



# PREPARING FOR THE NEXT WAVE OF OFFSHORE DECOMMISSIONING

By Eric Oudenot, Philip Whittaker, and Martha Vasquez

**A**N INTENSE PERIOD OF decommissioning is ramping up worldwide, as oil and gas wells and installations developed from the 1970s onward reach the end of their useful lives. Decommissioning is a costly challenge. For many countries, the value at stake in handling these projects properly could be worth several billion dollars. In recent decades, the North Sea and the Gulf of Mexico have seen multiple waves of decommissioning activity. Now other hot spots are emerging around the globe. And they must prepare for what is typically a massive task.

In many emerging hot spots, preparation for decommissioning is still at an early stage. Decommissioning requires a high level of coordination among governments, operators, and contractors—players that are all driven by different incentives. Moreover, in many countries, taxpayers are on the hook for the lion's share of decommissioning costs, heightening public scrutiny of stakeholders' actions.

Although operators and contractors play essential roles in defining and executing an

effective decommissioning agenda, national governments must lead the way by establishing a comprehensive governance framework and supporting it with strong institutions. This framework must ensure the optimal use of public funds, incentivize world-class project design and execution, and promote value-creating cooperation across the supply chain.

## Decommissioning Hot Spots Around the World

In the North Sea, an intense phase of decommissioning is getting underway. The challenges are especially acute, owing to the size and complexity of some of the facilities, the difficult physical and regulatory environment, and intense scrutiny by public and nongovernmental organizations. Aggregate estimates for North Sea decommissioning start at close to \$150 billion, covering the cost of removing more than 600 fixed installations and plugging and abandoning (P&A) more than 7,000 wells. (See "[The North Sea's \\$100 Billion Decommissioning Challenge](#)," BCG article,

March 2017.) Meanwhile, in the Gulf of Mexico, the US government and operators and contractors have already gained significant decommissioning experience. (See the sidebar, “Successes and Challenges in the Gulf of Mexico.”)

Beyond the North Sea and the Gulf of Mexico, we have identified three regions that are emerging as hot spots for decommissioning: Southeast Asia, Latin America, and West Africa. (See Exhibit 1.) Taken together, the structures and wells in these regions represent approximately 50% of those expected to become uneconomical in the next 20 years. The Arabian Gulf stands out as a future hot spot. By 2038, more than 1,000 structures and 3,000 wells in the Gulf will be more than 30 years old.

Additionally, five countries—Australia, China, Egypt, India, and Italy—are smaller hot spots for decommissioning. Egypt,

India, and Italy each have approximately 150 to 200 structures and 700 to 1,000 wells that are expected to become uneconomical in the next 20 years. Approximately 50 structures and 700 wells in Australia, and 200 structures and 2,000 wells in China, are expected to become in uneconomical by 2038.

## Readiness for Decommissioning in Emerging Hot Spots

A country needs a strong regulatory foundation for decommissioning in order to achieve three main objectives:

- Enabling the most prudent and efficient use of public funds
- Creating incentives for operators to maximize and continually improve their performance, in terms of both cost efficiency and environmental compliance

## SUCCESSSES AND CHALLENGES IN THE GULF OF MEXICO

No area in the world has more experience with decommissioning than the Gulf of Mexico. The first intense wave of decommissioning started in the late 1980s. Since then, operators have removed structures at a rate of 150 to 250 a year.

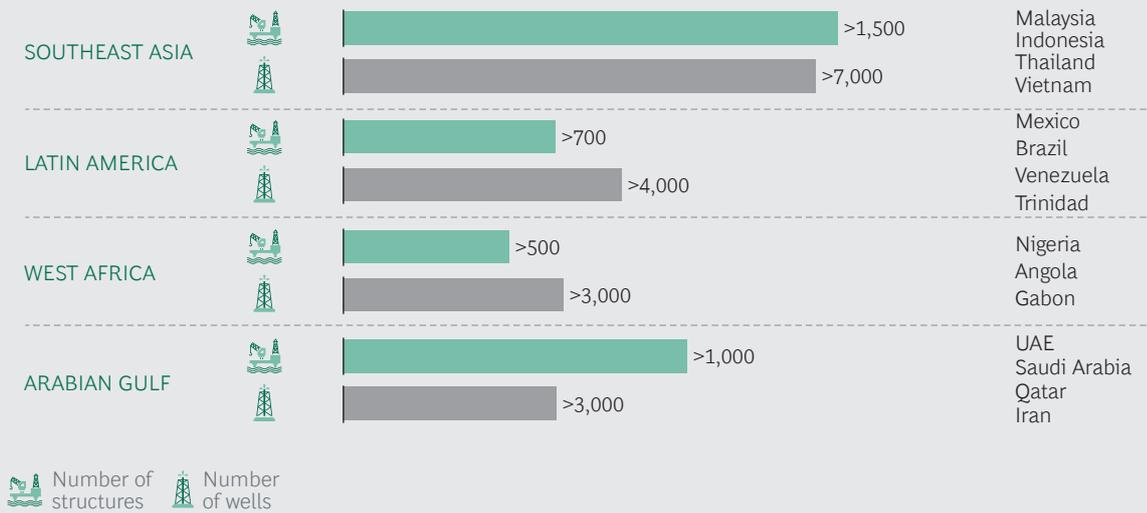
To support these efforts, the US government has established a robust regulatory framework, including technical standards and financial security requirements. The US Bureau of Safety and Environmental Enforcement (BSEE) is the main governing body and oversees all aspects of decommissioning.

