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# HOW FOREIGN OIL COMPANIES CAN STRIKE IT BIG IN MEXICO

By Luis Barallat, Eugenio Lohr, and Javier Romero

**F**OR MAJOR OIL COMPANIES, Mexico is a rare land of opportunity. The country has abundant hydrocarbon resources and has opened its upstream sector to attract foreign capital and competition. Many of its resources, particularly deepwater and shale assets, remain untapped because of insufficient investment by the country's monopoly oil company, Pemex.

Several factors should make foreign oil companies feel comfortable about stepping into this market. For one, Mexico's hydrocarbons are geologically similar to rich proven deposits on the US side of the border. Its proximity to the US also means that Mexico is a less expensive and easier place for oil companies to do business compared with countries in Africa, South America, and Asia.

Still, capturing that opportunity is not straightforward. Companies need to act carefully if they are to successfully navigate the Mexican market. They need to build a set of close, local relationships and develop new assets effectively—while minimizing operating costs—to be profitable.

## Mexico's Energy Market Liberalization

In 2013, the Mexican government announced landmark reforms to open up its oil, gas, and electricity industries to foreign direct investment. In addition, the government indicated that it would award the rights to upstream blocks to private domestic and foreign oil and gas companies and would introduce other measures encouraging private participation. (See *The Promise of Mexico's Energy Reforms*, BCG Focus, April 2014.)

Although the government took these steps to attract foreign investment and expertise, it was also looking to address the deteriorating state of Mexico's oil industry. Historically, the industry has depended on Pemex, which is one of the leading oil and gas companies in the world and the largest company in Mexico. But state ownership has resulted in inefficiencies at the oil giant and across Mexico's other energy companies. It has also led to a poor record on reserve replacement. Even though the company increased capex from about \$12 bil-

lion in 2008 to more than \$20 billion in 2013—when global oil prices peaked—proven reserves continued to decline owing to the low productivity of its investments. As a result, Mexico’s share of global proven reserves dropped from 1.6% in 2000 to 0.6% in 2015.

Since the 2013 reforms, Pemex’s financial position has further deteriorated, in part because of weaker oil prices. Despite a government-backed turnaround plan, several years of multibillion-dollar losses have hampered fresh investment in upstream exploration and production. Consequently, Mexican oil production has fallen sharply. This drop has given added impetus to the state’s drive to promote foreign investment. The government believes that international oil companies and a revitalized Pemex (through partnerships and farm-outs) could reverse the decline in production, boosting development of deepwater and unconventional reservoirs and increasing the amount of oil recovered from mature fields.

### The Size of the Opportunity

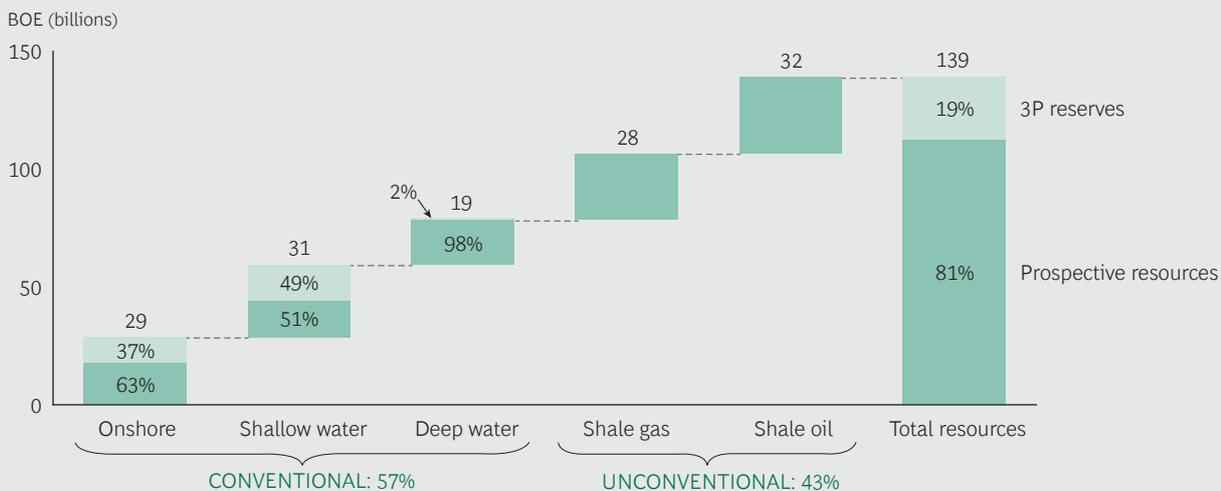
Although Mexico’s proven oil reserves have decreased, prospective resources are sizable. (See Exhibit 1.) The energy ministry estimates that Mexico has 3P—in other

