

## Threat of disruption stalks the market as winter looms



A gas pressure gauge at the Bil'che-Volicko-Uherske underground gas storage facility near Lviv, Ukraine. (PA)

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AS the Ukrainian crisis rumbles on and Russia's gas cut-off rolls into its fourth month, analysts are warning of transit interruptions come winter, in a development that could firm European prices and push regional buyers back into the spot market for LNG.

While three-way gas talks are scheduled for the middle of September, Russia and Ukraine are yet to reach a compromise on the issue of payment. Naftogaz Ukrainy has floated the idea of a European hub price, plus the cost of transport, while Russia has pushed for a price of \$385-386 per thousand cubic metres.

However, with a prepayment system in place and billions of dollars of Ukrainian gas debt still outstanding, there appears little hope of reconciliation before winter, especially with both sides facing off at the Stockholm court of arbitration. The Stockholm hearing – scheduled for 2015 – is expected to take at least 12 months,

meaning a stop-gap solution will be necessary in the interim.

"Given that Gazprom doesn't want to offer any discount, the risk of Ukrainian non-payment will be shared with European countries for the first time. The EU Commission can offer little help. We think this is likely to end badly, and soon," Société Générale's Thierry Bros said in note to clients last week.

Although Europe is now better positioned to cope with supply disruptions than it was in 2009 – the last time there was a major interruption to supply – European capitals are still concerned Kiev will tap transit pipelines during the winter heating season. This is despite assurances from Kiev that no siphoning will occur.

"With Ukraine not receiving Russian gas since the middle of June, they have now missed out over half of the storage filling season, meaning that they will be seriously short come winter," Pierre Noel, a senior fellow for economic and energy security at the International Institute for Strategic Studies, told *Interfax*.

"Ukraine's monthly winter consumption rises four times higher than its summer demand, with Russian supplies balancing the difference left by

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**> 01** domestic production and storage withdrawal," said Noel.

If Ukraine siphons off Russia's European deliveries, as happened in 2007 and 2009, it will likely push Gazprom into stopping transit, causing a knock-on effect in other markets dependent on Russian gas.

Germany, Italy and the UK were some of the largest consumers of Russia gas last year, but ex-Soviet states on Russia's western periphery are the most heavily dependent on Gazprom's supplies.

### Short-term resilience

However, with European storage volumes still above year-on-year average levels and more pipeline interconnections in place to ease circulation, most EU states remain well-positioned to withstand a short-term cut. Industry sources stress Bulgaria and its Balkan neighbours would be hard hit, given their low storage capacities and lack of alternatives to Gazprom gas transited via Ukraine.

The opening of a reverse-flow interconnection between Slovakia and Ukraine this week will allow 10 billion cubic metres of firm capacity to be auctioned by March next year – and an equivalent 6.4 bcm as of 1 October this year. The so-called Vojany-Uzhgorod pipeline will supply Ukraine's second largest import source and complement existing reverse-flow deliveries from Hungary and Poland.

Meanwhile, Russian flows will continue through Nord Stream, a pipeline designed to circumvent Ukraine and reduce Gazprom's transit risk.

### Long-term concerns

But while Europe may be better equipped to handle short-term interruptions, there is concern a long-term disruption will cause serious complications.

"Prices would be likely to spike on a short cut-off. But transit is still needed via Ukraine, especially in the winter. Any prolonged cut-off would have more of an impact as Europe would have to compete for higher-priced LNG to balance its demand," said Bros.

Potentially compounding the issue are questions regarding the Ukrainian government's finances, which are under strain as the country grapples with rampant inflation and an expensive military campaign.

"Because of Ukraine's terrible fiscal and financial situation, the crisis could last for much longer, with serious implications for the European gas market, unless someone pays on Ukraine's behalf or Russia calculates that it is in its interest to be generous," said Noel.

### Market jitters

The lack of an agreement between Ukraine and Russia has brought the bulls back to European gas markets.

"Heightened tensions in Ukraine have pushed spot prices up, amid capacity restrictions caused by maintenance in countries including the UK and France. However, price gains were relatively limited by high stocks and low demand," said Fatima Sadouki, senior energy analyst with *Interfax's Global Gas Analytics*.

These stocks will give the market some leeway, but the situation could change if winter proves colder than usual and Russian supplies are disrupted for a prolonged period of time.

"Given a prolonged crisis, the LNG market will tighten as European buyers enter the fray. But, so far, Europe has been pretty quiet despite the looming threat of disruption," Tony Regan, principal consultant at Singapore-based Tri-Zen International, told *Interfax*.

"There's also the possibility that Qatar and Norway could supply more gas, while Qatari deliveries have been making their way to Milford Haven in the UK to top up storage levels, meaning this could be pumped through the interconnector," said Regan.

Yet the best hope remains an interim agreement – potentially brokered by the EU – that would avert a wider crisis.

"The time for a grand political bargain seems to have passed. So the best hope now is for some stop-gap supply deal to restart Russian gas to Ukraine for several months to avoid a bigger crisis during the winter," Andrew Neff, an analyst at IHS Global Insight, told *Interfax*.

