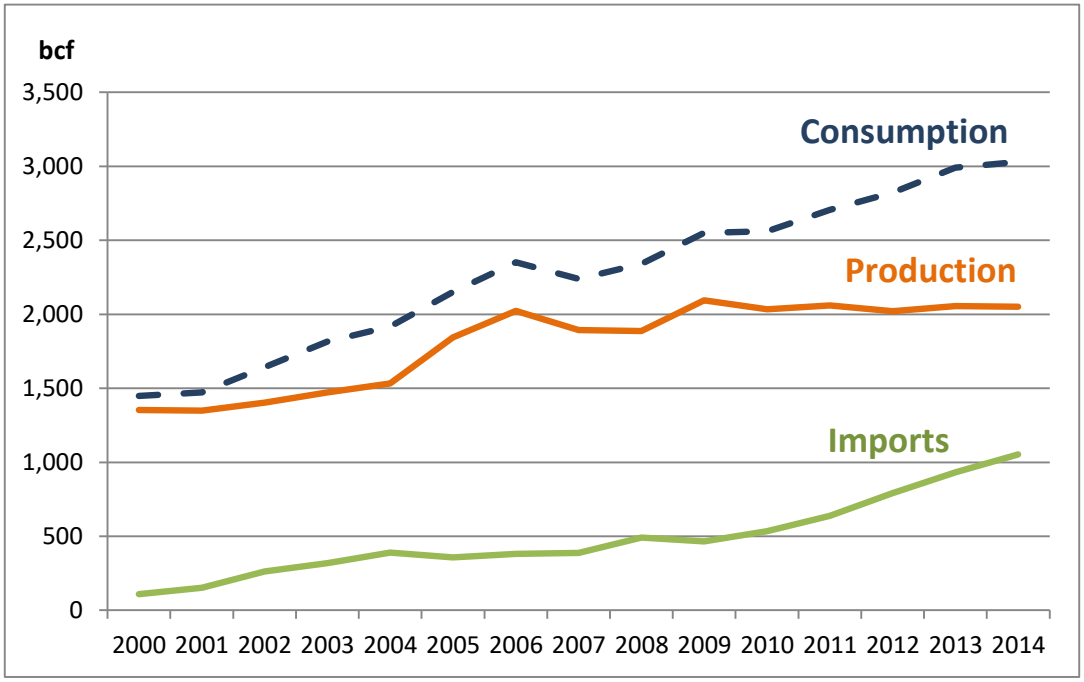
Natural Gas: More Needed

Mexico's natural gas production capacity is higher than in 2000, but has not been able to keep up with demand (see **Figure 5**), which increased about 123% between 2000 and 2014. Most of Mexico's natural gas consumption supports its oil operations and national electricity generation. Mexico's proven gas reserves are on the decline due to underinvestment in exploration. Production has also begun to decline in recent years as price differentials have made it more profitable for Pemex to produce oil than gas. And, although Mexico may have significant unconventional natural gas resources, it is further behind in developing these resources than other countries, such as Canada. Mexico's energy reforms seek to attract private investment in exploration and production of both conventional and unconventional natural gas resources, but also to accelerate investment in much-needed infrastructure for storage, transportation, and distribution.

As a consequence of demand rising faster than production, Mexico's imports of natural gas have also been increasing, accounting for about 35% of consumption today compared to less than 10% in 2000. In 2000, Mexico imported 30% of U.S. natural gas exports, which accounted for 100% of Mexico's natural gas imports. In 2006, Mexico started importing liquefied natural gas (LNG) at very high costs from Qatar, Nigeria, and Peru to help meet its growing demand for gas. Mexico has three LNG import terminals, two on the Pacific side and one on the Atlantic.

Figure 5. Mexican Natural Gas Production, Consumption, and Imports

2000-2014



Source: *BP Statistical Review of World Energy 2001-2014.*

Notes: Units = billion cubic feet (bcf).

As a free trade partner, exports of U.S. natural gas to Mexico are assumed in the public interest by U.S. statute and permitted without delay, which has spurred U.S. natural gas exports to Mexico. In 2014, U.S. natural gas exports accounted for approximately 69% of Mexican natural gas imports, and 24% of its natural gas consumption. Between 2008 and 2013, U.S. pipelines to

Mexico doubled their capacity. Current U.S. export capacity to Mexico is 4.9 billion cubic feet (bcf) per day. By the end of 2016, that capacity should reach 8.4 bcf/d.[33] It would appear that for the immediate future Mexico will likely remain dependent on U.S. supplies of natural gas to meet its growing demand.

