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The outlook for gas in the GCC

Implementing commercial principles, reaping greater economic benefits

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Executive summary

The countries of the Gulf Cooperation Council (GCC)[1] have long benefited from cheap, abundant gas, but as demand grows, governments must take a more proactive and strategic approach to managing the gas sector. They can do so by applying commercial principles to the management of gas portfolios.

Specifically, governments must take action in three ways:

1. Allocate gas more systematically, through forecasting models that can determine which industrial sectors and end uses can deliver the largest socioeconomic impact
2. Price gas to reflect its true value, not just as a by-product of oil production; and better understand all expenses and the relative value of gas to specific end uses
3. Reform government institutions to begin liberalizing gas markets, which will enable governments to manage their gas resources more effectively

An initial approximation shows that a relatively modest increase in the gas price can generate up to US$6 billion in increased government revenue per year. The re-allocation of gas to different end-uses could boost the region's GDP and foreign earnings by up to $10 billion per year, or support the creation of around 100,000 jobs.

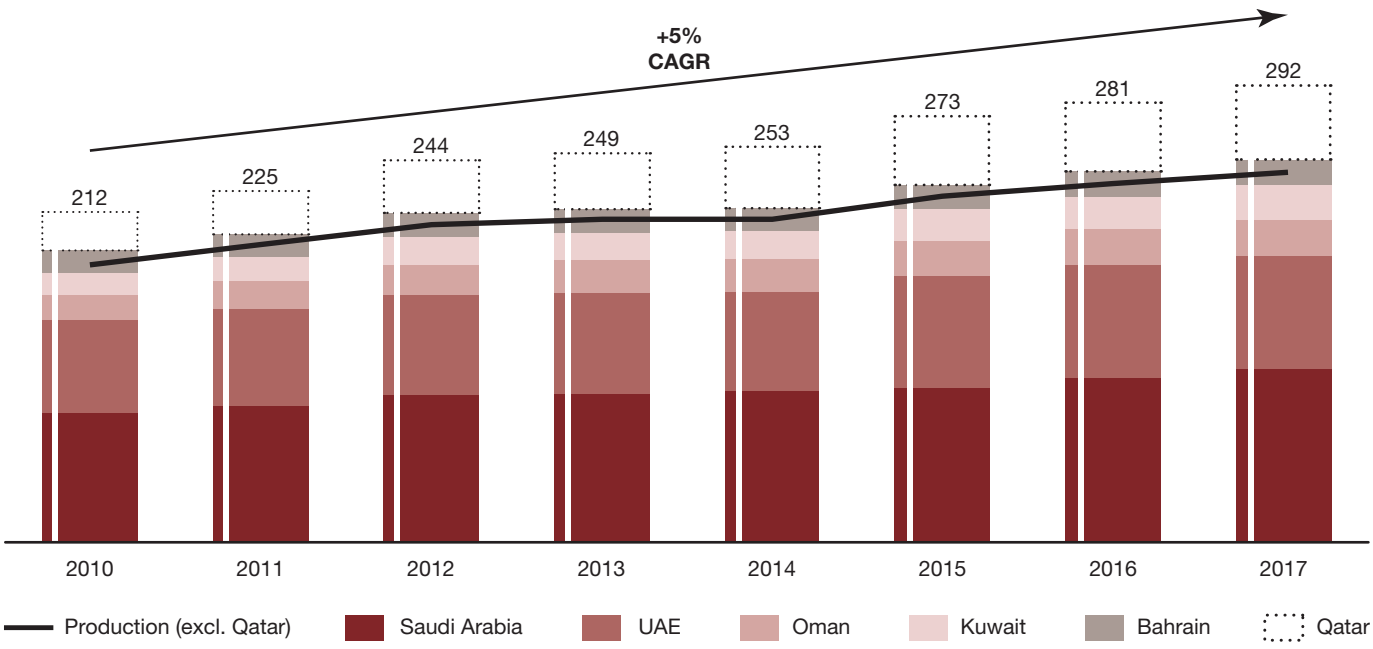
A critical need for reform

For decades, the GCC countries benefited from their abundant reserves of cheap, easily accessible gas that exceeded their needs. Today, that no longer applies. Since 2010, the demand for gas has grown at a compounded annual rate of about 5 percent (*see Exhibit 1*), even as new production grows increasingly expensive. With the exception of Qatar, the countries of the GCC must start making hard decisions about how best to use a finite resource amid competing demands.

