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International Energy Agency

SUMMER 2016

GAS DEMAND SLUMPS DESPITE ROLE IN CUTTING EMISSIONS

REPORT

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The IEA Medium-Term Gas Market Report 2016 assesses global natural gas trends and provides a detailed analysis of global demand supply and trade development through to 2021. It also explores the links between today's oversupply and emerging shifts in trade patterns, pricing mechanisms and market structures that have the potential to substantially re-shape the global gas industry over the next few years.

The event is part of our Greener Europe pillar, which focuses on global and EU policies needed to foster sustainable economy that reconciles economic growth with environmental responsibility. The topics it covers range from the global debate on climate change and the completion of Europe's Energy Union to sustainable mobility, resource governance and circular economy.

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The growth in demand for gas has slowed worldwide, but gas could serve as an effective intermediary in the transition to a low-carbon future dominated by renewables. This possibility raises questions over how much should be invested in gas infrastructure and the extent to which policymakers should support the use of gas and new gas projects.

This was the key message from the International Energy Agency's Medium-Term Gas Market Report 2016, presented in Brussels at Friends of Europe's conference on 8 June. According to the report, global demand will increase at an average annual rate of 1.5% between 2015 and 2021. But this is down from the 2.5% observed from 2009 to 2015, when gas gained popularity in part because its combustion produces less carbon dioxide than coal. The reduced expectations have slowed new investment, with the IEA saying that no new export projects were commissioned in the first half of 2016.

One cause is the world's slow economic growth combined with a decline in the global economy's energy intensity. At the same time, gas is sandwiched between two other sources of power, which have clear selling points. "You cannot look at gas in isolation from what happens with other fuels," said **Fatih Birol**, Executive Director of the IEA. "Coal prices are rock bottom, especially in Asia. If you don't have regulations on air pollution, coal may be the preferred option. And the falling cost of renewables and government support for these squeezes the room for gas."

In the United States, the deployment of renewables will continue for the remainder of this decade after the extension of federal incentives for solar and wind power in 2015. This is expected to cause a decline in thermal generation, as happened in Europe. And with gas prices unlikely to fall much further than the very low level they reached in 2015, there is little further potential for switching from coal to gas. As a result, the IEA expects US gas-fired generation to stagnate.

"In the US, gas is replacing coal," said Birol. "This is the main reason that US carbon dioxide emissions declined so substantially, as well as thanks to the Obama administration regulations. But in coming years, gas demand in the US will go down because there are not many possibilities left to substitute for coal. Plus, renewables are rising, supported by the government."

Chinese gas demand also slowed dramatically in 2015, with growth of just 4%, down from an average of 15% between 2009 and 2014. It is likely to remain weak over the medium term, since some of the slowdown results from slower economic activity. That said, China is trying to diversify away from coal and address local air quality – and gas pollutes less than coal. This should support average growth of around 9%.

In India, where gas demand fell slightly between2009 and 2015, demand is set to grow robustly, at an annual average rate of almost 6% from 2015 to 2021. However, India may not place as a high a priority on cleaner air as Europe and the US, because the biggest imperative there is simply to connect people to the grid as quickly – and cheaply – as possible. "Today in India, 250 million people have no electricity, which means they cannot keep medication for children in a refrigerator," said Birol. "In India, you have a different context."