Unconventional Oil and Natural Gas Opportunities

One of the areas gathering interest with the opening of Mexico's oil and natural gas industry has been shale development. The EIA has assessed Mexico's shale gas resources to be significant (the sixth highest globally).[34] The proximity of some formations in northern Mexico to U.S. developments makes them attractive to some U.S. companies. As an example, the Eagle Ford basin in Texas, one of the fastest growing shale producing areas in the United States, may extend down into Mexico.

Mexico, through Pemex, has already started exploring some of its unconventional formations. A limited number of test wells have been drilled, but Pemex has ambitious plans for scaling up development and production over the next 10 years. However, Mexico will need to implement reforms to attract outside investment to strengthen regulatory and environmental protection measures; expand pipelines, roads, and other infrastructure; address water management issues; and deal with security concerns. Some of the states in northeastern Mexico where shale formations are located have experienced significant violence in recent years, possibly deterring additional business opportunities. The impact of government efforts to quell that violence and criminality in those states has been limited.[35] Potential disputes with individuals and communities over access to land for exploration and development, as well as opposition to fracking in some areas, could also deter would-be investors. The United States has already been working with Mexico in some of the more technical areas such as resource assessment, environmental protection, and regulatory policies.

Refining: Limited Capacity and in Need of Modernization

Although Mexico is a large exporter of crude oil, it is a net importer of refined petroleum products, such as gasoline and diesel fuel. Mexico does not have enough refining capacity of its own to meet its domestic demand for refined products, nor has it made the investment to process heavy crudes like its Maya crude. Mexico has six refineries with a total capacity of 1.54 million barrels per day, but in recent years has operated below capacity because of operating mishaps.[36] As in many other countries throughout Latin America, Mexico's refineries are in need of major repairs and upgrades and often operate at below their stated capacity.[37] Mishaps and other losses are expected to result in a $7.7 billion loss for the company in 2013.[38]

Mexico and the United States already have a close relationship in the refining sector. Much of the U.S. Gulf Coast refining capacity is designed to process heavy crudes, which require more sophisticated and expensive technologies than Mexican refineries currently possess. Mexico

[33] Electronic correspondence with U.S. Federal Energy Regulatory Commission (FERC), August 14, 2015.

[34] EIA, June 2013.

[35] Kathryn Haahr, *Addressing the Concerns of the Oil Industry: Security Challenges in Northeastern Mexico and Government Responses*, Wilson Center: Mexico Institute, January 2015, available at http://www.wilsoncenter.org/publication/addressing-the-concerns-the-oil-industry-security-challenges-northeastern-mexico-and.

[36] EIA, April 2014.

[37] Justin Jacobs, "Refining Woes in Latin America," *Petroleum Economist*, October 2013.

[38] "Mexico's Pemex to Incur $7.7 Billion Refining Loss in 2013," *Fox News Latino*, October 23, 2013.

exports its heavy crude to U.S. refineries on the Gulf Coast, which then sends some of the refined products back to Mexico. Pemex, which operates all of the refineries in Mexico, also owns 50% of a refinery in Texas. The refining relationship between Mexico and the United States could potentially be expanded even further as the reforms fully open up Mexico's downstream (marketing and refining) hydrocarbons market to international companies.

Energy: A Central Component of U.S.-Mexico Trade

The bilateral economic relationship with Mexico is of key interest to the United States because of Mexico's proximity, the high volume of trade with Mexico, and the strong economic ties between the two countries. The United States is, by far, Mexico's leading partner in merchandise trade, while Mexico is the United States' third-largest trade partner in total trade after China and Canada. Mexico is the United States' second-largest export market after Canada and ranks third as a supplier of U.S. imports.

Since NAFTA took effect in 1994, the United States and Mexico have become more economically integrated with strong trade and supply chain linkages. U.S. exports to Mexico increased rapidly since NAFTA, increasing from $41.6 billion in 1993 to $240.3 billion in 2014, an increase of 478%. U.S. imports from Mexico increased from $39.9 billion in 1993 to $294.2 billion in 2014, an increase of 637%.[39] In most sectors, NAFTA removed significant trade and investment barriers, ensured basic protections for NAFTA investors, and provided a mechanism for the settlement of disputes between investors and a NAFTA country. The agreement, however, included explicit country-specific exceptions and reservations. Under Chapter 6 of NAFTA, the Mexican government reserved to itself strategic activities, including investment and provisions in such activities, related to the exploration and exploitation of crude oil and natural gas.[40] Despite these exclusions from NAFTA, energy remains a central component of U.S.-Mexico trade, as discussed below.

