

# Unlocking future growth for deepwater in the Gulf of Mexico

McKinsey projects deepwater prospects will be an important part of future global oil and gas supply, with the Gulf of Mexico representing a sizable portion of new production expectations for 2030.

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Operators in the Gulf of Mexico (GOM) have had success recently focusing on incremental tie-backs and near-field opportunities, and there remains uncaptured upside there. However, recent challenges in deepwater exploration puts into question the scale of the GOM's growth potential. New trends in technology, development, commercial models, and financing—and industry players' responses to these innovations—will determine whether the GOM will return to its former role as a high-margin, cash-generation contributor for the best operators.

### What is the role of the Gulf of Mexico as a source of future crude-oil supply?

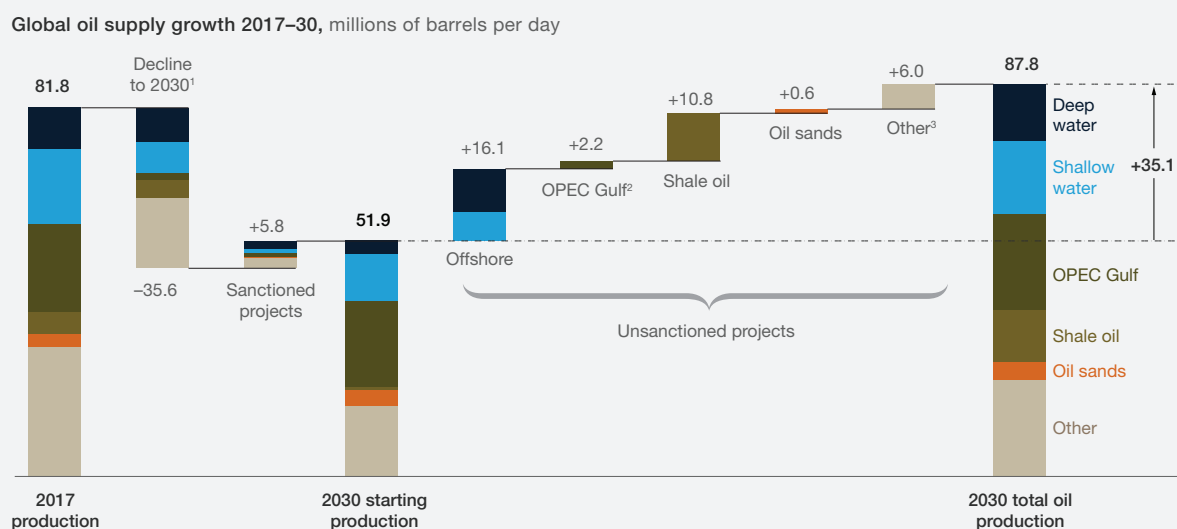
Even with the steep growth in onshore unconventional oil and gas production, deepwater fields are projected to remain an important source of future global oil supply, with the GOM representing a sizable part of the mix. If crude-oil prices average \$70 per barrel over the long term,

36 million barrels per day of new crude production from unsanctioned projects will be needed to meet demand in 2030 (Exhibit 1). Much of this (30 percent or 9.5 million barrels per day) is expected to come from deepwater fields.

This scenario assumes that market share for the Organization of Petroleum Exporting Countries (OPEC) remains constant and that US shale oil output will plateau by the mid-2020s in legacy plays such as the Bakken and Eagle Ford. At lower breakeven prices, shale plays begin to become exhausted. As that happens, the GOM and, more broadly, deepwater will become more attractive relative to the higher-cost onshore shale resources.

We expect that by 2030 about 20 percent or 2 million barrels per day of new global deepwater supply will come from the GOM, the largest wedge of new production after Brazil (Exhibit 2). The GOM's

**Exhibit 1** By 2030, 36 million barrels per day of new crude production from unsanctioned projects will be needed to meet demand.



<sup>1</sup>The decline is net of in-fill drilling and other work done to fields that are not classified as major projects.

