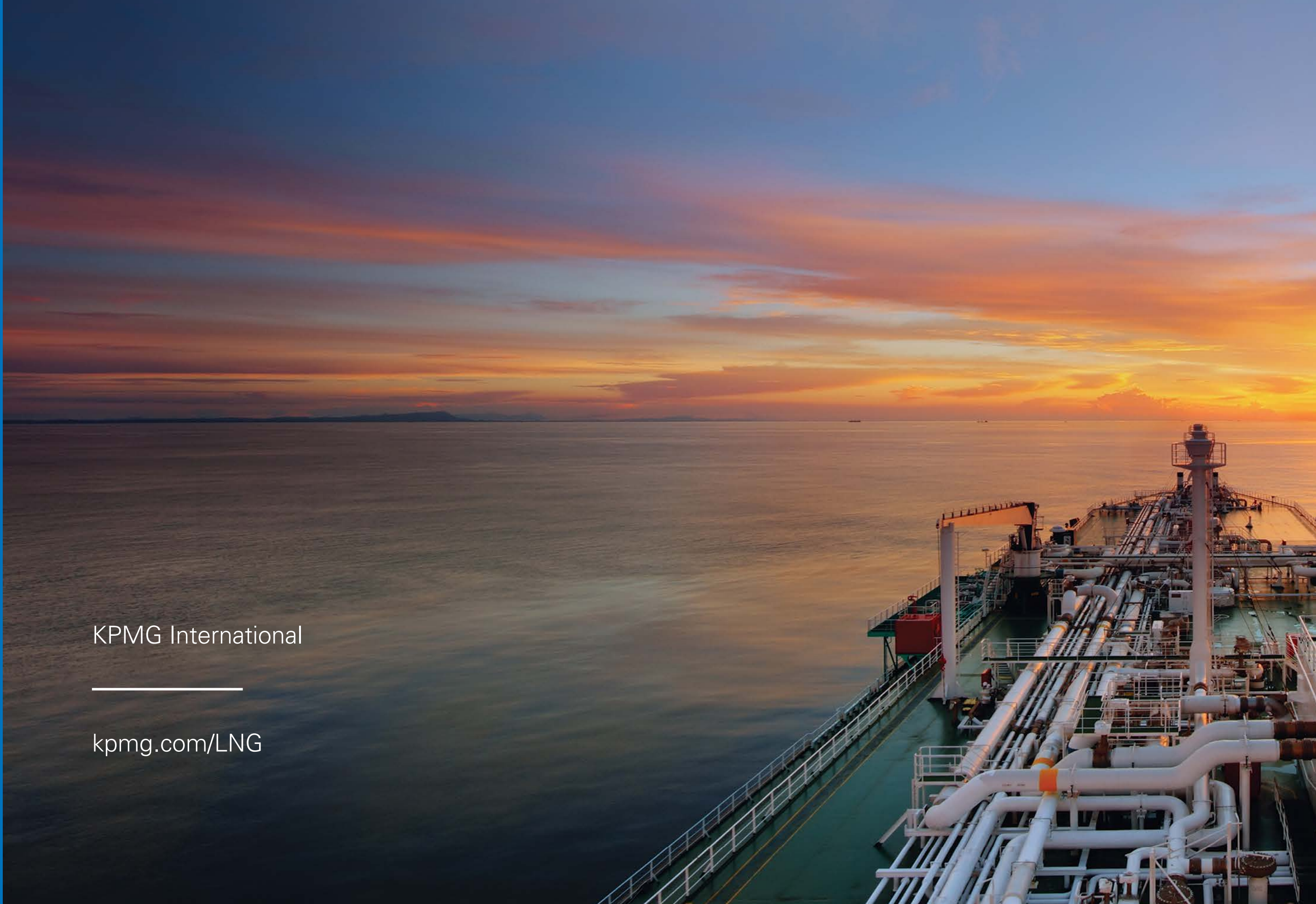
Winning in a transformed marketplace: A playbook for LNG businesses



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Overview

1 LNG markets are going through significant change in the form of increased customer focus

The LNG industry is witnessing a big shift towards buyer power fuelled by the following converging and compounding forces.

— **Supply competition** from diverse sources and very different supply options.

— **Market and portfolio evolution** in options, hedging and tradeable indices.

— **Destination flexibility** in contracts and in more adaptable regasification.

— **Demand drivers and dynamics** in positioning of gas versus other energy sources.

These changes are reorienting the industry around customer value and the role of gas in an affordable, reliable and lower-carbon energy system.

This shifts the focus from where gas molecules come from to where they go.

2 The old way of doing business is disappearing

These changes require businesses to operate with an increased customer focus, exploit new demands for gas under different terms and add value across the value chain as much as within it. In other words, they need to start thinking and acting like downstream businesses. This is a steep change from the recent past and the prevailing siloed business models.

3 How can the LNG supply businesses respond?

LNG businesses need to rethink their commercial strategy and whether their internal ways of working, cost structures and capabilities are aligned to servicing the changing market.

This means questioning the choices that businesses make — ranging from the formulation of their commercial strategy to the functioning of day-to-day operations.

Future-proofing the business amid such substantial market shifts demands new ways of working. We see six essential accelerators for such a transformation.