Mexico Still a Top U.S. Oil Supplier

Mexico has been trading oil and natural gas with the United States since the turn of the last century. It is typically among the top three exporters of oil to the United States. Mexico's crude oil exports to the United States increased steadily in the 1980s and the 1990s, reaching a peak in 2004 of 1.6 million b/d. Since 2006, U.S. crude oil imports from Mexico have generally declined, reflecting Mexico's drop in production and rising internal demand. In 2014, the United States imported 842,000 b/d of crude oil from Mexico, behind Canada and Saudi Arabia.[41]

As shown in **Table 1**, Canada accounted for 34% of the dollar value of U.S. crude oil imports in 2014, followed by Saudi Arabia (18% of the total), and Mexico (11% of the total).

[39] Based on data from the U.S. International Trade Commission (USITC) Interactive Tariff and Trade DataWeb using Harmonized Tariff Schedule (HTS) at the 4-digit level. For more information on NAFTA and its effects on trade, see CRS Report R42965, *The North American Free Trade Agreement (NAFTA)*, by M. Angeles Villarreal and Ian F. Fergusson.

[40] Chapter 6 of NAFTA applies to energy and basic petrochemicals. It reserves most activities in Mexico's energy sector to the Mexican state.

[41] EIA, *Mexico Country Report*, April 24, 2014.

Table 1. U.S. Crude Petroleum Oil Imports in 2014

Total in Billions of U.S. Dollars

Country	Value	% of Total
Canada	83.2	34%
Saudi Arabia	44.9	18%
Mexico	27.7	11%
Venezuela	25.9	10%
Iraq	13.6	5%
Other Countries	51.8	21%
Total	**247.0**	**—**

Source: Compiled by CRS using USITC Interactive Tariff and Trade DataWeb: HTS number 2709 for crude petroleum oil.

The United States is the destination for approximately 71% of Mexico's oil exports, which arrive via tanker. Although Mexico has an extensive pipeline network that connects major production centers with domestic refineries and export terminals, it does not have any international oil pipeline connections. Exports leave the country via tanker from three Gulf Coast export terminals.[42] The majority of Mexico's crude oil exports are of the heavy Maya blend (approximately 82% of exports), while the lighter crude oil produced offshore is mostly retained for domestic consumption. Most of Mexico's crude oil exports will likely continue to be exported to the United States because of its close proximity and also because the U.S. Gulf Coast possesses the sophisticated refineries necessary to process the heavier Maya crude oil.