Exhibit 1

Growth in domestic gas consumption in most GCC countries is outpacing production growth

GCC domestic gas consumption and production (billion cubic metres, 2010-2017)



Note: CAGR = compounded annual growth rate, UAE = United Arab Emirates.

Source: BP Statistical Review of World Energy, 2018

Thus far, GCC governments have taken small-scale, marginal measures to manage their gas portfolios more effectively. For example, they have sought to exploit unconventional sources of gas, along with sour gas, and they have increased their investments in renewable energy to mitigate gas demand in the power sector. They have also increased wholesale gas prices. However, those initiatives have largely been ad hoc and incremental. Even collectively, they are not sufficient given the scope of the challenge.

Instead, governments need a more coordinated and strategic approach to optimize the use of gas in driving GDP growth and creating employment. Specifically, GCC countries must take action in three ways:

1. Better allocate gas to competing end-use sectors to maximize the impact on the country's economy, and in turn on the well-being of its people
2. Price gas to reflect its true value
3. Craft institutional reforms to create the flexibility and transparency required to meet the objective of maximizing value

There is significant value at stake. A first-order analysis indicates that reallocating just 10 percent of current production levels to different end-uses could increase the region's GDP and foreign earnings by up to $10 billion per year, or support the creation of 100,000 jobs. Moreover, sustainably increasing the gas price for end users by just $0.5 per million British thermal units (mmBtu) would add more than $6 billion per year to GCC government coffers.

Allocating gas to create socioeconomic value

The first component of gas reform is to change the allocation of gas so that it supports the creation of socioeconomic value. Gas markets in most GCC countries are the result of a series of independent decisions. They are not the consequence of a holistic long-term strategy. These markets have developed with the assumption that gas is plentiful and almost-free, often a by-product of oil production. Today, gas is primarily allocated to four main end-uses on an "as-needed" basis: upstream oil production (primarily for re-injection); power generation (through gas-fired power plants); industry (as a feedstock for petrochemicals, which can include fertilizers and methanol, and as fuel for energy-intensive industries such as aluminum and cement); and export (through pipelines or as liquefied natural gas [LNG]).

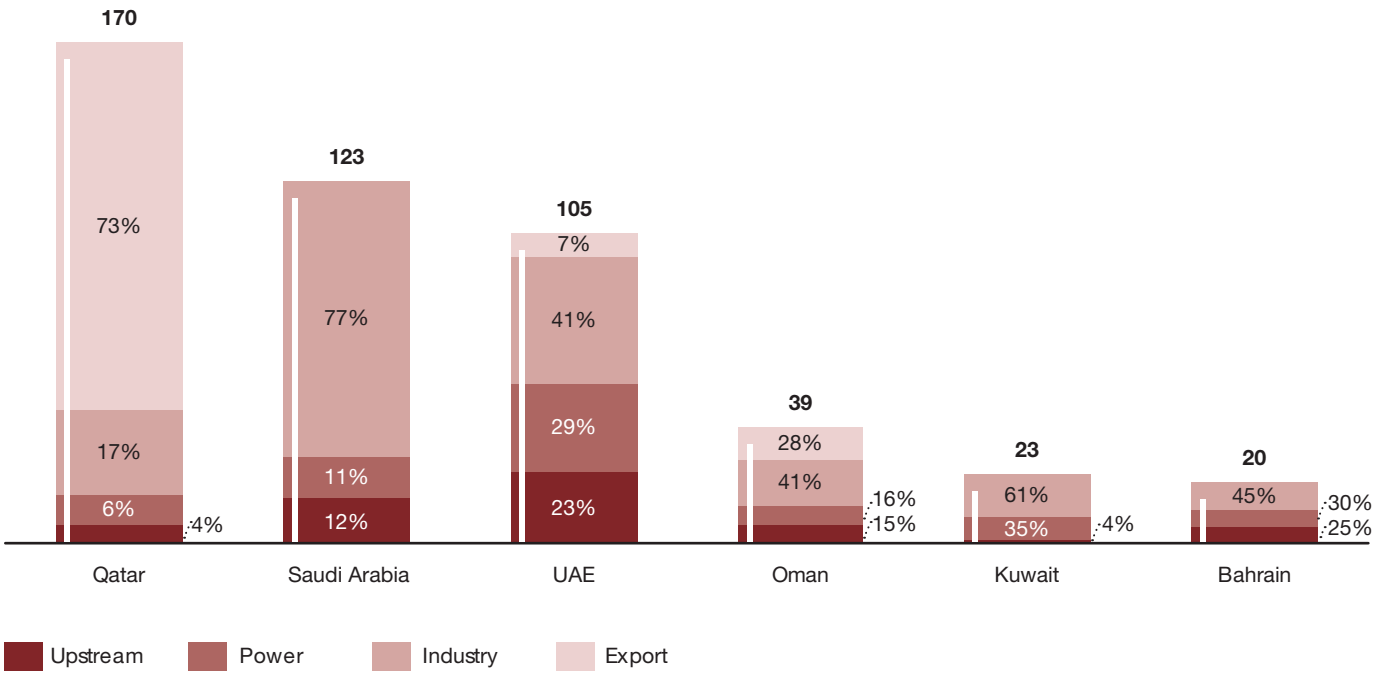
The various approaches taken to gas allocation among countries are apparent in how the proportion of gas to each end-use sector varies across the GCC (*see Exhibit 2, page 8*). Qatar, for example, has an abundance of gas resources and a small population with low domestic power demand and limited requirements for job creation through industry. As a result, Qatar's gas market is dominated by exports. Saudi Arabia, by contrast, allocates most of its gas to industry. Power generation in the kingdom is still based on oil, so industry takes a large share because this is perceived as encouraging employment. In the United Arab Emirates, gas is more evenly distributed across all four end-uses, with a higher share going to gas-fired power generation plants and to maximize oil production. These are all legitimate national needs. However, they may not be the best and most effective use of domestic gas resources.