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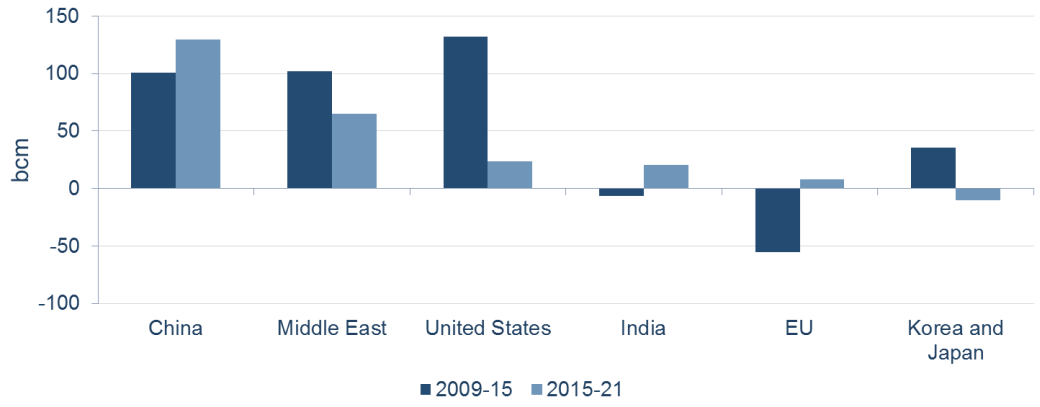
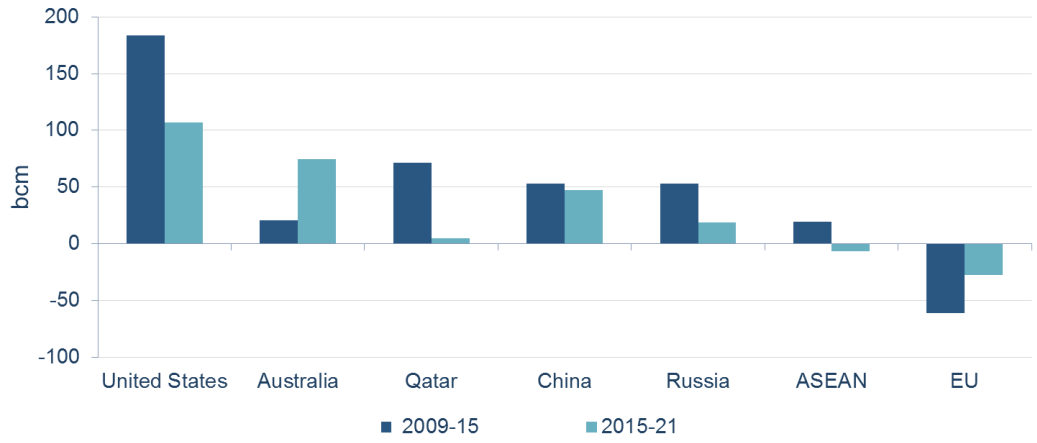
CHANGE IN NATURAL GAS DEMAND BY REGION



CHANGE IN NATURAL GAS PRODUCTION BY REGION (bcm)



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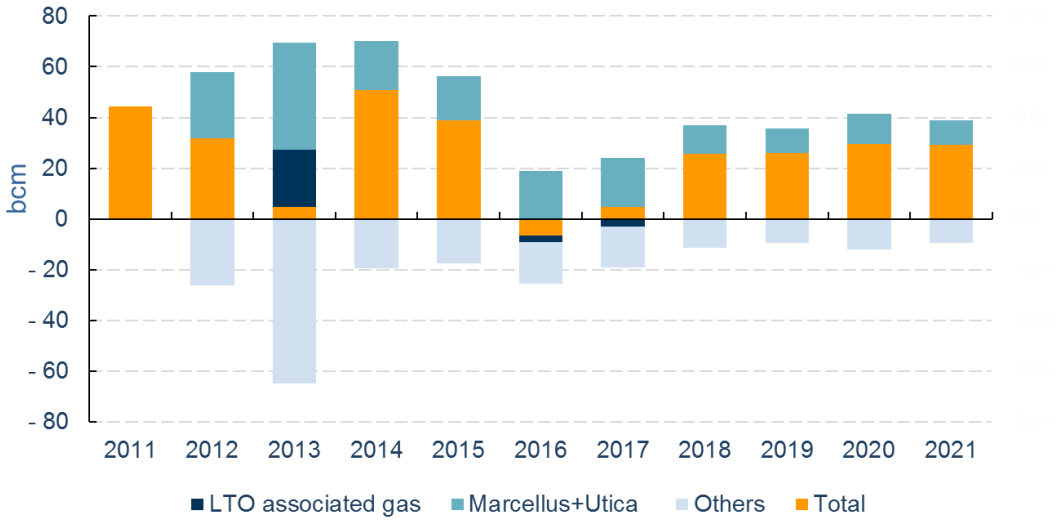

Source: IEA Medium-Term Gas Market Report 2016

European gas demand will remain weak amid the continued deployment of renewables. But retiring coal and nuclear capacity will create some demand for gas-fired generation, and gas demand is projected to increase modestly. “Four years ago, we published a report called ‘Are we entering a golden age of gas?’” said Birol. “Now we are always asked about this. But the report title had a question mark.”