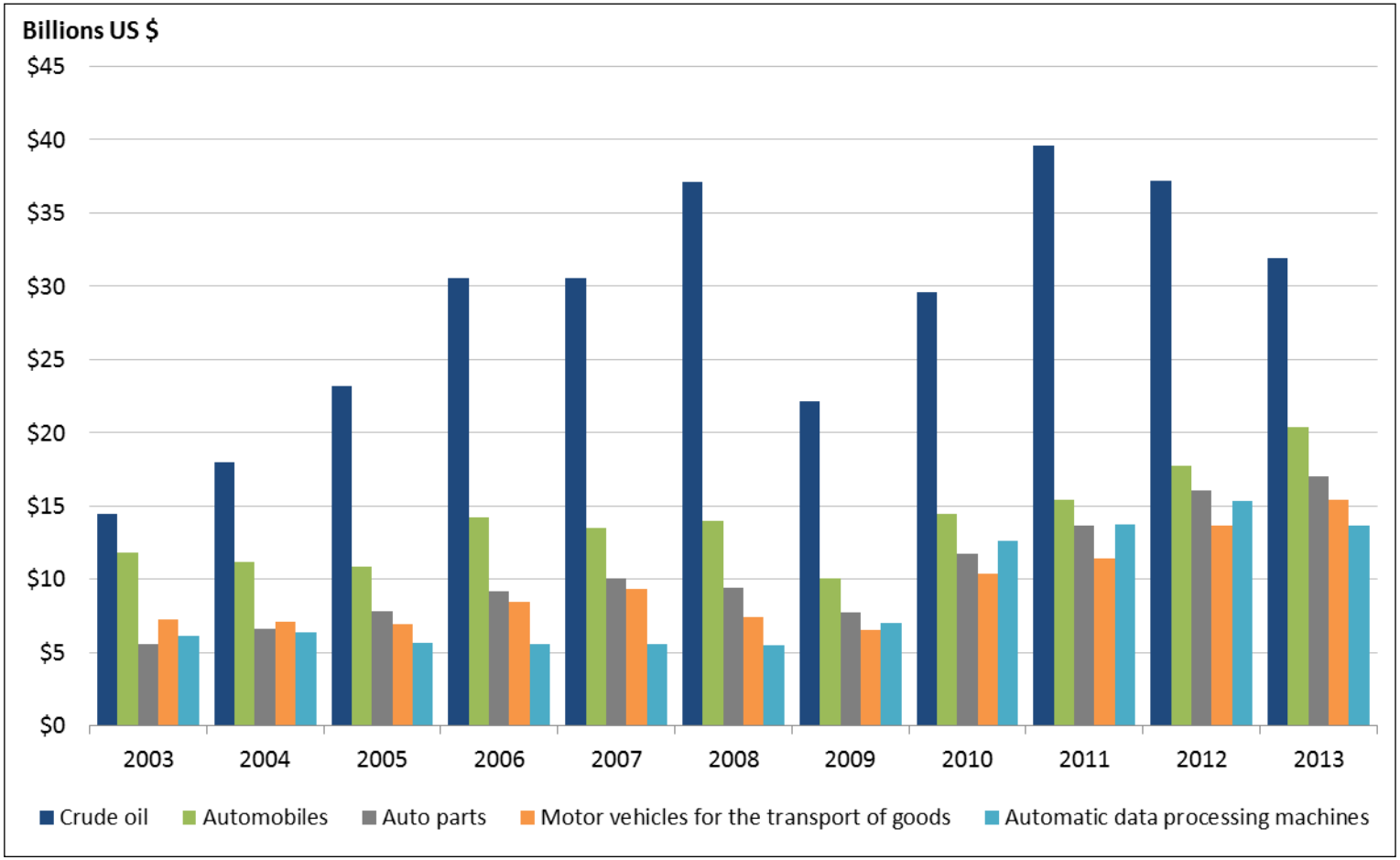
The leading U.S. import item from Mexico is crude petroleum oil.[43] The value of crude oil imports from Mexico in 2014 totaled $27.7 billion, nearly 30% higher than the value of automobile imports, the second leading import item. As shown in **Figure 6**, crude petroleum oil imports from Mexico have been considerably higher than other top imports from Mexico over the past 10 years. The drop in oil prices, however, caused the value of Mexican oil imports in 2014 to reach its lowest level since 2006, declining from a high of $39.6 billion in 2011 to $31.9 billion in 2013 and $27.7 billion in 2014.

[42] EIA, April 24, 2014.

[43] USITC Trade DataWeb, using HTS code 2709 for crude petroleum oil.

Figure 6. Top 5 Imports from Mexico

2003-2014



Source: Compiled by CRS using USITC Interactive Tariff and Trade DataWeb at http://dataweb.usitc.gov; HTS4-digit level.

Although Mexico is one of the world's largest crude oil exporters, it is a net importer of refined petroleum products. In 2012, Mexico's imports of refined petroleum products from all countries totaled $29.6 billion. Mexico was the destination for 44% of U.S. exports of motor gasoline in 2013, although imports from the United States have declined since 2011.

Trade in Natural Gas

The United States has been Mexico's largest supplier of natural gas and Mexico continues to be a growing market for additional U.S. natural gas exports. As previously mentioned, Mexico's natural gas production has failed to keep pace with rising domestic demand, making U.S. gas exports an important source of energy. The value of Mexico's natural gas imports increased from $995.7 million in 2007 to $2.5 billion in 2013.[44]

Mexico imported a total of 779 billion cubic feet (Bcf) of natural gas in 2012, out of which 620 Bcf came from the United States. The United States imports a very small amount of natural gas from Mexico. The surplus in natural gas trade with Mexico is expected to widen as recent supply and demand trends in both countries are expected to continue.[45] U.S.-Mexico trade in natural gas is done exclusively via pipeline.

Areas of U.S.-Mexico Energy Cooperation

In addition to the burgeoning energy trade between the United States and Mexico, energy cooperation has gradually risen to the top of the U.S.-Mexican political agenda as well. The United States and Mexico have been working on geothermal energy projects since the 1970s, but the possibility of expanding joint efforts to produce renewable energy sources, as well as conventional and unconventional hydrocarbons resources, has also entered the bilateral agenda.