words, proven plus probable plus possible—reserves amounting to 26 billion barrels of oil equivalent (BOE) and 113 billion BOE in prospective resources. Deepwater and shale assets make up more than half the total. Mexico ranks among the top ten countries in the world for technically recoverable unconventional shale oil and gas resources.

So far, the government has held two auctions (each with multiple rounds) that have attracted considerable interest from international oil companies and local firms. Successful bidders have included Shell, Total, BP, and ExxonMobil. In addition, BHP has taken a stake in the Trion deepwater field—Mexico’s first farm-out deal. Bidders that have succeeded at auction have committed to meaningful development programs that will benefit the local industry. (See Exhibit 2.)

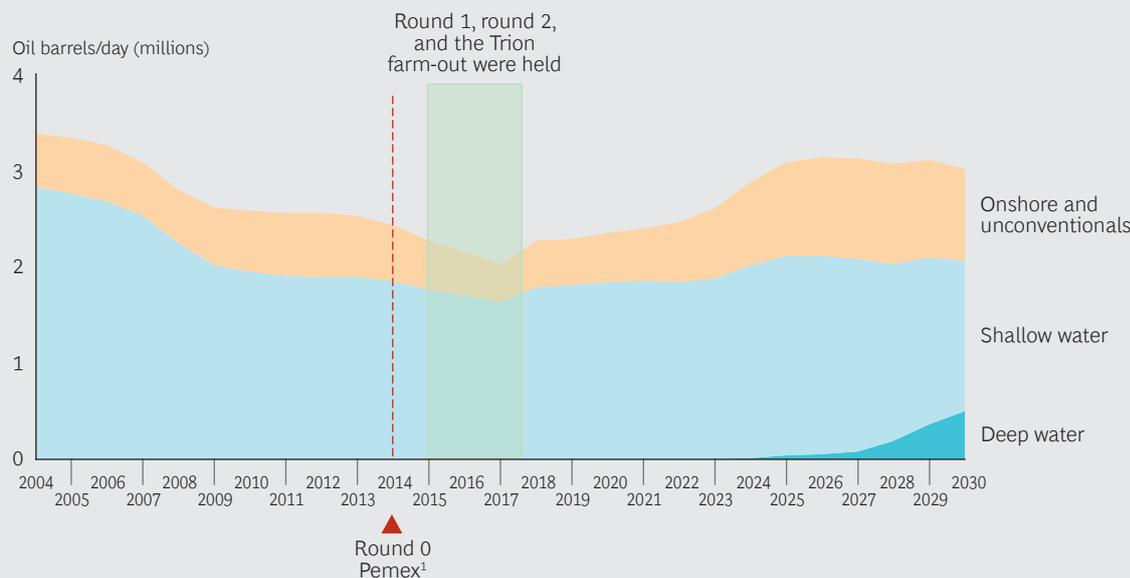
Generally, large integrated oil companies have secured deepwater fields located in Mexican territorial waters in the Gulf of Mexico; these fields are capital intensive and require technology and deepwater expertise. Because Pemex has limited capital, it has focused on shallow-water fields (including the giant Cantarell field, once one of the world’s most productive), leaving the deepwater fields largely untouched.

