

GAS

Medium-Term Market Report 2015



EXECUTIVE SUMMARY

Market Analysis and Forecasts to 2020



International
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INTERNATIONAL ENERGY AGENCY

The International Energy Agency (IEA), an autonomous agency, was established in November 1974. Its primary mandate was – and is – two-fold: to promote energy security amongst its member countries through collective response to physical disruptions in oil supply, and provide authoritative research and analysis on ways to ensure reliable, affordable and clean energy for its 29 member countries and beyond. The IEA carries out a comprehensive programme of energy co-operation among its member countries, each of which is obliged to hold oil stocks equivalent to 90 days of its net imports. The Agency's aims include the following objectives:

- Secure member countries' access to reliable and ample supplies of all forms of energy; in particular, through maintaining effective emergency response capabilities in case of oil supply disruptions.
- Promote sustainable energy policies that spur economic growth and environmental protection in a global context – particularly in terms of reducing greenhouse-gas emissions that contribute to climate change.
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 - Support global collaboration on energy technology to secure future energy supplies and mitigate their environmental impact, including through improved energy efficiency and development and deployment of low-carbon technologies.
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Global gas demand growth re-accelerates amid growing uncertainties

The *Medium-Term Gas Market Report (MTGMR)* 2015 forecasts that global gas demand will re-accelerate following a marked slowdown in both 2013 and 2014. The expectation for stronger economic growth and lower oil and gas prices provides some support for demand, even though the improvement falls short of forecasts made in earlier versions of this report. Global gas demand is projected to grow 2% on average between 2014 and 2020, slower than the 2.3% averaged over the previous ten years, with several factors weighing on the scale of the recovery.

In OECD countries, slower thermal generation growth dampens gas demand increases

In OECD countries, gas demand in the power sector remains challenged by sluggish electricity growth amid continued robust deployment of renewables. The resulting compression in thermal generation growth leaves limited space for gas demand increases despite substantial shut downs in coal-fired generation capacity in both Europe and the United States. In Japan, gas demand is set to fall. The only uncertainty is how fast, due to the fact that the scale and timing of the nuclear power comeback remain unknown.

In non-OECD Asia, the competitiveness of gas versus other fuels remains a key demand uncertainty

The past two years have brought a harsh reality to the eyes of the gas industry: in a world of very cheap coal and plummeting renewables costs, it was difficult for gas to compete. Gas demand growth has increased well below its ten-year average in both 2013 and 2014, and many parts of Asia have emerged as key areas of weakness. Very high import prices in 2013 and 2014 have undermined gas consumption growth, especially in the power sector. Several Asian countries took active steps to limit the share of gas usage in their power mix and have prioritised coal capacity expansions over those of gas. Other countries have run their regasification infrastructure and gas-fired power plants well below their full potential despite facing substantial power shortages in some cases.

Plunging oil and gas prices raise the question of how demand, particularly in Asia, will respond. While this report forecasts a price-driven increase in consumption, the sensitivity of Asian demand to lower prices is uncertain and has yet to be fully tested. In the short run, better affordability of gas imports is likely to result in higher consumption, particularly where this serves to reduce shortages rather than placing gas in direct competition with coal. But in the medium term, the picture becomes more complex. Trust in gas as an attractive strategic option must increase for the fuel to make sustained inroads in the energy mix of much of developing Asia. While environmental policies can play an important role in this regard, they will not do the job by themselves; thus the gas industry must prove it can deliver gas supplies at price levels substantially below those that have prevailed in the recent past.

China's gas demand growth slows amid major changes in its energy consumption patterns

China's gas demand growth slowed down to single digits in 2014, a substantial slowdown from the 14% averaged during the prior five years. Considering the massive slowdown in primary energy consumption that is taking place in the country, this growth rate is still impressive. Profound changes are unfolding in China in relation to both the structure of the economy and the way energy is

deployed. However, the net effect of these transformations is less clear for gas than it is for other energy components. On the one hand, slower economic growth and the sharp slowdown in primary energy consumption growth are strong headwinds for gas. On the other hand, the ongoing intensification of China's environmental policy should be broadly beneficial for gas. In this respect, lower import prices have the potential to turn gas into an increasingly attractive option from an environment viewpoint. While the fuel remains uncompetitive when compared with coal, the price spread between the two has narrowed appreciably and has the potential to move the balance between the economic cost of using gas and its perceived environmental benefits. Overall, this outlook forecasts a moderate re-acceleration of gas consumption growth from the lows of 2014, and an average annual increase of 10% throughout the rest of the decade is projected.