Bilateral Framework on Clean Energy and Climate Change

On April 16, 2009, President Obama and then-Mexican President Calderón announced the Bilateral Framework on Clean Energy and Climate Change to jointly develop clean energy sources and encourage investment in climate-friendly technologies. Among others, its goals include enhancing renewable energy, combating climate change, and strengthening the reliability of cross-border electricity grids. Four bilateral meetings have thus far been held to advance the Framework. Since Mexico remains a top U.S. crude oil supplier and many of its untapped resources lie in deep waters in the Gulf of Mexico and in shale formations abutting the U.S. border, the countries want to ensure that Pemex (or other companies) develop those resources in an environmentally responsible way.

The U.S. and Mexican governments share a mutual interest in developing renewable energy sources, particularly those capable of serving rapidly growing population centers along the U.S.-Mexico border. As part of that effort, since 2011 the North American Development Bank has provided loans worth at least $677 million for projects related to wind and solar energy. The U.S. Agency for International Development (USAID) and Mexico have also expanded cooperation on environmental issues with the *Mexico Global Climate Change (GCC) Program*, a five-year, approximately $70 million program. The program seeks to help Mexico reduce emissions from

[44] Secretaría de Energía de México, http://www.sener.gob.mx.

[45] EIA, April 2014.

deforestation, implement a low emissions development plan, and create a system for monitoring greenhouse gas emissions.

Although Mexico is trying to diversify its energy sources, it, like the United States, is likely to continue relying on oil and natural gas from traditional and unconventional (i.e., shale) sources. In the wake of the 2010 Deepwater Horizon spill in the Gulf of Mexico and amid concerns about the impact of hydraulic fracturing of shale oil in the United States, both governments have an interest in ensuring that hydrocarbons resources are developed in an environmentally responsible way. For example, as Pemex begins to partner with U.S. companies in the Gulf, it could benefit from participation in the Marine Well Containment Company that was created by U.S. companies to deal with spills. Should Pemex pursue contracts with U.S. companies who have years of expertise in hydraulic fracturing, they could complement the environmental and regulatory advice that Mexico is already receiving from the U.S. Departments of State and the Interior.

United States-Mexico Trans-Boundary Hydrocarbons Agreement

In 2012, the United States and Mexico signed an agreement known as the U.S.-Mexico Transboundary Hydrocarbons Agreement (the Agreement). The Agreement could mark the start of an energy partnership in an area of the Gulf of Mexico that the U.S. Department of the Interior estimates to contain as much as 172 million barrels of oil and 304 billion cubic feet of natural gas. Although it concerns relatively little oil and natural gas, a main purpose of the partnership is to lift a moratorium on development in that region that had been in effect since 2000. In addition, the Agreement gives Pemex and U.S. companies options for jointly developing oil and gas reservoirs, referred to as "transboundary resources," that exist in areas straddling the marine border of both countries.

Prior to the expected expiration date for the moratorium, the Mexican and U.S. Congresses reviewed and accepted the Agreement.[46] Congress enacted legislation approving the Agreement on December 18, 2013 (H.J.Res 59).[47] Now that the United States and Mexico have approved the Agreement, the moratorium is considered moot. The Department of the Interior's Bureau of Ocean Energy Management awarded the first leases subject to the Agreement in May 2014.[48]

Issues for Congress

Mexico's Economic Development

Mexico's long-term economic outlook depends largely on the energy sector. Economic growth in Mexico has been sluggish for several years, expanding just 2.4% in 2014 and 1.4% in 2013.

[46] The Mexican Senate reviewed and accepted the agreement in April 2012. On June 27, 2013, the U.S. House of Representatives passed H.R. 1613, the Outer Continental Shelf Transboundary Hydrocarbon Agreements Authorization Act (H.Rept. 113-101). House activity featured signs of a persistent policy divide between "pro-drilling" arguments to accelerate energy production and "anti-drilling" arguments to maintain the moratorium in order to provide time for fiscal, safety, and environmental issues to be addressed. On October 12, 2013, the Senate passed S. 812, to allow the Secretary of the Interior to implement the Agreement.

[47] Title III of the Bipartisan Budget Act of 2013 (H.J.Res 59) gives congressional approval of the Agreement and requires implementation planning by the Secretary of the Interior. For details about implementation plans to date, see http://www.bsee.gov/uploadedFiles/BSEE/Newsroom/Publications_Library/BOEM-BSEE%20MOU%20and%20Attachment%20A%20re%20Impementation%20of%20US-Mexico%20TBA%20(FINAL%20signed%207-17-2014).pdf.

[48] "BOEM awards leases in US-Mexico transboundary area to ExxonMobil," *Oil & Gas Journal*, May 30, 2014.