**EXHIBIT 1 | Mexico’s Prospective Resources Equal More Than 80% of the Total**



**Sources:** *Prospectiva de Petróleo Crudo y Petrolíferos 2015–2029*, Secretaría de Energía; Comisión Nacional de Hidrocarburos.  
**Note:** Total resources are equivalent to 3P reserves (about 26 billion barrels of oil [BOE]) and approximately 113 billion BOE in prospective resources.

## EXHIBIT 2 | Mexico's Energy Reforms Are Set to Reverse Its Downward Oil Production Trajectory



**Sources:** “Producción Nacional de Petróleo y Gas,” Comisión Nacional de Hidrocarburos website; *Prospectiva de Petróleo Crudo y Petrolíferos 2016–2030*, Secretaría de Energía (SENER); BCG analysis.

**Note:** Production values as of January 2017; projected volumes are calculated as an average of the minimum and maximum projection estimates provided by SENER. Values for 2018 through 2030 are estimates.

<sup>1</sup>PEMEX was awarded 83% of Mexico’s 2P (proven plus probable) reserves and 21% of prospective resources directly by the Mexican government without a competitive auction process.

In contrast to the approach of large companies, smaller and more specialized exploration companies have pursued onshore and shallow-water opportunities. Specialist upstream players are also looking at ways to access Mexico’s sizable unconventional resources. These may be included in subsequent auctions—a third auction is planned for this year. Tapping the country’s shale assets poses an additional set of challenges for the winners, however.

### BALANCING THE RISKS AND THE POTENTIAL

Companies need to carefully weigh the benefits and drawbacks of different assets before they compete in Mexico. Owing to Pemex’s limited upstream investment, most of the hydrocarbons that companies are bidding for are prospective resources, which need to be analyzed further to assess their full commercial potential.

Mexico’s most important shale formations are located in the northeast of the country, in the Burgos, Sabinas, and Tampico-Misantla Basins. Some are extensions of the Eagle Ford formation in Texas—one of

the largest oil-producing basins in the US; others share geological similarities with it. For example, reserves at Eagle Ford are located 7,000 feet below the surface, comparable to the depth of the Mexican sites. They also share similar levels of thickness, clay content, porosity, and organic matter.

As a result, Eagle Ford may be considered a proxy for future shale production costs in Mexico, once a proper industrial infrastructure has been put in place. In the same way, Mexico’s deepwater fields in the southern part of the Gulf of Mexico are geologically comparable to those located in US waters. International oil companies with expertise in the US Gulf of Mexico will have an advantage in finding hydrocarbons and keeping costs in check.

In fact, the first foreign-Mexican consortium to secure shallow-water assets at auction, in mid-2015, has prospered. When Sierra Oil & Gas, Talos Energy, and Premier Oil started to drill two years later, they found approximately 1.4 billion to 2 billion barrels, at least 13 times the amount estimated by official sources.

## TACKLING BARRIERS TO SUCCESS

Many of the enablers for success—natural resources, infrastructure, security, and human resources—need to be put in place at new developments in Mexico, especially in the shale region of the northeast.

Natural resources, in particular, will be a challenge. The availability of water, a key element in the fracking process, is a substantial problem in the region. Similarly, Mexico has no known domestic source of fracking sand, so robust supply chain management will be an important factor in successfully tapping Mexican shale resources.

Many other challenges must also be overcome for Mexico to fully exploit its resource potential. The existing pipeline network was built to transport oil from Pemex's main production fields and does not extend into the areas of the northeast where Mexico's shale basins are located. And highways in these rural areas were not built for intensive use. The northeast also suffers from high levels of organized crime arising from the illegal drug trade and is one of the least peaceful areas in Mexico. Finally, Mexico still lacks a broad cadre of engineers and technicians with the skills needed to work in this industry.

To tackle these problems, companies can learn from successful solutions elsewhere and apply them in Mexico. Operators in Eagle Ford, for example, switched from fracking techniques that use a large amount of water to gel fracturing, cutting water use by half. And to address a skills shortage caused by rapid growth at the Texas basin, companies implemented both short- and long-term solutions. They hired workers with relevant skills from other sectors—such as construction, engineering, and the military—and trained them, but companies partnered with local and regional educational institutions to develop relevant long-term training programs as well.