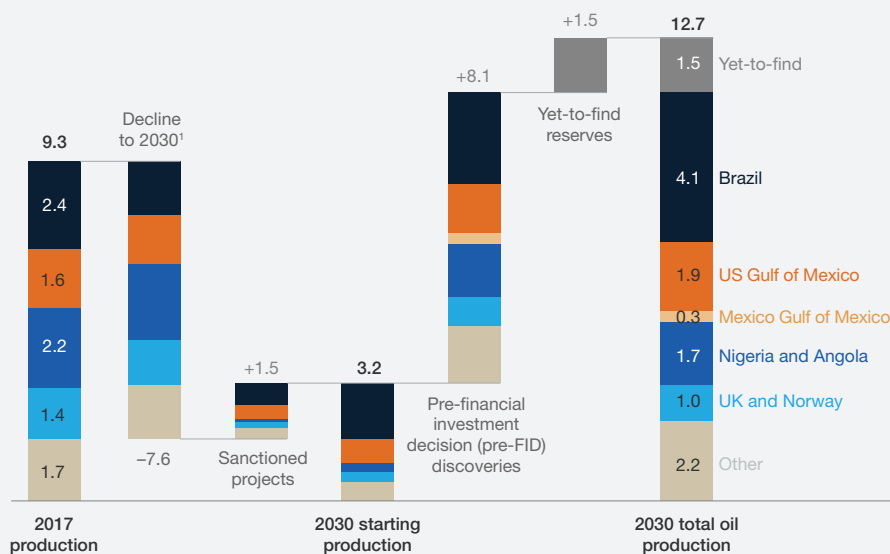
<sup>2</sup>Does not include shallow water. OPEC = Organization of Petroleum Exporting Countries.

<sup>3</sup>Other includes onshore conventional, heavy oil, unconventional gas, and excludes OPEC Gulf.

## Exhibit 2

After Brazil, the **Gulf of Mexico** is projected to supply the largest wedge of new deepwater production to 2030.

Global deepwater oil supply growth 2017–30,  
millions of barrels per day



<sup>1</sup>The decline is net of in-fill drilling and other work done to fields that are not classified as major projects.

McKinsey&Company | Source: Energy Insights by McKinsey

competitiveness on the global cost curve is driven by a set of factors. An attractive fiscal regime, which has been further improved by recent US corporate tax cuts, could further improve development costs by reducing breakeven costs by another \$2 to \$3 per barrel. While not certain, additional improvements to the fiscal regime (such as a reduction in the deepwater royalty rate from 18.75 percent to the equivalent onshore rate of 12.50 percent) could lead to an additional drop in breakeven costs valued at an additional approximately \$2 per barrel. The GOM also enjoys extensive existing infrastructure that improves economics relative to other emerging growth areas, such as the Brazil subsalt.

### What are the sources of growth in the Gulf of Mexico?

Despite the positive outlook, it is uncertain

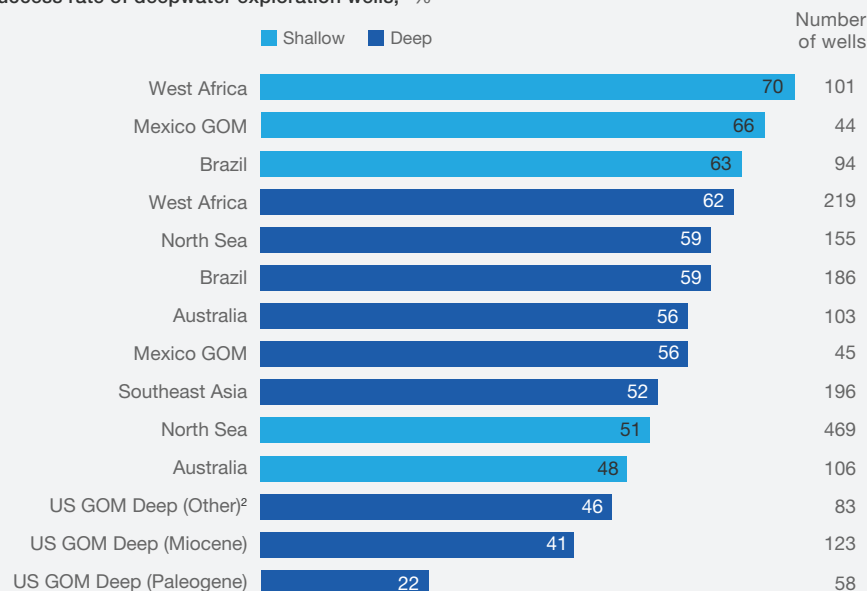
where growth in the basin will come from, given exploration challenges and the fact that the majority of recent GOM developments are incremental, near-field developments rather than the larger Paleogene plays.