Even with their track record and a strong regulatory framework in place, operators in the basin have faced challenges in fulfilling their decommissioning obligations. Cash constraints caused by depressed oil prices have been the greatest obstacle. In the past five years, at least 20 companies have experienced financial distress, including bankruptcy.

Their difficulties have put financial pressure not only on co-lessees of the structures being decommissioned, but also on previous lessees, which remain liable for decommissioning costs under the current regulatory framework.

The challenges in the Gulf are intensifying. Operators are expected to remove more than 2,000 structures and more than 9,000 wells in the coming years, according to estimates by the BSEE and the US Government Accountability Office. While earlier decommissioning waves included 600-tonne structures in water depths of up to 100 meters, the upcoming portfolio includes 11,000-tonne structures in depths exceeding 100 meters. About 25% of the plugging and abandonment activity (approximately 2,000 wells) will be at those depths. The complexity of such projects means that costs will also be higher, and operators and contractors will need more advanced technologies and capabilities.

## EXHIBIT 1 | Emerging and Future Hot Spots for Offshore Decommissioning



**Sources:** Infield Systems 2018 data; BCG decommissioning activity model.

**Note:** Analysis includes structures and wells (platform and subsea wells, but not floating installations) that will be more than 30 years old and/or are expected to become uneconomical by 2038. The listed countries are those with the largest decommissioning portfolio in each region.

- Allowing supply chain participants to play an active role in developing the solutions and technologies needed in each basin

To achieve these objectives, national governments must regulate decommissioning projects by establishing frameworks for governance, fiscal and risk management, and technical operations. It is especially critical that regulations set out clear obligations and requirements for the decommissioning process and for ensuring financial security (such as by creating a trust fund or providing a letter of credit or surety bonds). Regulations should also establish technical standards with detailed requirements for P&A, removal, monitoring, and disposal. And governments must create solid institutions to support these objectives. The US and other countries active in North Sea decommissioning projects (including the UK and the Netherlands) have already put in place such frameworks and institutions.

National governments in emerging hot spots have begun to create a strong foundation for decommissioning, although their degree of experience and readiness varies.

**Brazil.** The country has removed six fixed and five floating platforms, representing

less than 5% of its offshore platforms. Governance of decommissioning projects is overseen primarily by two government bodies: the National Agency of Petroleum, Natural Gas and Biofuels and the Brazilian Institute of Environment and Renewable Natural Resources. Regulations and a national petroleum law cover most of the decommissioning process, setting out specific fiscal and risk regulations (including parties' obligations, financial security requirements, and tax deductions) and technical requirements. Brazil has opportunities to improve its decommissioning framework, such as by providing incentives for stakeholders to invest in vessels and yards. The country should also consider developing a rig-to-reef policy (to encourage leaving certain substructures in place) and promoting the use of rigless technologies for well abandonment. Rigless technologies enable savings of up to 50% on the overall P&A costs.

**Thailand.** The country has just begun its first decommissioning projects, and will soon see a steady flow of intense activity. Thailand has established a legal framework for decommissioning, the foundation of which is the national Petroleum Act. Additionally, the government has issued guidelines for decommissioning upstream

installations and regulations that clarify requirements related to the decommissioning process, financial security, and the transfer of assets to the state. A government initiative, known as Decommissioning 2.0, aims to accelerate and streamline the decommissioning process by creating a one-stop service for obtaining approvals.

**Indonesia.** The island nation has very limited decommissioning experience. Although Indonesia has a legal framework for decommissioning, it has not fully clarified requirements related to the process, financial security, and technical issues. For example, the government did not specify security requirements in production-sharing contracts entered into before 2008 and has not issued detailed P&A guidelines.

**Angola, Egypt, and Nigeria.** None of these countries has seen major decommissioning projects. To regulate and guide decommissioning obligations and requirements, each relies, to a large extent, on national laws covering hydrocarbon exploitation and PSCs, as well as international regulations. In many cases, existing local regulations and guidelines are insufficiently clear about the decommissioning responsibilities, the process, financial security, and technical requirements.