Business model

1 Driving demand and establishing alternate business models

2 Optimizing supply for customer portfolio

3 Optimizing portfolio terms

Operating model

4 Managing new risks in portfolios and LNG projects

5 Leading on unit cost

6 Optimizing joint venture management

4 Call to action

Substantial, lasting changes in the LNG market are radicalizing traditional ways of working. Businesses need to respond swiftly and decisively. Those that take proactive steps to mitigate risks as well as exploit opportunities in the changing market will thrive, while others face the risk of losing significant market share and value.

Contents

Significant and lasting change in the LNG market is affecting both buyers and suppliers

The LNG industry is bracing itself for a new era of buyer power driven by slowing traditional demand, the proliferation of new LNG supply projects and rolling off of long-term, oil-indexed contracts. At the same time, a reduction in regas costs and the role of gas as an accelerator to clean energy systems, including growing electrification as well as increased transportation and heating use, also presents opportunities for suppliers.

1 Supply competition

On the supply side, new supply and supply options are combining with uncontracted volumes to drive down prices. On the demand side, buyer power has emerged.

For now, buyers have the advantage and are making smaller, shorter-term deals. New buyers attracted to lower cost and flexible supply continue to enter the market and are starting to absorb some of this wave of new LNG supply.

Implications

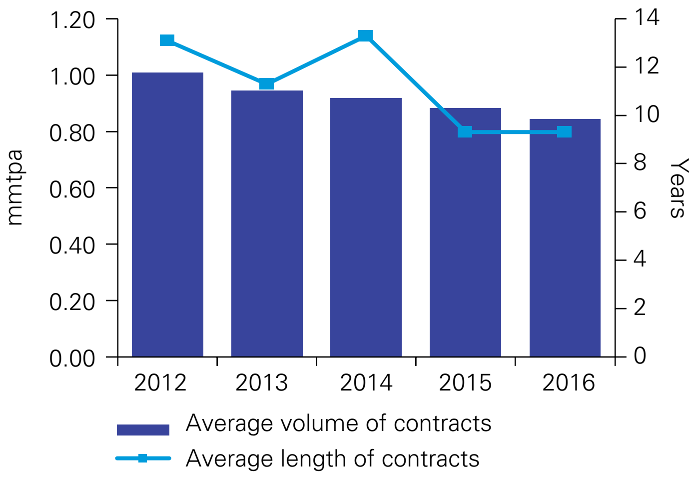
Buyers

- Advantaged with choice in sourcing and pricing, emerging buyers are less constrained by traditional creditworthiness standards.

Suppliers

- Challenged to place volumes with continued price and margin pressure, and also forced to sell at lower spot prices or compete with marginal cost production as long-term contracts roll-off.
- Challenged to bring on new capacity without cost improvement as older, fully depreciated assets sell at marginal costs.

Trends of declining contract volumes and duration

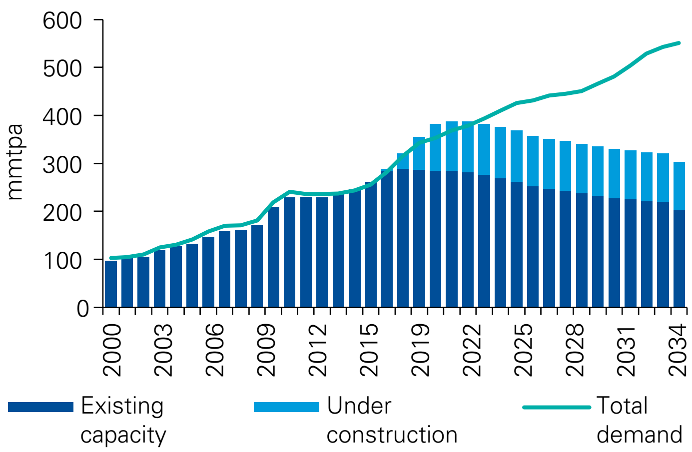


Source: Wood Mackenzie — LNG Service, Q1 2017

Buyers and suppliers

- Benefit through market growth driven from new demand potential as gas used as cheaper feedstock for power producers and chemical manufacturers, and from greater gas use in transportation, heating and broader electrification.

LNG nominal production capacity and total trade (MMTPA), 2000–2035



LNG markets could remain marginally oversupplied until 2022.

Source: Wood Mackenzie — LNG Service, Q1 2017

2 Market evolution

The days of high international oil, high LNG prices and the singular arbitrage value of placing Henry Hub gas in such markets are an ever distant memory. Oversupply has coincided with the fall in oil price and the LNG glut has brought LNG prices down and narrowed the arbitrage with Henry Hub prices. A more commoditized market with new players is spawning more variety of pricing. US suppliers continue to offer formulas based on Henry Hub prices. Singapore is promoting itself as a pricing hub and price reporting agencies now quote Middle East assessments (based on delivery to Egypt) alongside the established JKT (Japan-Korea-Taiwan) price. New hubs create market tools for managing price risk via hedging and options, but will take time to attract liquidity.

Greater buyer power, an excess of uncontracted LNG, a greater diversity of players and more flexible import infrastructure is driving a shift toward increased spot trade and shorter-term contracts. In the short term, suppliers will be challenged with existing cost structures and may perceive this as negative. However, in the medium term, it makes LNG more attractive to buyers, so those that can improve their competitive costs have a greater addressable market.