Growth is forecast to drop slightly in 2015 to 2.1%. Since the Mexican government's reliance on oil income is very high, any decline in oil revenue has fiscal and economic implications. The decline in oil production combined with the drop in oil prices has resulted in lower export earnings, prompting foreign-exchange market volatility and causing the peso to depreciate.[49] Energy reform is the centerpiece of the President Peña Nieto administration's attempts to overhaul the economy, attract greater foreign investment, and generate more jobs. Numerous observers and government officials have laid out high expectations for the potential of Mexico's energy reforms to improve economic conditions. One study suggests that the reform "offers the prospect of enormous wealth generation over the next five years."[50]

According to some industry experts, the importance of energy reform in Mexico cannot be understated because of the additional opportunities for unconventional or shale oil and gas production.[51] While it is difficult to predict how increasing private participation in Mexico's oil and gas sectors may affect the country's economic development, skeptics see reason to doubt the government's positive predictions. Some argue that multinational companies and large Mexican conglomerates stand more to gain from the energy reform than the Mexican people.[52] Other critics question the government's claim that the reforms will create thousands of jobs, and, maintain that because Pemex is a bloated company with too many employees, it would likely shed workers as a result of the reform. Others are concerned that the oil revenue will be mishandled by corrupt Pemex or government officials rather than invested in strategic ways that will benefit the country as a whole.[53]

Impact on the U.S. Oil and Natural Gas Sectors and the Bilateral Energy Trade

The opening of Mexico's oil and natural gas sector to foreign investors poses significant changes in the U.S.-Mexico energy relationship that may have advantages and disadvantages for both sides. Reversing Mexico's production decline would add more oil to the global market and enhance U.S. energy security. Having a neighbor who is a growing oil producer to the south, as the United States has to the north with Canada, could provide a reliable supplier for the long term and it would also contribute to North American energy independence. Some predict that the region could produce surpluses of oil and gas in the coming decades, as well as expanded renewable energy: wind, solar, biofuels, and hydro-power.[54]

U.S. companies that are able to enter the Mexican upstream sector are likely to benefit from the opening of Mexican resources to foreign investment, depending upon the terms of the contracts that are offered. Significant opportunities for infrastructure development, oil services companies, and downstream industries are also likely to open up. This would be true for both the oil and natural gas sectors, but U.S. natural gas producers who export to Mexico might, over the long term, potentially lose some of their market.

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[49] IHS Connect, *Country Outlook: Economic—Mexico*, Country Reports, June 24, 2015.

[50] Thomas Tunstall, Ph.D., Javier Oyakawa, M.S., M.Sc., and Alejandra Bueno, et al., *Economic Impact and Legal Analysis of the Shale Oil and Gas Activities in Mexico*, UTSA, UANL, AEM, Wilson Center, Preliminary Report, May 2015.

[51] Ibid.

[52] "Richard Fausset, "Tons of Thousands Protest Mexican Oil Reforms," *Los Angeles Times*, September 8, 2013.

[53] Enrique Krauze, "Mexico's Theology of Oil," *New York Times*, November 1, 2013.

[54] CFR, 2014.

U.S. Crude Oil Export Policy: The Case of Mexico[55]

U.S. crude oil exports generally are prohibited under U.S. law. The Energy Policy and Conservation Act of 1975 (P.L. 94-163, EPCA) directs the President to restrict the export of crude oil. There are certain cases where crude oil exports are permitted in statute, including if it is shipped to Canada for use therein, is shipped on the Trans-Alaska Pipeline, is of foreign origin, or is from the Strategic Petroleum Reserve if such export will directly result in import of refined products not otherwise available. Additionally, crude oil export regulations allow for exchanges with adjacent and non-adjacent countries as long as certain criteria are met. EPCA and other statutes permit crude oil exports in circumstances where the President determines that such exports are in the national interest.

There have been some efforts to encourage the President to issue a national interest finding that would allow for unlimited crude oil exports from the United States to Mexico, as has been permitted for Canada since 1985. Under current laws and regulations, unlimited oil exports from the United States to Canada are allowed, although an application must be approved for each export transaction. As a result of this exemption, Canada is the primary destination for U.S. crude oil exports, with exports exceeding 570,000 bbl/d in May 2015.[56] The President could make a similar national interest determination for export to Mexico, and, arguably, such a determination would allow crude oil to be traded freely between the countries as economic conditions justified.