Both before and after the 2014 oil price crash, exploration opportunities in the GOM were proving to be challenging with bottom-tier success rates for exploration wells benchmarked against other basins (Exhibit 3). One reason for this is that exploration in GOM deepwater has over time moved to complex reservoirs such as the Paleogene, where success rates have been particularly dismal (approximately 20 percent on average, two to three times worse than other deepwater regions). Even when Paleogene exploration has resulted in discoveries with large find sizes, most of these finds have not been

### Exhibit 3

Before and after the 2014 oil price crash, exploration opportunities in the Gulf of Mexico were proving to be challenging, with few successes.

Success rate of deepwater exploration wells,<sup>1</sup> %



<sup>1</sup>Excludes tight holes, for the period 2008–17.

<sup>2</sup>Data not available. Jurassic, or Quaternary.

McKinsey&Company | Source: Woodmac UDT; McKinsey analysis

developed given the complexity of the reservoir and the uncertainty of the economics.

Of the approximately 5 billion barrels of oil equivalent of discovered reserves in the GOM that have been brought online since 2005, 70 percent of the volume has been in the Miocene play, with only 5 percent coming from the Paleogene (Exhibit 4). Following the collapse of oil prices in 2014, operators in the GOM prioritized “value over volume.” New

reserves that have come online since 2014 have almost exclusively leveraged tie-backs in the Miocene with shorter cycle developments averaging three years from discovery to production of first oil. Focusing on new subsea tie-back developments has proved successful for many GOM operators, who have been able to leverage existing infrastructure and reduce cycle times. Leading operators, leveraging existing infrastructure, have been able to drive and are investing in deepwater because the

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#### Implications: What are the trends that may unlock value-creating growth?

We see four trends that should help accelerate exploration and development of the basin, boost operators' success rates, and increase the amount of production that can compete with onshore shale assets.

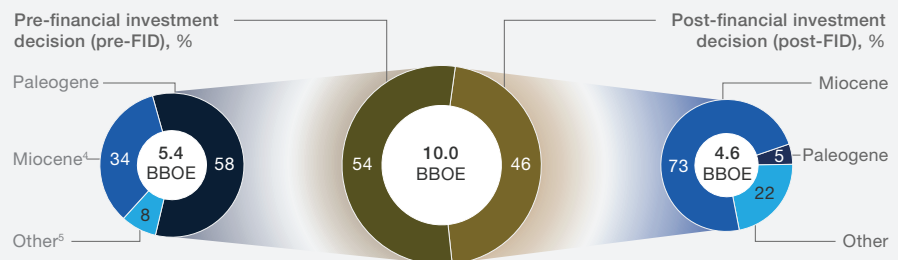
- **Game-changing technology.** Technology will be a critical factor for determining deepwater's ability to compete with onshore shale. New technologies are already transforming deepwater across the life cycle of a field. Exploration analytics, for example, are being used to identify new resources in existing fields in the GOM—and have the potential to transform competitiveness
- **New producer-supplier operating models.** Operators and suppliers are increasingly rethinking traditional ways of working. Partnership concepts at both the field and basin levels are on the rise, which have the potential to improve the overall cost structures of deepwater projects. For example, operator-supplier

in exploration. In the North Sea, operators are using technology to increase recoveries, with results as high as 70 percent. Deepwater operators also are utilizing digital applications to improve operating efficiencies. Predictive maintenance analytics for critical pieces of equipment have the potential to materially improve uptime. While still nascent, remote operations enabled by technology and analytics will be part of the GOM's future operating model.

#### Exhibit 4

The majority of discoveries brought online since 2005 have been smaller Miocene reserves.

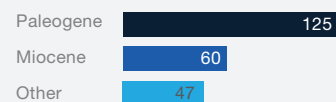
Discovered reserves in deepwater Gulf of Mexico<sup>1</sup> with spud<sup>2</sup> year between 2005–17, BBOE<sup>3</sup>



Pre-FID average discovery size, MBOE<sup>6</sup>



Post-FID average discovery size, MBOE



<sup>1</sup>Water depth of 1,000+ feet.

<sup>2</sup>Spudding is the process of beginning to drill an oil or gas well.

<sup>3</sup>Billions of barrels of oil equivalent.

<sup>4</sup>Miocene, Neogene, and Pliocene.