Implications

Buyers

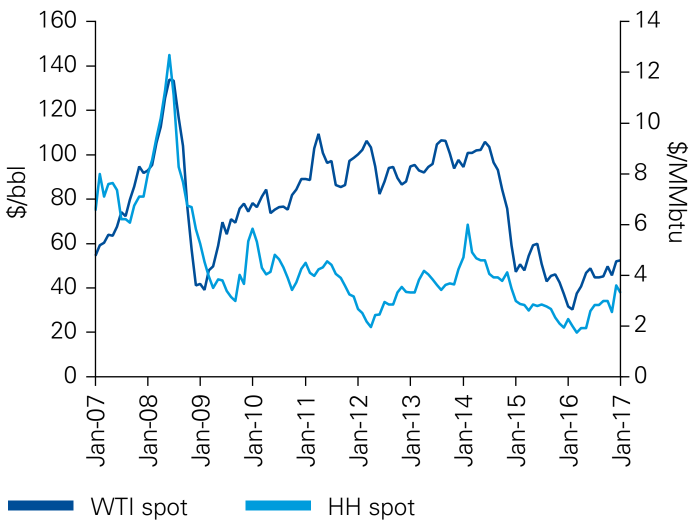
— Likely to maximize purchases of spot, and reduce long-term contract commitments; with corresponding exposure if the market tightens earlier than expected.

Suppliers

— Will have to accept and sustain production at lower prices to place volumes and grow demand.

Buyers, suppliers and traders

— Seek development of gas price indices, and support hedging instruments and derivatives markets to optimize and de-risk portfolios.



Rising LNG supply will weigh on spot LNG prices, potentially widening the discount to long-term, oil-linked contract LNG.

Source: www.eia.gov

3 Destination flexibility

Suppliers are coming under pressure to remove destination clauses, which forbids reselling to other locations. Removal of these clauses frees up buyers to resell when they are overcommitted or simply when a better trading opportunity presents itself. This will help buyers optimize their portfolios, extend buyers into the trading space and, in turn, create further competition for existing traders as well as suppliers seeking to place their volumes in markets in competition with buyers/traders.

Implications

Buyers and traders

— In extending activities with increased optionality, will need to mitigate new risks and realize value in deepening trading and spot markets.

Suppliers

— Will face continued pricing and competitive pressures with the need to provide more optionality.

Japan said to seek LNG contract details in resale-clause probe:

… removal of such clauses could trigger 'a flurry' of unrestricted outbound cargoes from Japan that may push down LNG prices for as long as 5 years... About 80 percent of long-term LNG supply contracts between major Japanese and South Korean buyers and suppliers are estimated to include destination restriction clauses…

— BMI research quote

4 Demand drivers

Cheaper terminals mean smaller, less creditworthy, seasonal or flexible importers can be accessed in a way that was impossible even a decade ago, driving rapid growth in numerous niche markets.

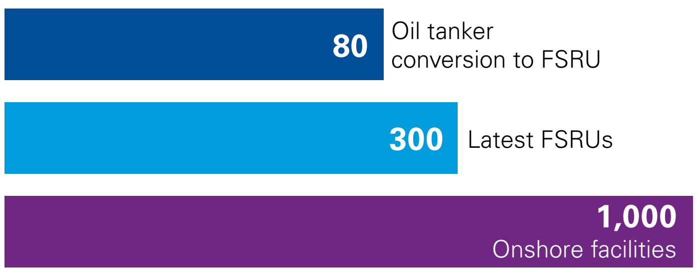
Implications

Buyers and suppliers

— Able to support increased gas penetration in key developing markets.

Improvement in regas technology is leading to increased and quicker market access points at a lower cost. Estimates suggest a 20–30 percent increase in FSRU count over the next 2–3 years.

Floating storage regasification unit costs ($m)



Source: www.poten.com/wp-content/uploads/2015/06/LNG-Opinion-Floating-Regas.pdf

Increased competition and price compressions place buyers in an advantaged position as they can have choice in sourcing and pricing and buy from a variety of sources at lower price points. Additionally, emerging buyers are not as constrained by traditional creditworthiness standards; especially as suppliers seek to place surplus supply and with more supply rolling off end-of-term contracts, long-term contracts or those rolling off contracts.

In the transforming market, LNG businesses need to make decisions like downstream businesses

The LNG sector has often acted like a mover of molecules, arbitraging low-value gas to high-value markets with oil-linked pricing.

Increasingly, there is a need to focus on broader competitiveness within the value chain. The imperative is not only for asset operations and project developments to improve cost competitiveness, but also in extending positions to include downstream customer value.

This requires reorienting and reskilling to focus on customer-centric competitiveness backed by world-class operational efficiency.