Congressional debate about potential changes to crude oil export restrictions is ongoing. Numerous economic studies from various government and industry organizations have been published. During the 114th Congress, there have been numerous hearings held by various House and Senate committees that have explored aspects of U.S. crude oil export policy. Furthermore, at least seven bills have been proposed during the 114th Congress, in addition to various Senate amendments that have been filed.[57] As of the date of this report, bills have been advanced in the energy committees of both the House and Senate that would allow for unrestricted crude oil exports. S. 2012, the "Offshore Production and Energizing National Security Act of 2015," was advanced by the Senate Committee on Energy and Natural Resources in July 2015. H.R. 702, "To Adapt to Changing Crude Oil Market Conditions," was advanced by the House Energy and Commerce Committee in September 2015.

Mexico-U.S. Oil Exchanges

Under the Export Administration Act of 1979,[58] the Bureau of Industry and Security (BIS) provides export licenses for crude oil exports under so-called short supply controls. Its licensing decisions are based on the statutory prohibitions and exemptions previously noted. However, it will review other applications to export crude oil on a case-by-case basis to determine whether they are in the national interest and consistent with the EPCA.

The BIS crude oil export regulations allow for exchanges with adjacent and non-adjacent foreign states as long as certain criteria are met. It is important to recognize that exchanges with adjacent and non-adjacent foreign states are distinct types of crude oil export transactions, and each has

[55] This draws from CRS Report R43442, *U.S. Crude Oil Export Policy: Background and Considerations*, by Phillip Brown et al.

[56] Oilgram Price Report, "Canadian Imports of U.S. Crude Hit Fresh Highs in May," July 9, 2015.

[57] Proposed legislation in the 114th includes H.R. 156, H.R. 702, H.R. 1487, H.R. 2369, S. 791, S. 1312, and S. 1372.

[58] The EAA is currently expired, however, its provisions and those of the regulations implementing it, the Export Administration Regulations (EAR), are maintained through a declaration of national emergency and invocation of the International Economic Emergency Powers Act (IEEPA, P.L. 95-223).

different criteria. Generally, crude oil export licenses for non-adjacent foreign state exchanges are much more difficult to obtain than those for adjacent foreign states. Adjacent foreign state exchanges could be approved based on "convenience and increased efficiency of transportation," terms that are not defined in the regulations. Crude oil exported as part of an adjacent foreign state transaction may not be reexported to another country.

In a move that could potentially enhance the efficiency of refinery utilization in both the United States and Mexico, the Mexican government proposed an exchange transaction whereby heavy, sour crude oil from Mexico would be exchanged for light, sweet crude oil from the United States. On January 8, 2015, the chief executive officer of Pemex announced that the company wants to increase Mexico's production of gasoline for domestic use by importing and refining light crude from the United States.[59] U.S. Commerce Secretary Penny Pritzker has confirmed that the United States is engaged in ongoing discussions with Mexican officials over whether to export light crude oil to Mexico.[60] In August 2015, the Department of Commerce Bureau of Industry and Security stated that it "is acting favorably on license applications for the exchange of U.S. crude oil for similar quantities of Mexican crude oil."[61] Details of the approved applications were not disclosed. While some analysts suggest that the approval of oil exchanges with Mexico represents a shift in U.S. policy, as discussed above existing crude oil export regulations provide the opportunity for exchange transactions with adjacent countries.

Pipeline Issues

Cross-border natural gas pipelines are authorized by the Federal Energy Regulatory Commission (FERC) in the United States. More than 20 natural gas pipelines linking the United States and Mexico are operating. Their approval by FERC has generally proceeded with little opposition, although concerns about environmental impacts from "induced" gas production in the United States may become a factor in the future. Between 2008 and 2013, U.S. pipelines to Mexico doubled their capacity. Current U.S. export capacity to Mexico is 4.9 billion cubic feet per day (bcf/d). By the end of 2016, that capacity should reach 8.4 bcf/d.[62] Private companies have, for the most part, not complained about the speed of the current pipeline approval process, although they have voiced concern about delays for specific projects.[63]

Unlike natural gas pipelines, cross-border oil pipelines require authorization from the U.S. Department of State in the form of a Presidential Permit. Although there are no crude oil pipelines between the United States and Mexico, there are two cross-border pipelines for refined petroleum products. The review and issuance of Presidential Permits by the State Department has become contentious in recent years, as illustrated by the protracted review of the proposed Keystone XL pipeline between the United States and Canada. A number of legislative proposals in the 113th Congress sought to modify the State Department's oil pipeline permitting authority to encourage pipeline development, but none have been enacted. The House approved a related bill on January 21, 2015 (H.R. 161).

[59] Voice of America, *Mexico Proposes Historic Crude Oil Swap with US*, January 8, 2015.