Other success stories can also serve as examples. At Eagle Ford, the rapid construction of a 50-mile oil pipeline, paid for by operators, reduced pressure on local highways by 1,250 truck trips each day. (By

comparison, Mexico's energy ministry plans to develop new pipelines in the northeast by 2019, though this capacity is likely to be insufficient for new operators.) Argentina solved the problem of fracking-sand shortages at its Vaca Muerta shale formation by importing the material, despite the need for a complex logistical process to transport it in-country.

In Nigeria, the government ended a violent campaign of kidnapping and bombing—aimed at giving local communities a share of oil revenues—by providing the militants with cash payments in exchange for their weapons and lucrative contracts to secure oil pipelines. While this type of solution may not be appropriate in Mexico, it demonstrates that issues arising from high crime rates can be resolved.

## What Companies Need to Do to Prosper

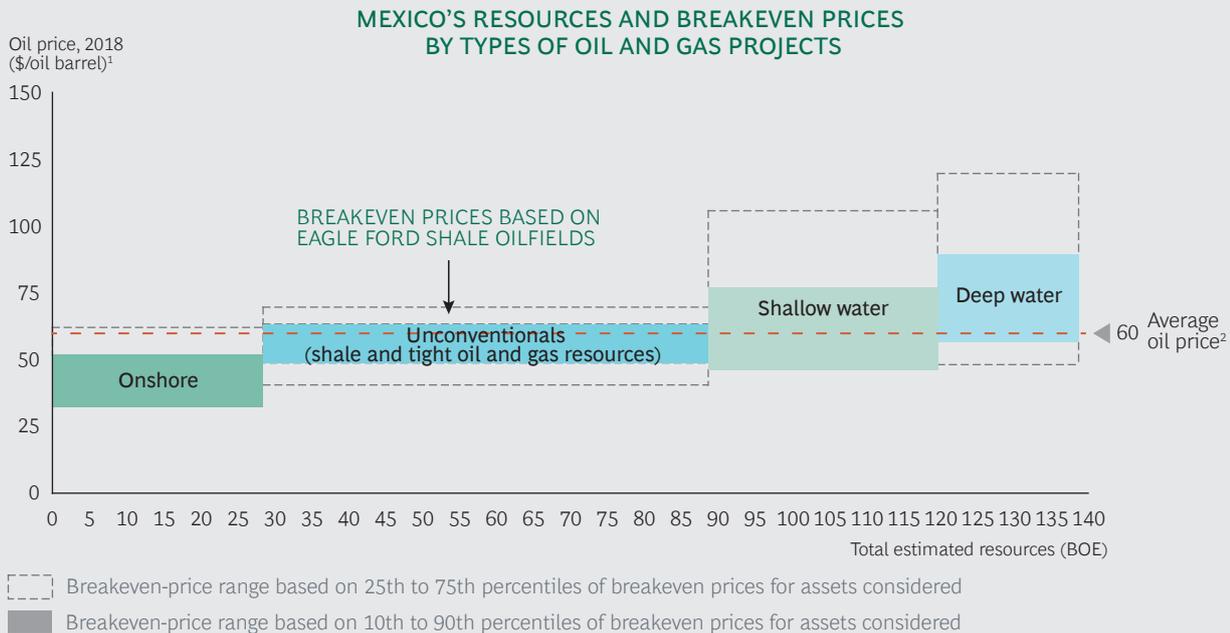
Given the currently low price of oil, profiting from Mexican oil and gas assets will not be straightforward. To assess the challenges that companies will face in trying to achieve profitability, we looked at breakeven prices from the Eagle Ford shale fields and existing deepwater assets in the Gulf of Mexico. We found that, for the average global operator, achieving a rate of return superior to its cost of capital will require careful selection of ventures and excellent project development skills. (See Exhibit 3.) Operators need to use capital efficiently, both in the project phase and when fields are in operation.

In this environment, companies entering the market should consider the following steps.