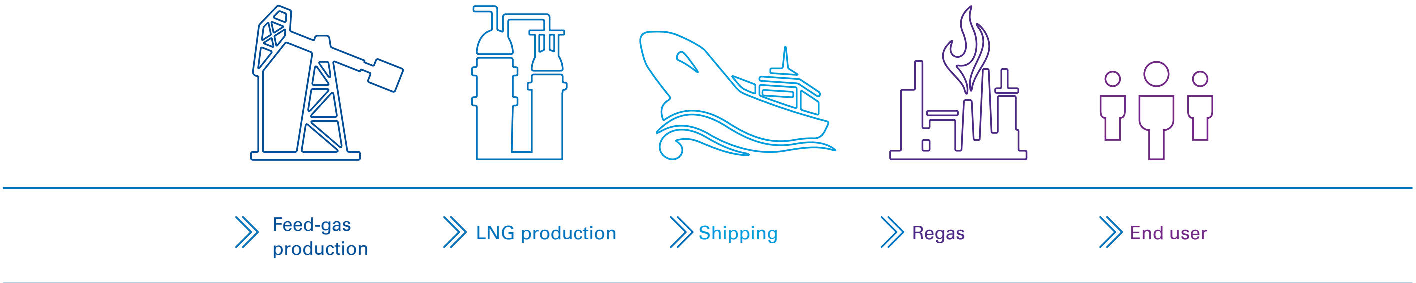
The LNG business is shifting from a traditional model, with fixed long-term contracts and destinations, to more focus on optimizing value along the value chain, in a dynamic, interactive market where the roles of producers, shippers, traders and buyers are blurred, and where it is more important to create demand than to find it.

Traditional setup of the sector

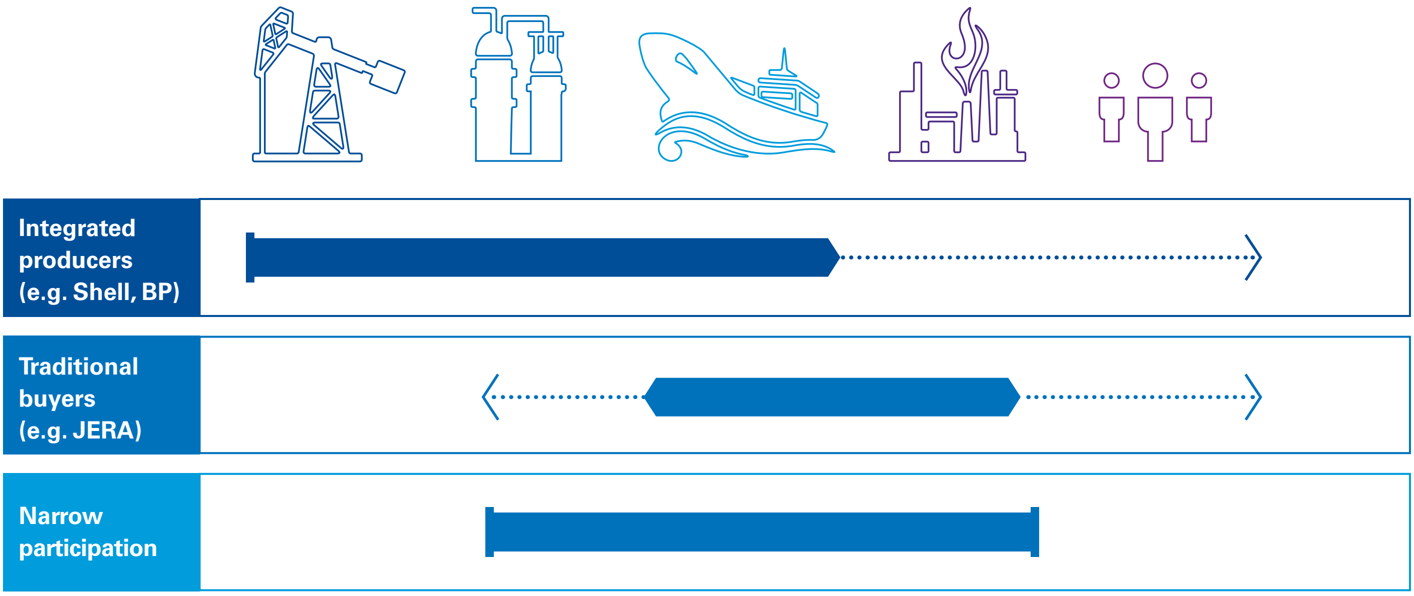
Main purpose of suppliers seen as movers of molecules with lesser focus on margins.

Specialists in particular value chain component with limited skills in adjacent areas and overall lack of commercial and trading skills.

Buyers and suppliers tied in steady and indexed long-term contracts (both up and downstream) with fixed destination clauses.



Expected future marketplace — we see three trends emerging



Source: KPMG Analysis, 2017

1 Interactive marketplace where same players are both suppliers and buyers who find value in interfaces, e.g. JERA.

2 Increasing breadth of capability in businesses (e.g. increased need for trading and forecasting skills for traditional pure play suppliers and buyers).

3 Emergence of end-to-end solution providers (e.g. potential for LNG suppliers to provide energy solutions to local governments).

In this new world there is a need to rethink business and operating models to capture value

There are key questions that businesses can ask in order to carry out an initial assessment of their position and readiness to face a transformed market, focusing on six accelerators to make the transformation they will require possible.