As the supply/demand balance changes, GCC countries need to create more coherent, proactive strategies that allocate gas to end-use sectors based on their relative contribution to the country's socioeconomic targets. Typically, these goals would be to increase GDP growth, local employment, and fiscal revenues.

For example, the conventional wisdom among governments is that providing gas to industry generates the biggest overall economic

Exhibit 2
Gas consumption by end-uses varies widely among GCC countries

Gas consumption by end-use (billion cubic metres, 2017)



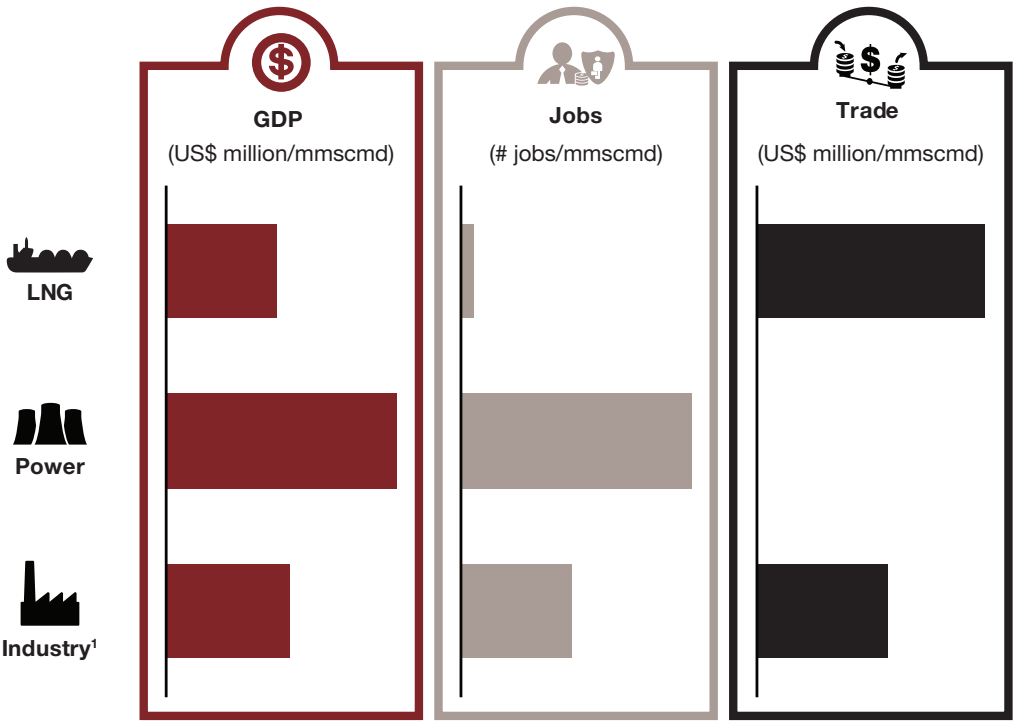
Note: Upstream includes flaring, fuel, and re-injection.