### DEVELOP JOINT VENTURES

Mexico poses several challenges for foreign companies. Exploiting its potential requires the strong technical skills that international oil companies possess, but this expertise needs to be combined with a good understanding of the operating environment, particularly for onshore operations. Access to qualified local personnel and service companies is important.

### EXHIBIT 3 | Capital Efficiency Will Be Important If Assets Are to Be Profitable



**Sources:** Rystad Energy UCube as of January 17, 2018; *Prospectiva de Petróleo Crudo y Petrolíferos 2015–2029*, Secretaría de Energía; Bloomberg; BCG.

<sup>1</sup>Undiscovered resources are not included in the calculation of future breakeven prices. Analysis includes developed fields, fields under development, and fields that will be developed in the future (already discovered). Breakeven prices are calculated using cash flows from the award year onward, with a 10% discount rate, and expressed in real prices. US fields are considered for estimation of breakeven prices of onshore and unconventional segments; Mexican fields are considered for shallow-water and deepwater segments.

<sup>2</sup>Oil prices as of December 2017 for Brent and West Texas Intermediate (WTI) crudes.

Partnership arrangements can help address some of these challenges. By using a joint-venture approach, operators may be able to tap local supply networks. They are also more likely to be successful in negotiations with stakeholders, regulators, and local communities. Savvy foreign companies will navigate the supplier landscape through partnerships with Mexican players that have an established track record in the country. Creating successful joint ventures depends on multiple conditions, from setting clear objectives to planning your exit in advance. (See *Getting More Value from Joint Ventures*, BCG Focus, December 2014.)

#### FOSTER GOOD CAPITAL STEWARDSHIP AT NEW FIELDS

Keeping large-scale capital-intensive projects on time and on budget is a perennial success factor in the oil industry. The requirement for cutting-edge technology and the challenges arising from managing multiple stakeholder relationships (with contractors, government, and local communities) have compounded project complexity and

led to larger project teams for the industry as a whole. According to IHS, about 40% of oil and gas projects worldwide experience schedule overruns and 20% are over budget.

We have found that companies can achieve savings of about 10% to 15% of their original budget—from initial appraisal to execution—with a lean approach to large projects that combines effective, standardized, and structured procedures. Applying such an approach can significantly enhance project management. (See *Eight Key Levers for Effective Large-Capex-Project Management*, BCG Focus, October 2012.)

#### APPLY A BEST-IN-CLASS APPROACH TO OPERATING EXPENDITURES

Once companies bring assets online, they need to immediately focus on minimizing operational costs. To keep costs in check in today's low-price environment, they should adopt a multipronged approach and avoid overly complex processes. They should focus on three areas, including optimizing the asset portfolio, increasing organization-

al effectiveness and efficiency, and simplifying and improving operational processes using digital technologies. (See “From Cutting Costs to Building Resilience in Upstream Oil and Gas,” BCG article, November 2017.)

In the Mexican context, companies should evaluate the benefits and tradeoffs of strategies such as the following:

- Given the timing of the auction process, several companies will start exploration or production at about the same time. They should consider pooling production facilities, staff, or equipment to capture potential synergies.
- Companies need to optimize both inbound and outbound logistical costs—using all modes of transport—and improve planning as well as load management. They should think about

partnering with companies that can invest in pipelines and optimize existing road and rail infrastructure.

- Companies should consider taking a flexible approach to support functions, outsourcing services locally where necessary and designing the appropriate team size for the task.

**M**EXICO'S UPSTREAM AUCTIONS offer international oil companies a unique opportunity to enter a region with substantial hydrocarbon resources as well as many additional advantages. Seizing the Mexican prize will not be straightforward, however. Newcomers need to combine excellent technical skills with the ability to develop strong local relationships so that they can successfully navigate the Mexican business landscape. If they can do this, the payoff could be substantial.

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### Acknowledgments

The authors would like to thank Patricio Gamboa, Borja Jimenez, Alberto Santos, Andrei Sardo, and Eugene Chiam for their help with this article.

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