Part of the difficulty, said moderator **Dharmendra Kanani,** Executive Director at Friends of Europe, is that “as a commodity, gas doesn’t seem to respond to normal laws of supply and demand. As a result, there’s an absence of direct links between demand and prices.”

GAS AS A BRIDGE FUEL TO A LOW-CARBON FUTURE

Gas could have a large role to play as the world tries to reduce carbon dioxide emissions to achieve the aims of the COP21 Paris Agreement. The 2015 conference set a target of keeping global temperature rises well below 2°C. Coal emits proportionally more carbon dioxide than gas; and while renewables are often talked about as the ideal solution, they are thought unlikely to expand fast enough to replace coal by themselves. That could give gas a ‘transition’ role.

“Europe is facing a choice between coal and climate,” said **Rune Bjørnson**, Vice President for European Policy and Regulatory Affairs at Statoil. “It is very difficult to reach long-term emission targets without addressing coal, and even under the most optimistic scenario for renewables, you still need something to fill the gap. That role falls to natural gas.”

Philippe Jeunet, Special Advisor to the Senior Executive Vice President of ENGIE and Chairman of the Board of Gaz Réseau Distribution France (GRDF) agreed. “Gas is a fossil energy, but emits less carbon than other types,” he said. “I am sceptical about the ability to reach COP21 objectives without natural gas. It is usual to think that tomorrow the energy world will be renewable. But I think the future will be a smart cocktail of various energies. Gas can accompany renewables: use in green systems is the best solution to bring support for renewables.”

Gas is by no means perfect, but it has the potential to take the world in the direction it wants, said Bjørnson. “What is possible is different from what we want,” he said. “Some countries are more successful at reducing their emissions than others. The US reduced emissions by 12% from 2005 to 2015. The UK is doing the same through the same conversion. One shouldn’t let the best be the enemy of the good, and I think gas is pretty good.”

Gas played a role in the Paris Agreement, by making it politically possible for countries such as China and the US to agree to it, according to **Dominique Ristori**, European Commission Director-General for Energy. “I was always confident of the success of COP21 for two reasons,” he said. “One was the excellent political command from the French presidency, in close contact with the EU. But also because of the evolution of positioning from other economies, in particular China and the US. Frankly, without the

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Gas also has a role in reducing pollution from transport, added Jeunet. "It is part of green mobility," he said. "Though electric cars are being developing quickly, they are a good but limited solution. Natural gas can be a complementary solution, powering trucks, trains and sea vessels."

DANGER OF LOCKING IN SUPERFLUOUS PROJECTS

There are some doubts over the role of gas in decarbonisation. Stephan Singer, Director for Global Energy Policy at the World Wide Fund for Nature's (WFF) European Policy Office, said that gas's impact as an intermediary to renewables could only be very small. To keep the concentration of carbon dioxide in the atmosphere below 450 parts per million – a limit thought to be a condition for keeping the global temperature rise below 2°C – would mean a significant decrease in gas use in coming decades. "If you translate that into a carbon budget (how much carbon dioxide can be emitted while staying under that level), the potential for so-called low-carbon fossil gas is very low. We don't have the space."

Moreover, the use of an intermediate energy source like gas comes with the danger of 'locking in' its longer-term use. Gas needs to be accompanied by infrastructure ranging from the power plants that burn it to the transport facilities to get it to the plants. These are large upfront investments that would need to be justified economically by long-term use. The IEA has previously warned about this phenomenon with respect to coal-based infrastructure, Singer pointed out. "Yes, you might say that gas is low-carbon, but it is high-carbon compared to renewables," he said. "What we have seen in the past is the threat of a lock-in into high-carbon coal infrastructure. Do we not see the same danger – albeit on a lower level – with gas infrastructure? If we talk about decarbonisation, then, to be honest, gas has no role to play."

Many analysts point to the US shale gas revolution as the main driver of CO2 emission reduction, as it contributed to the switch from coal to gas. Yet there has been a big rise in methane emissions from the US mainland that has not been accounted for and could be related to the extraction of shale gas.

Though the environmental impact of gas is often talked about in terms of global warming, it also has an effect on air quality, as it pollutes less than coal when used to generate electric power. "I was raised in Ankara and used to play football in the street," said Birol. "But my mother called us home at 5:00pm because that was when the pollution was highest. In the last few years, there has been a substitution of coal for natural gas, and now there is almost no problem."