<sup>5</sup>Data not available. Jurassic, or Quaternary.

<sup>6</sup>Millions of barrels of oil equivalent.

McKinsey&Company | Source: Wood Mackenzie



partnerships to standardize engineering designs and equipment—in early stages of project development—are being developed to speed cycle times and take waste out of the system. Another trend is the emergence of new commercial models, pioneered in the aerospace sector, that align incentives across operators and equipment suppliers through risk-sharing and jointly sharing in the value of an end-to-end project.

- ***Operator collaboration to improve capital and operational efficiency.*** Collaboration among operators also has the potential to structurally reduce deepwater project costs. Such initiatives already are under way in the North Sea, where offshore operators are seeking to merge activities, including procurement, logistics, and back-office support functions. Creating common inventory among industry players and pooling standard equipment at a basin level through a buyers club model are emerging concepts. Another opportunity being explored is to share helicopter resources and other marine logistics among operators active in a similar area. Finally, industry-wide collaboration such as the JIP33 Capital Project Complexity initiative, begun in conjunction with industry participants and the World Economic Forum in 2015 and now hosted by the International Association of Oil & Gas Producers, is creating standard specifications of equipment and components. The subsea tree specification developed by this initiative is estimated to result in roughly 20 to 25 percent cost savings per tree, even with the same quality expectations. Finally, joint-venture partners can collaborate to improve capital efficiency and cycle times, in areas such as streamlining company project approval and capital call processes.
- ***Novel financing approaches for project delivery.*** Independents are increasingly leveraging third-party capital for investments

in greenfield projects to reduce upfront capital needs and improve cash flow. Additionally, some larger operators are divesting stakes in existing platforms to infrastructure funds, which have a more attractive cost of capital for owning the “steel”—thereby freeing up operator capital to invest in the resource base that produces higher returns.

### What are the implications for industry participants?

- ***Take a ‘long game’ approach to deepwater investment.*** Once a company has identified the GOM as a priority basin, it must make sure it can invest sufficient time and resources to maintain growth. For majors, this means committing to a “basin master” approach, or a strategy that not only leverages infrastructure for incremental plays but also delivers value-creating growth in prolific fields, such as in the Paleogene, that can compete with other investment opportunities. For smaller players, an M&A strategy may be crucial to fuel growth and leverage economies of scale for operating efficiencies and access to infrastructure.
- ***Refocus on your strengths.*** Creating value in deepwater requires operators to be above average on such key dimensions as exploration, access to capital, contracting strategy, and production efficiency. Benchmarking can help operators identify their competitive advantages and the best way to leverage them—and potentially partner with those with advantages elsewhere.
- ***Build a partnership strategy.*** In many deepwater developments, partnerships can bring benefits. In the GOM specifically, partnerships offer a way to share risks, pool specialized capabilities, and leverage the supply chain and talent pool in the basin. Opportunities exist for both operators and suppliers to improve and build upon collaboration examples across other deepwater basins (for

example, Brazil and the North Sea) to increase deepwater's competitiveness.

- ***Commit to innovation.*** Technology and innovation will continue to shape deepwater's trajectory. Both operators and suppliers will need to invest in systems and transform ways of working to keep pace with technological advances that are reshaping the industry. There is an opportunity for operators and suppliers to set bold strategies, both at a company level and at the regional level (for example, a cross-company approach to digitize basin operations) to accelerate growth and performance in the new industry context.
- ***Prioritize talent—the key to the future.*** Attracting and retaining top talent is increasingly a structural challenge for the industry. Millennials—many of whom are choosing to enter other industries—are projected to comprise approximately 75 percent of the labor force by 2025 as older workers retire. The potential “brain drain” represents a threat to industry performance and safety. Operators and suppliers will need to carefully plan for the jobs of the future. One potential approach is to link technology and digital strategies to people strategies. Companies also will need to

evolve the way they work, such as creating agile work environments and processes, to attract and retain the new workforce. Attracting and retaining more women to the industry also is essential for increasing the quality of the talent pool.

Deepwater will be an integral part of the global crude-oil supply curve over the coming years. The GOM is expected to continue to set the pace with respect to development within the broader deepwater industry. But in a volatile oil price environment and the continued rise of onshore shale supplies, GOM industry players will need to continue innovating internally within their companies, as well as through collaboration at the industry level, to grow and compete successfully. ■

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