LNG businesses need to rethink their commercial strategy and whether their internal ways of working, cost structures and capabilities are aligned to servicing the changing markets. This means questioning the choices that businesses make, ranging from the formulation of their commercial strategy to the functioning of day-to-day operations. LNG businesses can assess their readiness, and accelerate their transformation in this fast-changing market, by asking themselves a set of questions about their business model, market and customers; their operating model, processes, technology, structure, people and culture; and their measurement and incentives. We see six accelerators essential to consider for such a transformation.

Financial ambition

Key questions

- What unit operating cost, EBITDA and ROI should businesses target in the next 3 to 5 years?

Business model

Propositions

Markets

Customers and channels

Key questions

- Are you able to respond to changing demands?
- How are you monitoring marketplace activity — who will be the buyers of the future?
- Are you considering market opportunities beyond your existing portfolio, and are you engaging with the end consumer (energy companies, governments, etc.)?
- How are you monitoring risk and evaluating new risks?
- Are you conducting scenario planning on a regular basis?
- Can you anticipate policy and regulatory changes and benefit from them?

Accelerators

1 Demand and alternate business models

Extend from a pure-play position to a more active role in the value chain, and in doing so create new partnerships.

2 Supply optimization

Bring greater central management of product flows and delivery oriented to customer and downstream market to create greater value.

3 Optimization of commercial terms

Develop greater understanding of market dynamics and identify strategies for levering price, risk management and hedging to bring added options and value.

Operating model

Core business processes

Operational and technology infrastructure

Organizational structure, governance and risk controls

People and culture

Key questions

- Do your operations look at efficiency (both operational and capital) with similar rigor as a downstream business?
- Have you defined the capabilities needed to compete?
- Are you agile enough to respond to disruptive forces in the industry and future scaling/growth?
- Are you leveraging organizational platforms and processes to drive efficiencies, and are strong controls in place?
- Do you have the right technology to support your business objectives?
- Do you have the right strategic partners and alliances?

Accelerators

4 Improving costs and managing risks in LNG projects

Take development costs out and de-risk using a commercial mindset to improve capital efficiency and capital costs, and better leverage joint venture (JV), supply chain capabilities and improve contracting and oversight processes.

5 Unit cost competitiveness

Challenge complacency and bring insights from downstream business with a relentless focus on asset performance through lower capex and opex as well as maximum possible throughput.

6 Optimizing joint venture management

Adapt to fast-changing global operating models, improve cost transparency, achieve proper level of control between participants and optimize resources.

Measures and incentives

Key questions

- Do you have the right metrics to incentivize the organization for end-to-end business optimization?

Optimizing the business model

1 Driving demand and establishing alternate business models

Suppliers and buyers should consider extending from a pure-play position to a more active role in the value chain and in creating new partnerships to do so. Gas through LNG is ideally placed to expand its role as one of the world's key energy sources in a cleaner future. But the business needs to be reoriented around customer value. The current glut in supply puts a premium on creating and accessing markets as well as creating a need for a more flexible and extended value chain.

Considerations for suppliers

Understand LNG demand holistically:
Compare the attractiveness of different end-user geographies, including large but mature markets, big markets with potential for growth and emerging niches. On a global scale, strategic choices by gas exporters shifting from one market to another (for instance Russia's changing pipeline focus from Europe to China) can open up LNG supply opportunities.

Create demand:
Access niches and new markets and create new import points by investing in or facilitating regasification terminals and connections. JVs could be considered to create demand (for example, on gas-fired power plants in existing coal-using markets or on LNG shipping). Singapore's ambitions in LNG bunkering point to a way ahead that may be linked to China and India for both sea and ground transport.

Considerations for buyers

Create buyer alliances:
Reduce duplication of redundant demand and strengthen negotiating positions. JERA may point the way to future buyer alliances, for instance, as proposed between Chubu Electric of Japan and GAIL of India, between Tokyo Gas and Korea Gas, and the March 2017 MOU between JERA itself, CNOOC and KOGAS. Potential issues such as minority interests, competition law and response of LNG suppliers would need to be taken into account.

Diversify portfolio:
Reloading (the practice of reloading an already discharged LNG cargo back onto a vessel for export) is an option, given more flexible LNG markets, but exposes the reseller to the risk of mismatches between long-term and spot prices.

Build a more diversified portfolio of contracts with different suppliers, periods and pricing bases, and extend portfolio management via intermediary trading companies and financial hedging mechanisms.

Optimizing the business model

2 Supply optimization for the customer portfolio

Delivering value to end-users is taking on much more importance. This includes utilizing a portfolio approach that includes trading in the market instead of using one's own capacity.

Today, many businesses are set up on the assumption of individual point-to-point sales based on assets in source regions built off legacy contracts. This has led to considerable latent exposure under liberalized markets and changing electricity generation requirements, creating a need to rebalance volumes around spot/short-term contracts.

With growth in options such as spot sales and financial derivatives and rapidly shifting pricing and buyer expectations toward optionality, reinforced by removal of destination clauses, the opportunity is to offer portfolio management through the central management of product flows and delivery, in a way that can create greater value for businesses.

Creating stronger central management

Players will need to optimize not on individual assets or contracts but from a portfolio perspective, which will need to bring stronger central portfolio management across the value chain.

— This requires an ability to build and manage portfolios. Greater portfolio management will require greater capabilities.