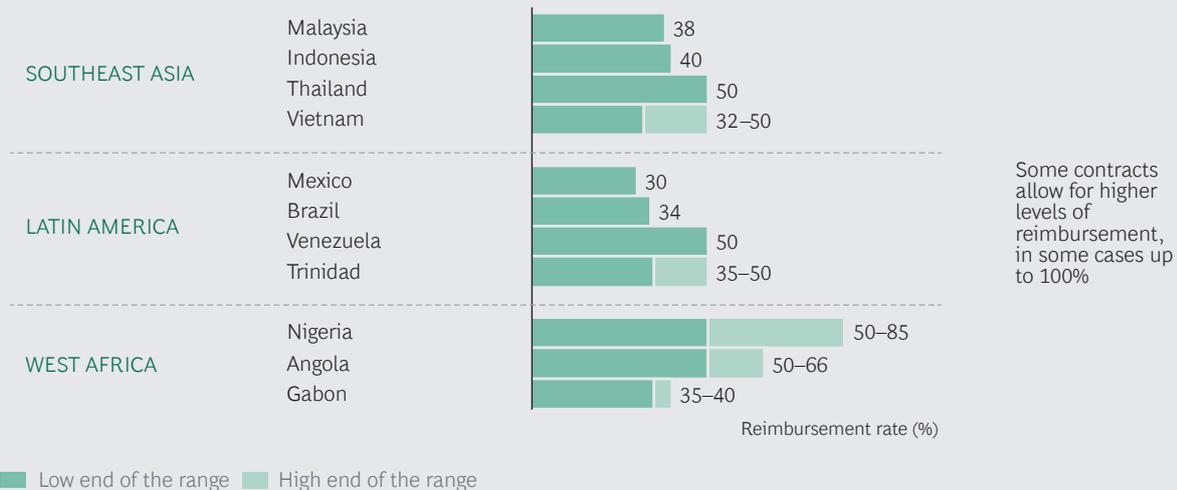
## Countries Need a Tailored Approach to Decommissioning

A country with decommissioning liabilities of \$14 billion, the median level among the top 30 countries by total liability, could generate savings of more than \$1 billion by improving its decommissioning performance. Achieving these savings would require, for example, decreasing the average cost per well by 25% or the average cost per tonne of topsides removal by 30%.

To secure this value, countries need a tailored approach that takes into consideration multiple factors.

**Extent of Liabilities.** Many governments finance more than 50% of the decommissioning costs. Operators in some countries may be entitled to reimbursement for up to 100% of these costs, depending on the contract terms. (See Exhibit 2.) In countries with high decommissioning liabilities, public scrutiny of government regulation tends to be more intense. Because decommissioning has environmental and social ramifications, taxpayers, the media, and nongovernmental organizations, among other stakeholders, expect governments and operators to be prudent stewards of national resources and public coffers.

**EXHIBIT 2 | Reimbursement Rates for Decommissioning Costs**



**Source:** BCG decommissioning benchmarks.

**Note:** These potential reimbursement rates result from the applicable effective tax rate for calculating tax relief from decommissioning expenses, including contract-specific terms in some cases. The countries listed are those with the largest decommissioning portfolio in each region.

### Size and Complexity of the Portfolio.

The decommissioning portfolio's size and complexity determine the effort required to consolidate into a single database information about the wells to abandon and the structures to remove. Such a database enables the high-quality baseline understanding of the portfolio that is essential for estimating costs, optimizing schedules, and selecting the overall decommissioning approach. The decommissioning portfolio also influences many aspects of the regulatory framework. For example, countries with a deepwater portfolio should provide incentives to leave structures in place. Countries with a large portfolio of wells (numbering in the hundreds) should provide incentives for operators to conduct sequential P&A operations, so as to accelerate the learning curve and retain the knowledge and improvements gained.

**Age and Condition of Assets.** The age of wells and structures can be a significant driver of decommissioning costs. The length of time since the cessation of production is another important factor. For instance, offshore structures that have not been used for several years may have deteriorated significantly. In some cases, the helipad is no longer operational, walkways and handrails are unsafe, and lifting equipment is unusable. We have seen instances in which decommissioning took nearly twice as long as planned because contractors needed to make repairs before the project could proceed, leading to significantly higher costs.

**Quality of Data and Information.** The quality of data and information about the wells and facilities being decommissioned can vary greatly. For example, documentation describing an installation is often out of date or nonexistent. In such cases, contractors may find that some pipelines are not in the expected location or the weight of offshore structures has changed over time. In addition, essential information about infrastructure may be recorded in many different documents. Such poor quality data and information can make costs harder to predict and undermine the effectiveness of design choices.

## How Governments Can Meet the Decommissioning Challenge

On the basis of our experience supporting decommissioning projects globally, we have identified five steps that governments must take to prepare.