Source: U.S. Energy Information Administration, International Energy Statistics; Arab Union of Electricity; Strategy& analysis

benefit. Usually, this is in areas such as petrochemicals, aluminum, methanol, and fertilizers. However, using gas to ensure a cheap and reliable source of power in the country can lead to a larger payoff in terms of GDP growth and potentially jobs. That is because power supports all sectors of the economy resulting in economic diversification and the development of the services sector. Similarly, allocating gas for export through LNG can have the largest positive impact on a country's trade surplus (*see Exhibit 3*).

Exhibit 3
Gas allocation among sectors has a significant impact on socioeconomic indicators

Impact of gas allocation on socioeconomic indicators, GCC example



1. "Industry" includes subsectors typically found in gas-rich economies (plastics, methanol, fertilizers, aluminum, etc.). Different subsectors have their own characteristics that should be taken into account.

Note: mmscmd = million metric standard cubic meters per day.

Source: Strategy&

Indeed, cheap power is a foundational requirement for the transition to a new economic model based on digital technologies and hybrid or electric vehicles. As renewable power sources mature, countries around the world are seeking to shift their economies in this direction. GCC governments are similarly investing to develop digital capabilities and invest in renewable power sources. The region's reserves of cheap gas for power provide a competitive advantage (*see "Aligning gas and renewable energy agendas"*). A coherent gas allocation strategy can upend the traditional thinking on how to manage gas resources in the most efficient manner.

Developing a coherent gas allocation strategy that meets national objectives requires building models of the economy that gauge the impact of various options. There are several approaches, the most important of which are: using country- and industry-specific socioeconomic multipliers with no interdependencies; and using general equilibrium models that simulate an all-industry view of an entire country's economy with all the possible interdependencies, which is the preferred route. Whichever model a country opts to use, success calls for a governance model that can bring together the relevant ministries — typically energy, economy, and planning — and establish a single entity to serve as the central custodian of the model and the underlying data.

Aligning gas and renewable energy agendas

An important component in developing a gas allocation strategy is to understand the role that renewable energy will play in meeting future power demands. Given their own indigenous gas resources, GCC countries are insulated from the volatility in market-based gas prices that occurs elsewhere. That is a competitive advantage that GCC countries must exploit. With a supply of gas at predictable future prices, GCC countries can accelerate the deployment of gas-backed renewable energy, thereby providing the lowest possible overall cost of power.

In the near term, gas remains the best available solution for flexible power generation. Gas can act as a "bridge fuel" that helps manage the intermittency of renewables while emerging solutions such as energy storage and battery technologies mature.

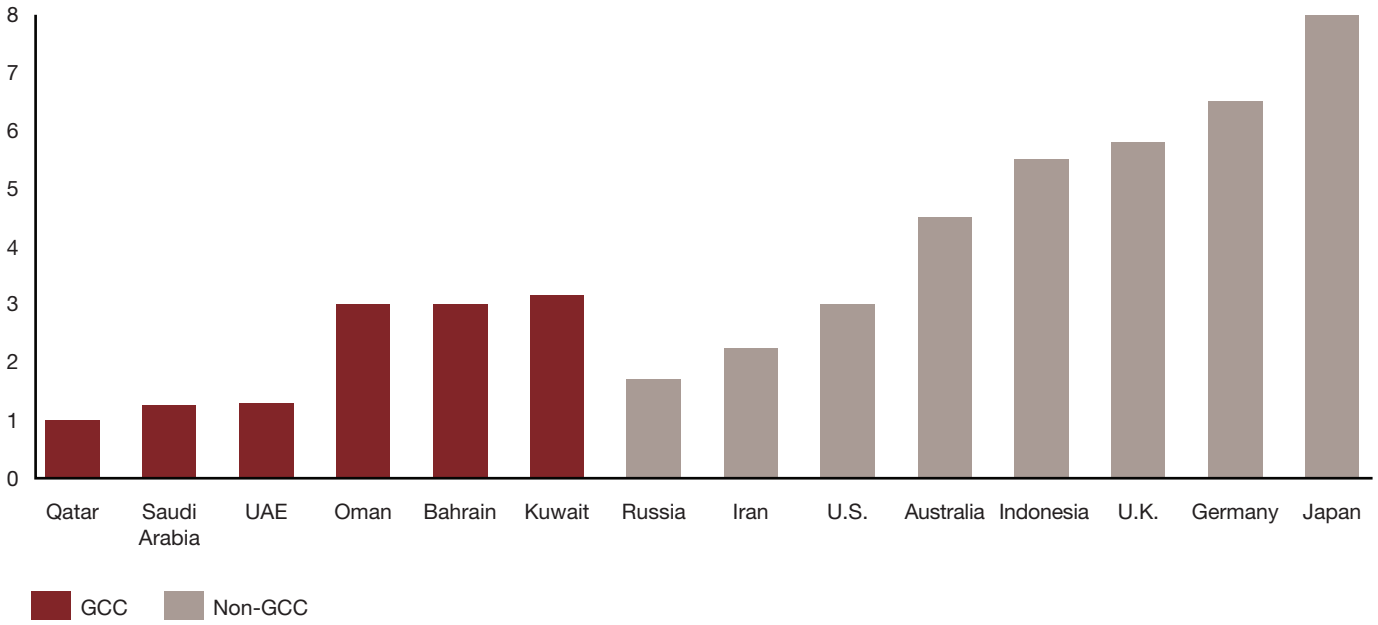
Longer term, GCC governments need to reassess continually the economic feasibility of energy storage solutions to manage a gradual transition to fully renewable electricity systems.