Demand growth in Latin America, Africa, and the Middle East is constrained by supply availability

In all these regions, production growth falls short of actual demand potential, and supply shortages remain a chronic problem, particularly where access to gas imports is limited. A combination of ill-conceived upstream policies and lower oil and gas prices weigh on production growth. In Africa, gas production is forecast to return to growth after a seven-year streak of volatile output around a declining trend. Despite the increase, the existing tension between meeting export commitments and responding to domestic demand needs is not yet resolved. As a result, the reliability of Africa's exports remains at risk, and prospects for consumption growth are capped. In Latin America, production growth will decelerate sharply relative to its recent past performance, mainly driven by countries other than Brazil and Argentina. Overall, Latin America will be forced to rely more heavily on imports to support relatively modest consumption growth.

Lower oil prices result in slower gas production growth over the next five years

In June 2014, Brent prices averaged above USD 110/barrel (bbl). In January 2015, they averaged below USD 50/bbl. While prices have recovered from their lows, they remain locked in a USD 55-70 range at the time of writing. The implications of such a steep and sudden oil price resetting go far beyond the oil market itself. Gas, through its direct and indirect linkages to oil, is not immune to the tremors shaking the oil industry.

Low oil prices have clear knock-on effects on upstream investments. Oil and gas companies are responding to the new market environment by cutting capital expenditure programs. Budgets for 2015 have already shrunk, but in the absence of a meaningful price recovery, deeper cuts will follow. Companies are refocusing on core assets while putting large investments through a much tougher vetting process. Amid squeezed cash flows, more costly, low-return projects will be cancelled. As a result, growth in global gas production is set to slow.

Due to its capital-intensive nature, the liquefied natural gas (LNG) industry faces an uphill battle. Those projects currently under construction today are set to come on stream broadly as planned, as large upfront capital costs have already been incurred. Beyond that, however, new LNG plants will struggle to get off the ground. Today LNG prices simply do not cover the capital costs of new plants. Several projects have already been scrapped or postponed, and the number of casualties will rise if prices do not recover. Final investment decisions (FID) taken in the next 24 months will determine the amount of incremental LNG supplies available in the early part of the next decade. If current low prices persist, LNG markets could start to tighten up substantially by 2020.

Over the next two years at least, however, the LNG market will have to cope with a flood of new supplies. Global LNG export capacity additions throughout 2020 will amount to more than 40% of today's existing infrastructure with almost half of the incremental supply due on line in 2016 and 2017. In the short run, the responsiveness of LNG supplies to prices is low since operating costs are a fraction of the overall cost of building a plant. As long as prices are high enough to cover operating and transportation costs, LNG plants will run at full capacity as operators try to recover as much as possible of the large upfront sunk cost. In this context, excessive supplies will have to be absorbed via a price-driven response on the demand side. Asian spot LNG prices have already halved since 2014 and oil-linked contracts have also started to fall. The price responsiveness of gas demand in this new environment will be tested.

Amid falling prices and budget cuts, the US gas industry is showing an unparalleled ability to absorb shocks. US gas production increased robustly last year and has remained on an upward trend thus far in 2015. While companies' cash flows are falling, producers are responding by quickly pushing the profits' squeeze downstream. Service costs have already dropped substantially and further reductions are likely, which should attenuate the impact of low oil prices on drilling programmes. Overall, the dynamic and flexible nature of the US gas supply chain is allowing the industry to efficiently adjust to changing market conditions. Production growth in core areas of prolific shale gas formations is set to prove resilient to low oil prices. In particular, the production outlook for the Appalachian Basin remains bright, and while rig activity in the region was scaled back in early 2015, this came more in response to plummeting gas prices amid excessive supplies than as a consequence of lower oil prices.