But as the fighting rages across eastern Ukraine and relations between the West and Russia becoming increasingly adversarial, it remains to be seen whether an agreement can be reached to avert a longer-term cut-off that would be damaging to both sides. ■

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# What goes around comes around

With reverse-flow interconnectors now able to supply Ukraine with gas from the west, it seems Kiev has been thrown a lifeline in its dispute with Gazprom.

It took nearly three years, but Gazprom's strategy to circumvent Ukraine with a pipeline via the Baltic Sea was undermined this week, as a reverse-flow link – which will be able to send Nord Stream gas back into the market it was meant to bypass – was launched on the Slovak-Ukrainian border.

With Russia and Ukraine still poles apart on the price Kiev should pay for Gazprom imports and the winter looming, a reverse-flow interconnector stretching from a power station at Vojany in Slovakia to the Uzhgorod storage centre in western Ukraine is the final link in a circuit of pipeline infrastructure across Central Europe.

But although a 'roundabout' now exists to send gas back from west to east, it caters only for sharply diminishing volumes. Nord Stream can supply 55 billion cubic metres of Russian gas into the German network, with OPAL then able to take 35 bcm on to the Czech border, where the 30 bcm/y Gazelle link carries gas into the national network.

An expanded reverse-flow compressor station will allow 75 million cubic metres per day (MMcm/d) to cross the Lanzhot border station between Slovakia and the Czech Republic as of 16 September.

A further 27 MMcm/d can then flow through the border station with Ukraine at Velke Kapusany – where the pipeline was inaugurated on Tuesday.

Slovak transmission system operator Eustream said this week it hopes to supply firm daily capacity for an annual 10 bcm/y as of March next year – with 6.4 bcm/y available pro rata as of 1 October.

The company said capacity has been booked on the link until 2019 – although questions remain over whether the price will be competitive

against direct Russian imports.

Kiev wanted a high-capacity mainline development that would have allowed flows of 30 bcm/y, to add to existing small-scale reverse-flow options from Poland and Hungary that have helped keep gas flowing following the cut-off in June. Ukraine imported 27 bcm from Russia in 2013.

However, Bratislava has insisted such a development is impossible – with Slovakia's forthright Prime Minister Robert Fico telling press at the pipeline launch this week that the Vojany pipeline was the only choice from both a "technical and legal point of view".

"Vojany was the only possible solution due to obligations we have to foreign partners. I asked [Ukraine's Prime Minister Arseniy Yatsenyuk] what is the total capacity that is needed – together this should be 25 bcm. There are three routes and we can meet this together," Fico said, referring to the other two low-capacity reverse-flow routes.

Converting one of the five mainline pipelines that run under the Velke Kapusany compressor station would affect the terms of a deal with Gazprom for transit – leading EU officials to complain Eustream couldn't undertake its business-as-usual relations with its Ukrainian counterpart Ukrtransgaz.

However, EU officials have said the benefits of a separate link are that Algerian or Norwegian supplies as well as Russian gas will be available at the Baumgarten hub, and could also be sent back into Ukraine.

A theoretical step, but a promising one. ■

**Joshua Posaner** Central & Eastern Europe editor



For more incisive commentary on this and other issues in the natural gas industry, go to [interfaxenergy.com/gasdaily/opinion](http://interfaxenergy.com/gasdaily/opinion)

## People Moves



Sidhartha Sur was appointed chief of corporate planning at India's Oil and Natural Gas Corp. this week.

He has more than 30 years of experience in developing oilfields in India and abroad. He served as chief technical officer and chief executive of Mansarovar Energy Colombia, a joint venture of OVL and Sinopec, developing heavy oil fields from 2010 to 2012.



Tom Mackay was appointed a non-executive director to the board of Aminex this week. He is a partner in Gemini Oil and Gas Advisors, which acts as a technical and financial adviser to Gemini Oil and Gas Fund, investing in global appraisal and development projects. He is a geologist

by training and has had an extensive career in the industry, working for Shell and Clyde Petroleum among others.



Gunvor Group, the world's fourth-largest oil trader, hired Ksenia Babenkova as an LNG trader for its Geneva office and Kalpesh Patel for its Singapore office this week. Babenkova previously worked at Gazprom Marketing & Trading, while Patel came from BG Group. They will focus on short-term trading as the company plans to expand into the LNG market.



Afdal Bahaudin, director for investment and planning for Pertamina, will be the interim chief

executive of the Indonesian state company. Karen Agustiawan steps down as president director of the company next month to become a researcher at the Harvard Kennedy School specialising in energy.



Graham Heard has announced he will retire from Northern Petroleum at the end of the calendar year. He is the company's exploration and technical director and has been with the company for 12 years. The company also announced Paul Lafferty will join as chief operating officer later this month. Lafferty previously worked for the exploration and production division of E.On, where he was general manager of operations.