Pricing gas to reflect its true value

The second component of gas reform is the implementation of cost-reflective gas pricing. A significant problem is that overall gas pricing in GCC countries is opaque and prices remain artificially low by international standards (*see Exhibit 4*). The need for a more coherent approach to gas pricing is not new.[2] However, growing gas demand and increased fiscal pressure on GCC governments are making the issue more urgent. Rather than consider gas operations as cost centers linked to oil production, GCC governments must treat them as separate, profit-generating entities, with accurate planning and cost accounting for gas operations and wholesale gas prices that reflect the true value of gas.

Exhibit 4
Wholesale gas prices in the GCC remain low by international standards

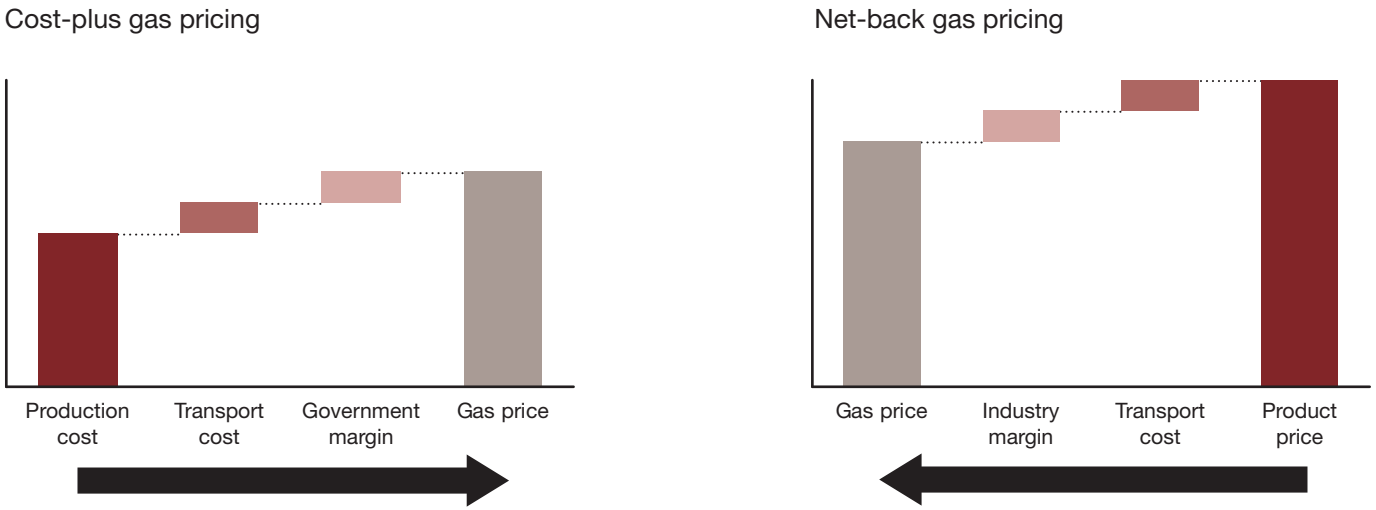
Wholesale gas prices (US$/million British thermal units, 2017)