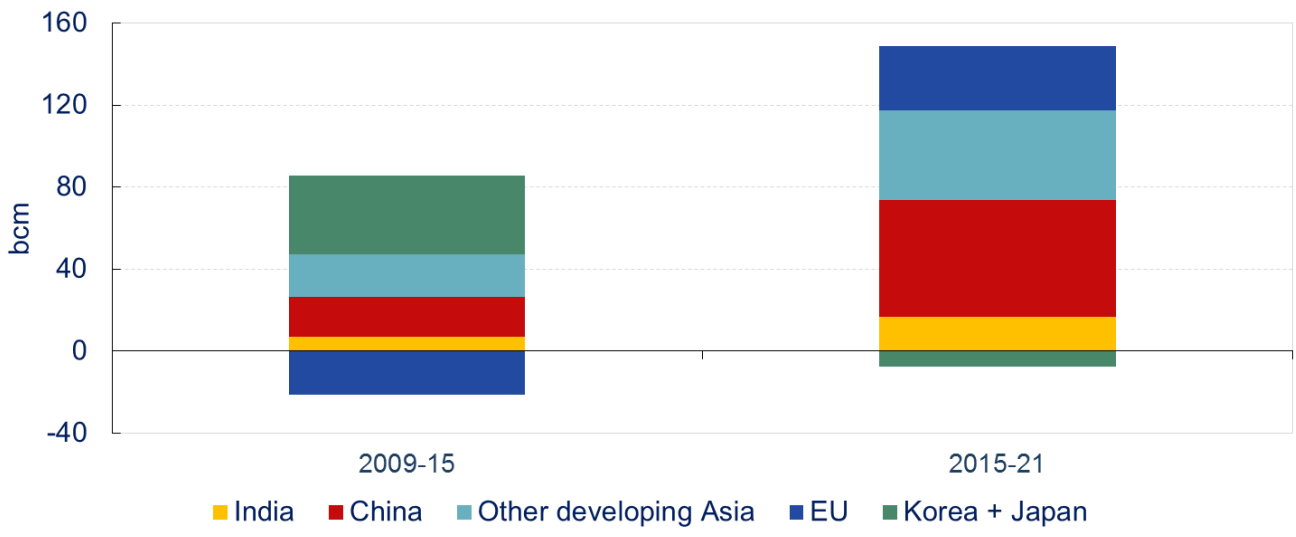
GAS AND ENERGY SECURITY

Europe's overdependence on Russian gas – and Ukrainian gas transit – triggered a debate in the EU about the need to prevent a possible gas supply crisis, with the EU Energy Union becoming one of the flagship projects of the Junker Commission. The Commission's latest energy security package emphasised that security of supply is closely linked to other goals such as greater efficiency and an internal energy market. "The gas market will remain mobile, as it is changing fast," said Ristori. The IEA report "is a message regarding the need to maintain energy security for gas as a priority. That is why we proposed a new energy-security package in mid-February."

Gas could help countries such as Germany and Poland, which depend heavily on coal for electricity generation, to reduce power-related emissions. But to ensure the security of gas supply, new infrastructure and sources are needed. One boost to supply will come from gas exports from the United States. "Last year, nobody expected such an important change with regard to the US restrictions on exports," Ristori said. "This will be good for our security and our competitiveness. We will have to import even more in the short term because of the declining production we have in the UK and more recently in the Netherlands."

Spain, the UK and France have been developing gas infrastructure, but it is also needed in other areas such as the Baltic states and central and south-eastern Europe. Ristori said that innovations such as floating terminals have already begun to reduce costs. "We can progress more rapidly in security and competitiveness," he said. "These are clear lessons regarding what we should do, and we should do more."

CHANGE IN LNG IMPORTS BY REGION (bcm)



Source: IEA Medium-Term Gas Market Report 2016

As well as infrastructure, digital technology will be a key factor in Europe's smart use of gas. First is that it will help reduce waste. Second, digital technology will contribute to security, such as cyber security and the protection of critical infrastructure. Digital applications will also help put the consumer at the centre of energy use, allowing households to monitor their use and make better choices. "There will be a new bridge between the Energy Union and the digital market," said Ristori.