Building trading capabilities linked to supply chain

As buyers seek to diversify their portfolios, there are increased spot and short-term market volumes.

— Reaching almost 30 percent of trade; this would require suppliers to develop trading capabilities to service contracts while protecting and potentially enhancing value for themselves (e.g. an understanding of hedgeable instruments and derivative markets or of new derivative instruments such as location swaps).

Testing the portfolio resilience against various supply, demand and price scenarios

Players will need to bring together 'the basics' to understand the likelihood, materiality, velocity and interplay of factors. Insight to manage and mitigate risk is required.

Questions to be answered (and capabilities developed to answer them):

— **Rebalancing:** When will the LNG market rebalance?

— **Demand sensitivity:** What is the sensitivity of the demand trajectory to elasticity and key assumptions?

— **Hub pricing:** What will be the relationship between various hub pricing and LNG, and how could differentials between various hubs play out?

— **Term contract expiration:** What is the current structure of term contracts — schedule of expirations and impact to portfolio balance?

— **Market development:** How will optionality play out and shape portfolio composition and demand and supply?

Optimizing the business model

3 Optimization of commercial terms

With tightening margins, increased spot sales and short- to medium-term contracts, we foresee increased tension between suppliers and buyers. Both will need to reassess their in-house capabilities for such negotiations.

KPMG's work on some of the highest-profile contract renegotiations have highlighted key strategies and bargaining positions, and that neither buyers or suppliers can afford to be complacent or singular.

Considerations for suppliers

Segment markets by price-sensitivity and pricing basis:
Some markets have gas-on-gas competition, some feature competition against oil-indexed pipeline gas, and in others, LNG competes against coal for bulk demand. Demand and price are further complicated by policies that distort pure economics. To understand demand intelligently, it should be measured against the right LNG price basis and policy mechanisms.

Understand buyers' business strategies:
Align with marketing and business strategies that will differ between a traditional large LNG project looking to secure anchor customers; a Henry Hub-based tolling project in the USA; a small floating LNG project; and a portfolio player or trader with many sources and destinations. These different business models need to match with the choice of pricing bases and contract durations and the access to physical infrastructure such as tankers and regasification terminals.

Considerations for buyers

Understand bargaining positions:
The current market provides buyers an upper hand. Long-term buyers need to balance the desirable objectives of portfolio diversification and supply including jurisdictional, commercial models, terms and investment along the value chain; matching LNG pricing basis with their downstream customers; and flexibility.

Balance contract portfolio:
Shorter terms reduce the risk of over-committing to purchases with uncertain demand. Reloading is an option, given more flexible LNG markets, but exposes the reseller to the risk of mismatches between long-term and spot prices. A bundle of contracts with different suppliers, periods and pricing bases can help, as can a greater role for intermediary trading companies who can manage demand risk across their portfolio.

Plan for a shorter/balanced market:
Buyers are at risk of getting complacent, expecting an extended period of oversupply. Over the course of the last 6 months, the LNG supply and demand outlook has changed to a more balanced view over the long term, prompting a need for buyers to have better forecasting capabilities.

Optimizing the operating model

4 Managing risks in engineering, procurement and construction projects

Realizing project cost and cost improvement opportunities is challenging in complex LNG environments. The experience of the LNG sector of mega projects with mega cost overruns and delays reinforces the imperative for players to refocus on improving project development, including exercising the supply chain, reducing complexity and adopting a commercial mindset to improve capital efficiency and capital costs.

The cyclical nature of the LNG industry suggests an opportunity for fewer, higher-quality projects to be sanctioned — leveraging improved commercial value that includes revisiting contracting strategies and project execution structures.

A recurring theme in the LNG experience is that each LNG project creates unique stresses on the contracting approach and associated risk management driven by:

- scale and complexity including the often conflicting objectives of participating shareholders, governments, consortia and JVs
- bespoke contracting and risk-carrying arrangements, site-specific requirements, leadership and management team capabilities, unknown local supply chain participants and local labor.

Below are areas of focus and opportunity to navigate the high-risk environment of LNG projects (all of which are obvious, but to date, elusive in realizing).

Project management and simplification

- Effective project planning, logistics, tracking and analysis can reduce costs and mitigate the risks of remote site location and the associated challenges.
- Simplifying the procedural complexities that accompany project planning and execution in large organizations can significantly reduce the time and cost overrun.

Owners team

- Investing early in defining clear roles and creating an aligned view that considers all stakeholders to reduce the number of unanticipated conditions or requirements needing change.

Contracting strategy

- Developing and implementing a robust contracting strategy that enhances oversight and proactive risk management.

Key principles behind a robust contracting strategy should include:

- ensuring contract clarity
- securing a common understanding among all stakeholders regarding what the various contracts require in delivery
- understanding risk retention, transfer and management
- clarifying which risks are carried by whom (sponsors, prime contractor, management contractor, etc.)
- quality information from the contracting structure
- timely visibility and proactive attention informed by works contractors and supply chain to ensure progress and completion
- progress reporting and forecasting — develop short-, medium- and long-term forecasting to provide proactive, accurate, forward-looking reporting, and building skills in project professionals for delivering high-quality forecasts.