Source: International Gas Union; Strategy& analysis

Hub pricing is the most efficient mechanism to determine the true value of gas in fully developed gas markets, which have sufficient buyers and sellers. For the GCC, such a market-based approach may be a longer-term possibility, but it is not feasible today. This is because GCC gas markets are highly localized, there are limited independent producers and consumers, and governments need to retain a degree of control over gas destinations. Instead, there are two more-practical options that GCC governments should consider in reforming gas prices: cost-plus and net-back pricing (*see Exhibit 5*).

Exhibit 5
There are two practical options to reform gas pricing in the GCC



Source: Strategy&

Cost-plus pricing
The first approach, cost-plus pricing, factors in all the costs needed to deliver gas to an end user, including supply and transportation costs, plus a government margin. Any increase in supply costs — for example, through developing more challenging and costly gas reservoirs — is passed to customers rather than eroding the government's margin. In this way, cost-plus pricing increases transparency of the true cost of gas supplies and gives end users improved awareness of pricing trends and allows long-term planning.

For GCC countries, a simple rule of thumb is that gas destined for domestic consumption should be priced through a cost-plus mechanism. The impact from a potential shift to cost-plus pricing will vary by end-use. Governments may need to tailor the implementation on a case-by-case basis. Some industries may easily absorb the potential price increases from this approach, while others may see their viability threatened. In the latter case, the government must decide whether to reduce its margin to subsidize the industry in question (while still covering the costs) or whether to provide an alternative route to subsidies through a strategic tariff for power prices, or other incentives. Depending on the country's gas-allocation strategy, discussed above, those subsidies may be justified or not. In either case, better cost accounting means that governments can make these decisions with a full understanding of the economic implications.

Net-back pricing

The second approach, net-back pricing, indexes gas prices to the price of the end products that use gas as a feedstock. This approach ensures that the government accurately captures the value of gas, rather than allowing a manufacturer to benefit from artificially low feedstock prices by selling the transformed product at very high prices in their destination markets. Adopting net-back pricing requires an understanding of the cost structure of the process industry in question, along with an assessment of the export market outlook for its products. Net-back formulae can be relatively simple. For example, the price of gas delivered to a methanol plant can be a percentage of a global methanol price. In other cases, prices may be indexed to a specific target market and include more complex variables including price ceilings and floors to protect governments and investors from price volatility.

Net-back pricing is more appropriate than cost-plus pricing for gas destined for export or supplied to local industries that export products. For GCC countries, this includes the gas for LNG exports, and that supplied to petrochemicals, fertilizers, methanol, and other export-focused industries.

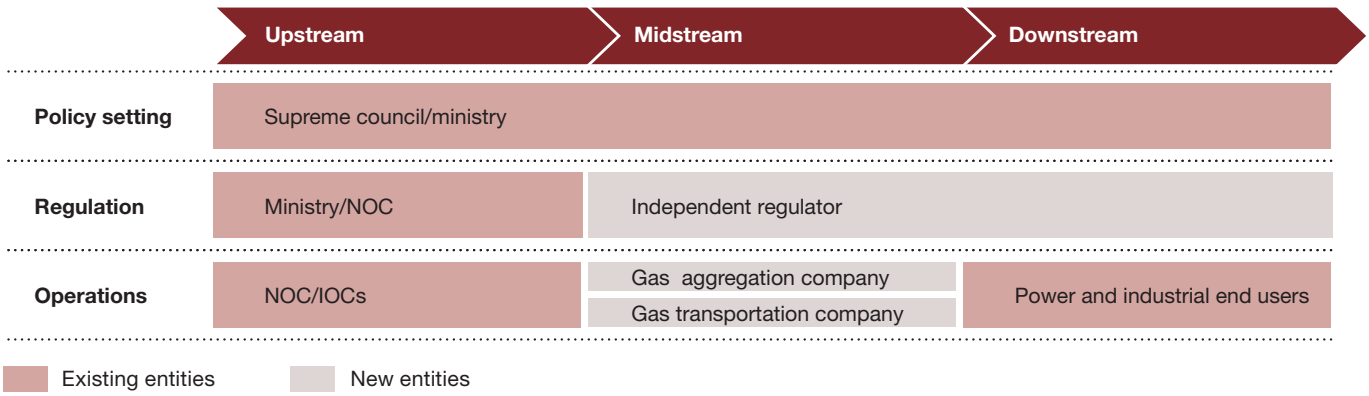
Structural market reforms

The third component of gas reform is to ensure that the right market structure and institutions are in place to support more strategic gas allocation and more accurate pricing. In the short term, complete liberalization of gas markets in the region, akin to those in the U.S. and Europe, is not realistic. At the same time, increased demand and markets that are more complex mean that the status quo is also not an option.