European gas markets face a challenging geopolitical background

The year 2014 was shaped by an escalating conflict between Russia, Europe's largest gas exporter, and Ukraine – Europe's most important transit country. This confrontation is having major repercussions on trade, financial, and energy relationships within the region. Public perception of and policy makers' confidence in gas is deteriorating while a growing sense of urgency in regard to enhancing Europe's security of supply can be detected.

The Energy Union Framework Strategy launched by the European Commission earlier this year is well attuned to these new developments. Access to sufficiently diversified gas supplies and stronger infrastructure connectivity are presented as two main pillars of Europe's future gas strategy. This report has an insight focus section analysing the progress made in strengthening European gas infrastructure in recent years and the major bottlenecks that still remain. One key conclusion is that ensuring full bi-directional flow capability on major lines that still lack it would be a low-cost option to fully leverage Europe's existing LNG, storage, and domestic production capabilities in the event of a high-scale supply emergency.

Major strategic shifts in Russia's gas export policy are occurring as well. Russia's efforts to lock in export agreements with China have intensified, reflecting Russia's strategic choice to diversify to the East. Russia recently stated that China is on track to become its largest export market, ahead of Germany and Turkey, over the medium term.

At the same time, the abrupt cancellation of South Stream and the new Turkish Stream proposal marks a major change in Gazprom's strategy towards Europe. While a desire to bypass Ukraine as a transit country remains firmly embedded in the choice to build a new route through Turkey,

Gazprom has now backtracked on its previously held position to build the required connecting lines through European territory. The proposed Turkish Stream envisions a different role for Gazprom. Russian volumes would be delivered at a newly created gas hub at the Turkish/Greek border with the responsibility of building the required missing infrastructure shifting to European buyers. The company has gone so far as to suggest that it might stop any transit gas through Ukraine by December 2019. While Gazprom's position has seemingly become more nuanced in recent months, and existing contractual obligations make any swift change in the delivery point of Russian gas unlikely, recent developments point to new challenges in the relationship between Europe and its major gas supplier.

Against this backdrop, Europe's gas import dependency will continue to increase. Lower oil prices and stricter self-imposed caps on Dutch production will result in faster domestic output declines than forecast in previous *Medium-Term Gas Market Reports*. By 2020, OECD Europe gas production is expected to stand 25% below its 2010 level. Compounding the declining trend in production is a moderate recovery in demand. Weather normalisation after a very mild 2014 plays an important part in that improvement, but higher gas usage in the power sector to compensate for the shutdown of coal-fired generation capacity is also a driver. As a result, European gas import requirements are set to increase by almost one-third between 2014 and 2020. With large quantities of cheap LNG supplies available, at least in the earlier part of the forecast period, Europe's growing import needs might well offer a welcome outlet to LNG exports struggling to find a home. This report forecasts European LNG imports to roughly double between 2014 and 2020. Even in this context, however, Russian gas is not set to be meaningfully displaced. Russian deliveries to Europe are expected to rebound following the weather-induced collapse of 2014 and then remain locked in a 150-160 bcm range for the medium term.

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Global natural gas demand remained weak in 2014, falling well below its ten-year average. High prices for gas in the past two years undermined its competitiveness, bringing to light a harsh reality: in a world of cheap coal and falling costs for renewables, gas has laboured to compete. Although Asia has been regarded as an engine of future gas demand growth, the fuel has struggled to expand its share of the market in many parts of the region. This has raised questions over the viability of gas as an attractive strategic option across Asia.

The context for gas markets is changing rapidly, however. Falling oil prices have resulted in much lower gas prices in many parts of the world. As a result, gas demand is enjoying the tailwind of substantial price drops while the upstream sector is suffering amid large capital expenditure cuts. The interaction of these opposing effects on gas markets is examined in the IEA *Medium-Term Gas Market Report 2015*, which provides a detailed analysis of global demand, supply and trade developments through 2020. The impact on global gas markets of Russia's strategic shift in its gas export policy and the rising tide of liquefied natural gas supplies are given careful consideration. Two special insights also feature in this report. The first analyses the progress Europe has made in strengthening its gas infrastructure since 2010 and the major bottlenecks that still remain in enhancing the security of supply in the region. The second takes a close look at reforms to the gas and electricity sector in Mexico, investigating their impacts on North American gas markets.

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