**Define the ambition, strategy, and master plan.** Countries should determine their ambition for decommissioning performance, including their goal for reducing abandonment expenditures. A reduction of 20% to 30% is typically reasonable, depending on the starting point. Countries also need to decide on the strategic initiatives necessary to achieve their goals. Finally, to align all relevant stakeholders around a common agenda, it is essential to codify the ambition and strategy in a master plan. The recently issued report, *Netherlands Masterplan for Decommissioning and Re-use*, provides a model. The document sets out the country's 20-year plan to optimize the decommissioning of approximately 150 offshore platforms and 1,800 active wells, representing asset retirement obligations of approximately \$9 billion. The plan outlines initial priorities, midterm objectives, and execution enablers.

**Establish and enforce the right governance, fiscal and risk management, and technical regulatory frameworks.** Countries must establish a framework that makes the most prudent and efficient use of public expenditures. Establishing the right governance (laws, regulations, standards, and processes) for decommissioning is critical to clarifying each party's obligations and requirements. Setting up a clear fiscal- and risk-management framework is necessary to guarantee the operator's share of the decommissioning expenses. Governments must identify the ministries and agencies that will manage and enforce adherence to the frameworks and ensure that they have the mandate, resources, and capabilities to carry out their responsibilities effectively.

**Set up a single collaboration platform for operators to share lessons, resolve issues, and explore joint campaigns.** Cooperation can occur at the national or international level or among specific operators. By

cooperating on decommissioning projects, operators make demand more visible to contractors and accelerate the dissemination of lessons learned. A common forum can promote cooperation with regulators, helping to streamline regulations and standardize operating procedures. Recently, the Netherlands launched the world's first national platform for decommissioning, called NexStep. The platform aligns 14 operators and 4 government entities on a shared, practical agenda to optimize decommissioning. A committee composed of staff members hired by NexStep or temporarily reassigned by operators develops and implements the agenda and reports to a board comprising representatives of the government and operators.

#### Identify the decommissioning obligations.

This should include the wells and structures to be decommissioned and the related liabilities and timelines. All stakeholders will benefit from a transparent, integrated view of the scope, costs, and timelines. This visibility helps to incentivize contractor investment, improve budgeting and benchmarking of performance, and identify ways that operators and suppliers can collaborate. It also helps highlight opportunities to reuse or repurpose installations.

Maintaining the confidentiality of proprietary data (such as cost estimates and the cessation dates of production) is essential. The right process must be in place to ensure that no commercially sensitive data is shared, while still gaining the benefits of transparency.

**Create and drive a rigorous performance agenda.** Countries must set ambitious yet realistic performance targets and create the right performance incentives for decommissioning. Digital performance dashboards are an effective way to create transparency and enable improved performance management. To support operators and suppliers in achieving high performance, countries must provide the right governance and oversight.

**A**S STEWARDS OF a nation's natural and financial resources, government officials and policymakers have an obligation to ensure that their country is prepared for the decommissioning challenge. To persuade all stakeholders of the urgency for action, government leaders in decommissioning hot spots should initiate a review of the country's legal and regulatory frameworks and the supporting institutions. An assessment of the experience levels of operators and supply chain players is also essential. Leaders can apply this understanding of the country's starting point to define an ambition, strategy, and master plan and determine which enablers to put in place. Countries that establish an effective approach to decommissioning will be rewarded with cost savings and will promote the confidence needed to support M&A and oilfield development.

## About the Authors

**Eric Oudenot** is a partner and managing director in the London office of The Boston Consulting Group and is coleader of global decommissioning activities. You may contact him by email at [oudenot.eric@bcg.com](mailto:oudenot.eric@bcg.com).

**Philip Whittaker** is a director in BCG's London office and is coleader of global decommissioning activities. You may contact him by email at [whittaker.philip@bcg.com](mailto:whittaker.philip@bcg.com).

**Martha Vasquez** is a project leader in the firm's London office. You may contact her by email at [vasquez.martha@bcg.com](mailto:vasquez.martha@bcg.com).

## Acknowledgments

The authors would like to thank Eugene Chiam, Alberto Santos, Kyryll Ponomarenko, and Rene Willemars for their contributions to this article.

The Boston Consulting Group (BCG) is a global management consulting firm and the world's leading advisor on business strategy. We partner with clients from the private, public, and not-for-profit sectors in all regions to identify their highest-value opportunities, address their most critical challenges, and transform their enterprises. Our customized approach combines deep insight into the dynamics of companies and markets with close collaboration at all levels of the client organization. This ensures that our clients achieve sustainable competitive advantage, build more capable organizations, and secure lasting results. Founded in 1963, BCG is a private company with offices in more than 90 cities in 50 countries. For more information, please visit [bcg.com](http://bcg.com).

© The Boston Consulting Group, Inc. 2018. All rights reserved. 4/18 Rev. 3/19