The answer for GCC countries lies in a middle ground, based on three institutional elements that will make the gas sector far more efficient: a gas aggregation company, a gas transportation company, and an independent regulator (*see Exhibit 6*).

Exhibit 6
Evolution of GCC gas markets requires the development of new entities and capabilities

Gas sector "blueprint"



Note: NOC = national oil company, IOC = international oil company.
Source: Strategy&

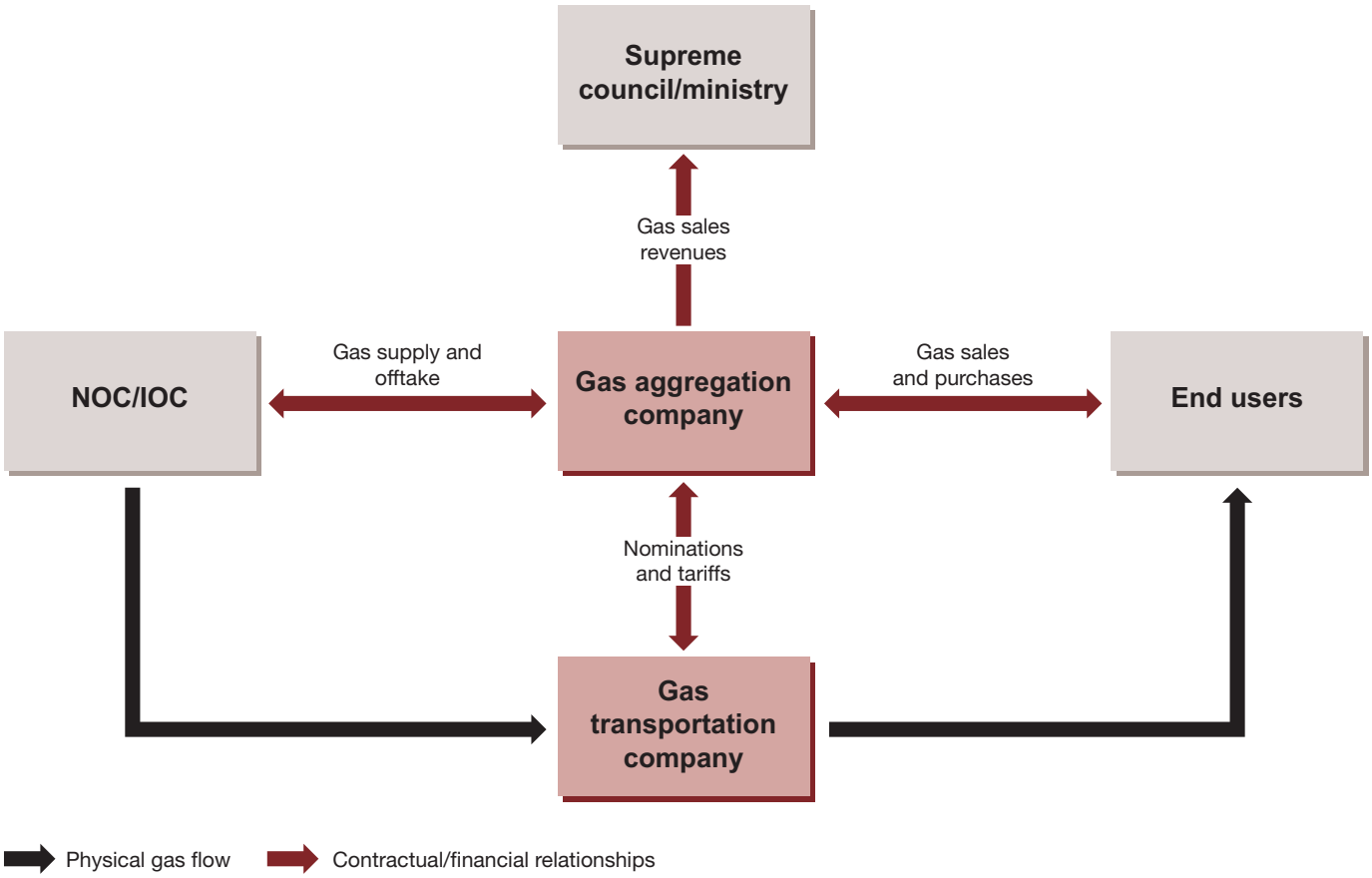
Gas aggregation company

The first institutional element is a gas aggregation company. In the past, managing gas sales and purchase agreements was relatively straightforward. The government, or the national oil company, routed gas to predominantly government-run downstream entities. Yet as supplies become more diversified and complex, there is an increasing need to manage the portfolio on a commercial basis. The complexity in supplies comes from including domestic fields with varying supply costs, supplemented in some cases with imports, and more private-sector players in the power and industrial sectors downstream. A common solution for an evolving gas sector is to create a separate gas aggregation company, tasked with managing all gas sales and purchase agreements (*see Exhibit 7*).

Exhibit 7

A gas aggregation company is at the heart of a reformed gas market

Role of a gas aggregation company



Note: NOC = national oil company, IOC = international oil company.
Source: Strategy&

The gas aggregation company can remain 100 percent government controlled, but it must be a separate, ring-fenced entity. This structure, which has been used in such markets as the Netherlands and Nigeria, provides several advantages, including:

- Greater transparency on the costs, revenues, and profitability of the gas sector
- Increased government revenue through active management of sales and purchase agreements and securing new gas supplies to meet new demand
- Increased margins by procuring gas from the lowest-cost sources and prioritizing sales to higher-margin end users
- Minimized risk through improved supply–demand planning and stronger commercial agreements
- Enhanced ability to quantify and manage subsidies to end-use sectors

Gas transportation company

The second institutional element is a dedicated company to operate gas transmission pipelines, rather than having them handled by the national oil company or government. This measure provides a basis for full and transparent accounting of gas transport costs. Some GCC countries have already established gas transportation companies, as have governments in other parts of the world. For example, Mexico launched the Centro Nacional de Control del Gas Natural (Cenagas) as part of its current market reforms.