CHALLENGES AHEAD

Gas has recently been losing popularity. The potential for a further shift from coal to gas in power generation is limited, due to the sharp fall in the price of coal and the ever-increasing economic case for renewables.

Gas, though, may yet have a great deal to offer. Compared with coal-fired power generation, it pollutes less and emits less carbon dioxide – and it also has the potential for wider use in transport. But to do this effectively, gas will need new infrastructure, requiring investment – which has been declining because of the falling energy prices. At the same time, new gas investments should take into account low growth in gas demand that is expected to persist in the future, the role of energy efficiency in reducing the consumption even further, and decarbonisation needs which might make new projects superfluous before the end of their economic life.

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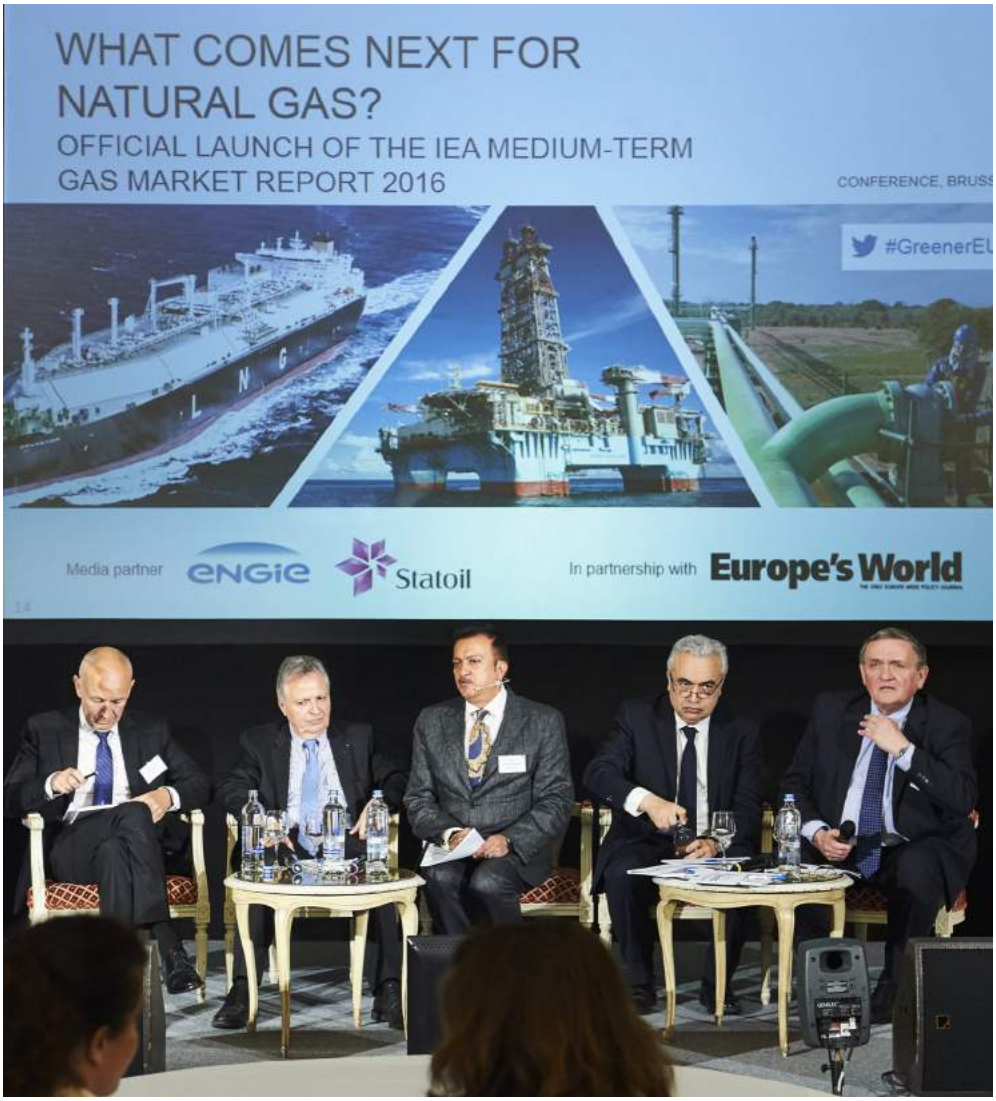

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