Optimizing the operating model

5 Achieving unit cost competitiveness comparable to downstream

Increased competition can be met by a relentless focus on asset performance. This means lower capex and opex as well as maximum possible throughput.

Most suppliers have an ongoing continuous improvement program, but these may fall short of addressing their needs in an increasingly competitive market. By answering three questions, companies can identify gaps and additional opportunities:

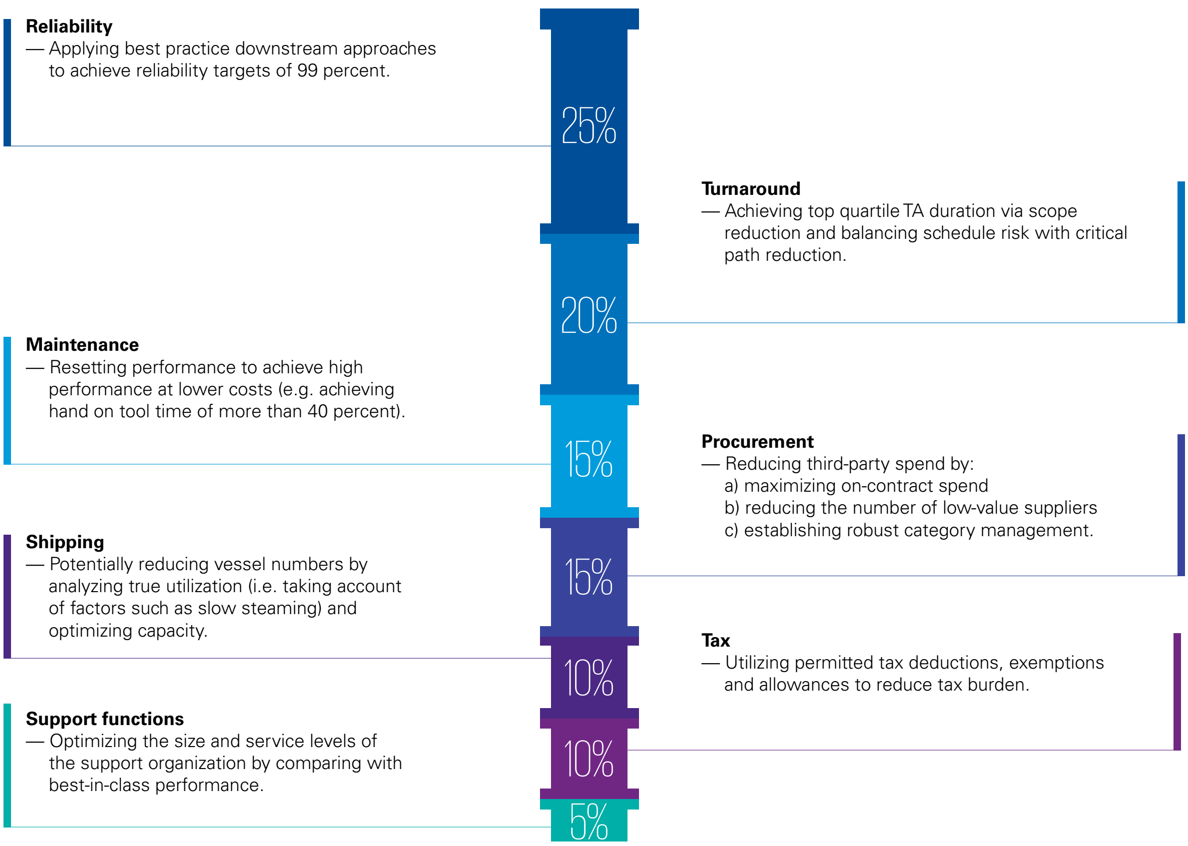
— ***Are all areas (strategic and tactical) covered and prioritized based on value and risk?***

— ***Do the opportunities capture the full value available and can they be accelerated?***

— ***What will be delivered when, and what is the level of assurance on delivery?***

Using benchmarks from related industries — validated through work with LNG assets and using the rigor of our proven external investor lens approach — we typically see the following sources of value for asset operators:

Typical breakup of total opportunity by area



The performance improvement prize is large. Based on KPMG work in the sector, suppliers have the opportunity to achieve 20–35 percent unit operating cost improvement in LNG assets.

Source: KPMG analysis, 2017

Optimizing the operating model

6 Optimizing joint venture management

A significant majority of LNG producers operate under a JV agreement.

Many of the opportunities highlighted earlier, both for execution of capital projects as well as operational efficiencies, require businesses to overcome suboptimal JV arrangements and operations.

This requires JV partners to act as active asset managers and owners instead of passive shareholders.

Where JV partners have played the role of active asset managers, businesses have been able to realize a set of improvements including cost rationalization and overall operating and development asset performance improvements; implemented new operating models keyed to sustaining improved performance; applied innovation to update process and practices to achieve better performance; and attracted new investors based on improved performance.

Making material step changes requires JV engagement and improved JV agreements to promote comprehensive cross-functional programs in major assets keyed on performance. This requires companies to focus on:

Operating models

— Adapting to fast-changing global business conditions and achieving cost savings by eliminating inconsistent management and operating models, as well as keying on performance standards in areas of reliability and process rationalization and performance excellence.