Gas transportation companies are standalone entities with their own profit-and-loss accountability and the means to raise financing to fund new infrastructure. They are paid typically through tariffs raised according to a model that provides a fair return on investments.

Independent regulator

The third institutional element is the creation of an independent regulator. The job of the regulator is to ensure that the gas aggregation and gas transportation companies operate fairly and provide equal access and treatment to all sector participants, in both the public and private sectors. Traditionally, governments are responsible for the gas sector in the GCC and have regulated themselves, although Oman and Saudi Arabia are establishing independent regulators for their gas sectors.

Specific roles of the regulator include:

- Advising policymakers about all proposed gas sector policies and regulations
- Conducting due diligence on, and licensing of, market participants
- Reviewing and endorsing proposed gas transportation tariffs and pricing
- Enforcing all applicable policies and regulation
- Resolving disputes between sector participants
- Reviewing operational practices and increasing energy efficiency across the sector and among end users
- Advising the government on opportunities to improve market functioning

Conclusion

The days of abundant cheap gas are over. GCC governments must start to make better decisions about how to manage a finite resource amid competing demands if they are to maximize socioeconomic value. Success requires a comprehensive strategy to allocate gas among end users, along with pricing gas to reflect its true value and allow the governments to reduce subsidies. To accomplish these two measures, governments must also reform the market structure to create dedicated gas aggregation and transportation companies, overseen by an independent regulator to promote efficiency across the sector.

Collectively, these measures represent a large step forward in managing national gas assets on commercial principles. Moreover, they allow countries to start incorporating the benefits of fully competitive gas-hub pricing seen in developed gas markets. Establishing a gas-trading hub is not an immediate priority for the GCC, but it is likely to happen as the market develops. The country that moves first to introduce commercial principles in managing gas resources today will become the prime candidate to build that kind of gas trading hub in the future.

Endnotes

[1] The GCC countries are Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates.

[2] George Sarraf, David Branson, and Dr. Yahya Anouti, “Securing the future of natural gas in the GCC: Time for sustainable price reforms,” Strategy&, 2016 (https://www.strategyand.pwc.com/media/file/Securing-the-future-of-natural-gas-in-the-GCC.pdf).

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