[60] David Alire Garcia and Christine Murray, "U.S. Discussing Possible Light Crude Exports to Mexico: Pritzker," Reuters, January 6, 2015.

[61] Email correspondence with the Bureau of Industry and Security, August 14, 2015.

[62] Electronic correspondence with U.S. Federal Energy Regulatory Commission (FERC), August 14, 2015.

[63] On June 24, 2014, the House approved legislation (H.R. 3301) that seeks to ensure the continued development of natural gas infrastructure and exports to Mexico. Those provisions were integrated into H.R. 2, which the House passed on September 18, 2014.

Other Opportunities for Bilateral Energy Cooperation

As energy moves to the forefront of U.S.-Mexican relations, opportunities may exist for greater bilateral or trilateral (with Canada) energy cooperation. Those advocating a trilateral approach generally highlight the need for regulatory harmonization, regional planning, reduced investment and export restrictions, and strategic investments in new infrastructure.[64] Within the U.S.-Mexico context, analysts have urged the United States to offer more technical assistance to Mexico if it is requested.[65] Another area that could be expanded involves efforts to ensure that hydrocarbons resources are developed without unduly damaging the environment, possibly through collaboration between Mexican entities and U.S. federal or state regulatory entities. In terms of capacity-building, the University of Texas system has recently expanded educational exchanges and training opportunities for Mexicans working in the petroleum sector. Other U.S. universities could also follow suit, potentially with support from the Obama Administration's "100,000 Strong in the Americas" effort to boost educational exchanges.[66] Many others have also urged the United States and Mexico to work together to provide oil and natural gas resources to help reduce expensive energy costs in Central America as well.

TPP Negotiations

While the North American Free Trade Agreement (NAFTA) removed significant investment barriers and ensured basic protections for U.S., Canadian, and Mexican investors in other NAFTA countries, it did not open the Mexican energy sector to foreign investment.[67] The recent opening of Mexico's energy sector to foreign investors may have implications for the ongoing trade negotiations for a Trans-Pacific Partnership agreement (TPP).[68] The United States, Mexico, and Canada are all participating in the talks and, while a TPP is not likely to change NAFTA, an agreement may change the rules governing North American investment and trade. During an October 2014 visit to Washington, DC, Mexico's Economic Secretary Ildefonso Guajardo suggested that the TPP talks should reflect the opening of Mexico's energy sector to private investors and include updates in the investment provisions of NAFTA to deter trade and investment disputes among North American investors.[69]

Outlook

Since taking office, President Peña Nieto has shepherded a number of significant constitutional reforms through the fractious Mexican Congress that had eluded the past two PAN Administrations. The most important of those reforms may be the energy reforms promulgated on December 20, 2013, and implemented by secondary laws signed on August 11, 2014, that allow for private participation in Mexico's oil and gas sector in ways not possible since the sector was

[64] CFR, 2014.

[65] Goldwyn, August 2014.

[66] For information, see http://www.100kstrongamericas.org/about.

[67] For more information on NAFTA, see CRS Report R42965, *The North American Free Trade Agreement (NAFTA)*, by M. Angeles Villarreal and Ian F. Fergusson.

[68] For more information on the TPP, see CRS Report R42694, *The Trans-Pacific Partnership (TPP) Negotiations and Issues for Congress*, coordinated by Ian F. Fergusson. The 12 countries involved in the Trans-Pacific Partnership (TPP) negotiations are the United States, Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, and Vietnam.

[69] "Trade Talks Must Reflect Mexico's Energy Reforms, Guajardo Says," Bloomberg Bureau of National Affairs, October 23, 2014.

nationalized in 1938. The recently enacted energy reforms have the potential to boost energy production and improve economic competitiveness in Mexico, but implementing them in a meaningful way may prove difficult.

The next six months could prove critical for the success or failure of Mexico's energy reforms. Amid strong opposition from the political left, the Mexican government will have to manage popular expectations about the benefits of the reforms, many of which may not be felt immediately. Pemex will need to restructure its workforce and investment priorities as it seeks to become a productive state enterprise that can compete with other companies. The National Hydrocarbons Commission (CNH) will need to complete the first rounds of public bidding in an efficient and transparent fashion and to offer contracts with terms that are attractive to international companies. At the same time, the executive will need to create strong regulators to oversee the hydrocarbons sector in a time of budget austerity.

This report will be updated periodically to inform the U.S. Congress on the implementation of oil and gas reforms in Mexico and to analyze how the reforms may impact Mexico's economic performance, the U.S. oil and natural gas sector, and bilateral energy relations.

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