Contract collaboration and service sharing

— Leveraging and improving cost transparency between unrelated JVs involving, for example, maintenance and logistics.

Separation of ownership of infrastructure

— Accessing the most efficient structures and capital providers, learning from evolution and capitalizing on interest in power plants, pipelines and other supporting infrastructure.

JV governance

— Achieving the proper level of control (versus more or over-governance) between participants and when attracting investment.

Resourcing

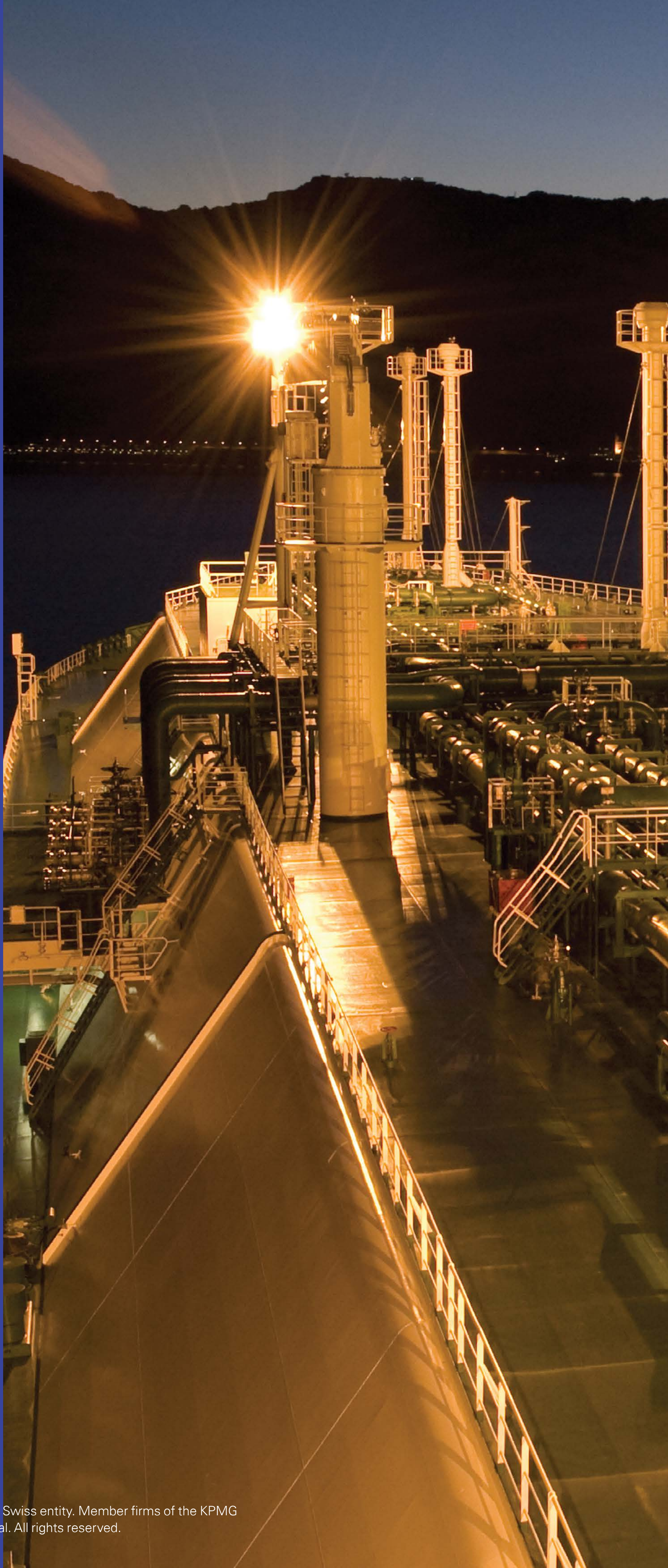
— Noting the right transition of capabilities between deal-makers and JV operators.

Accounting procedures

— Keeping pace with ever-changing requirements so companies can avoid poor cost allocation, loss of cost transparency, tax issues and cost disputes.

A call to action

Changes in the LNG market are substantial and lasting. We believe that businesses need to move fast and proactively to take steps to mitigate risks as well as exploit new opportunities. There is a premium to be earned in the form of new customer relationships and capturing new markets as first entrants. At a minimum, those who do not act now will suffer both reduced market share and a high cost burden.



A call to action

Business and operating models of LNG businesses have to adapt to win in a transformed marketplace.

Changes don't happen overnight: creating a fundamental shift in ways of working is typically a 12- to 36-month journey.

Taking a function by function approach to transformation is not the answer. Businesses need to take an end-to-end perspective to effect the required scope of change in a sustainable way.

Three factors need to be considered by businesses as they respond to the transformed marketplace:

1

Understand where the value will be created and use this to focus on the business and operating model changes.

2

Prioritize key areas where businesses should focus their transformation effort.

The six accelerators highlighted in this paper include:

1. demand creation and alternative business models
2. supply optimization
3. commercial term optimization
4. improving costs and managing risks in LNG projects
5. unit cost leadership
6. JV optimization.

3

Changes to an operating model are interrelated.

Processes, infrastructure, capabilities and incentives all need to be considered to achieve the desired change.

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