# India looks to Oz for uranium, rather than LNG

India and Australia are both keen to sign a uranium supply deal this week, as India looks to fill its thermal power shortage with more nuclear capacity. Asia Pacific Editor **Sara Stefanini** reports

A DEAL for uranium exports is at the centre of an Australian delegation's trip to India over the next few days, as India looks to expand its nuclear power capacity to make up for a shortfall in fossil fuels while Australia hopes to increase its exports.

Australian Prime Minister Tony Abbott will be in New Delhi and Mumbai between Thursday and Saturday, along with Trade Minister Andrew Robb and 32 chief executives from the resources, finance and other industries.

The visit comes a week after Indian Prime Minister Narendra Modi's trip to Japan, during which the two governments failed to reach a long-discussed agreement allowing Japanese companies to export nuclear technology to India. Japan has resisted the deal as long as India chooses not to sign the Nuclear Non-Proliferation Treaty.

But as India struggles to pay hefty LNG and coal import bills, it is looking to boost the share of nuclear power in the energy mix from around 3% in 2011 to 25% by 2050, according to the United States Energy Information Administration.

The country had six nuclear plants with 21 reactors and a combined capacity of 5.3 GW as of August, when its newest facility started commercial operations, according to the World Nuclear Association. However, less than half of that capacity falls under the International Atomic Energy Agency's

safeguards – meaning it can be supplied with foreign enriched uranium, while the rest can only use domestic uranium. The country imported 2.1 billion tons from Russia and Ukraine between the fiscal years 2011 and 2013.

India's previous government aimed to have 14.6 GW by 2020 and 27.5 GW by 2032. Modi, who took office in May, has already made clear he believes nuclear power should play an "essential role" in India's energy strategy.

"He underlined the importance of ensuring that nuclear energy remained commercially viable and competitive with other sources of clean energy in the long run," India's Press Information Bureau said in a statement following the prime minister's visit to the Department of Atomic Energy in Mumbai.

### A win-win

A uranium export agreement would also benefit Australia, where the industry is pushing to increase its global supply of the resource. India's nuclear power sector is now the third-fastest growing in the world, after China and Russia, according to Australian uranium explorer Toro Energy, whose Managing Director Vanessa Guthrie is part of the visiting delegation.

"Australia has nearly one-third of the world's known economic uranium resources, but only supplies around 11% of global supply. Australia needs to develop new

uranium mines to support the growing global energy demand," Guthrie said in a statement on Thursday.

Uranium exports are expected to make the biggest increase between FY 2013 and FY 2014 compared with other energy and resource exports, going up by 19.4% to 6.4 mt. LNG is the next fastest-growing export, rising by 13.5% to 27 mt in FY 2014, the Bureau of Resources and Energy Economics has forecast.

### What about gas?

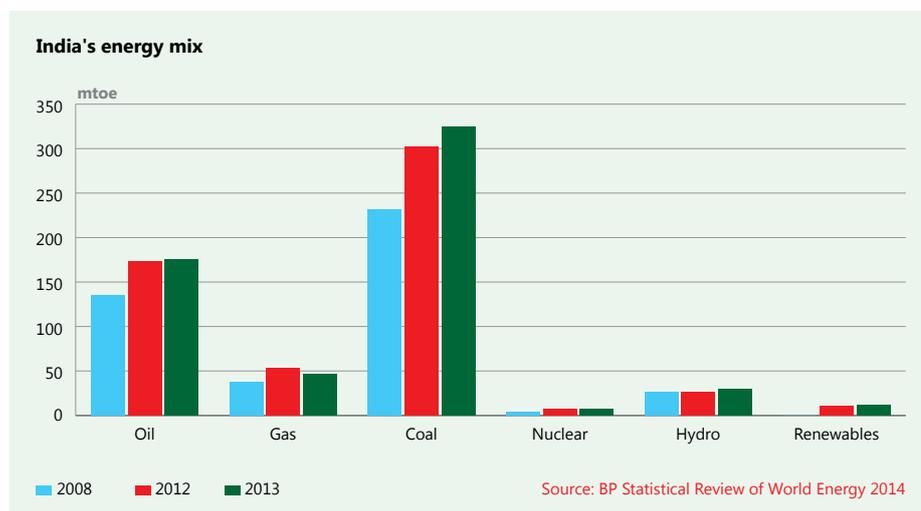
While mining and energy is expected to be a focus of the Australia-India discussions, there has been far less talk about LNG trade between the two countries.

Indian importers have been eager to sign new LNG supply contracts in the past few years – reducing their dependence on Qatari imports – but the country's single contract for Australian LNG has drawn heavy criticism for being too expensive (see *Henry Hub, swaps and tankers – the future according to Gail*, 20 November 2013).

State-run Petronet LNG has a 20-year supply agreement with ExxonMobil for 1.5 mtpa from the Gorgon plant, which is expected to startup in mid-2015. However, Petronet's shareholder Gail asked the importer to renegotiate the contract in July 2013, complaining the price was too high. Petronet said a few months later it would review the potential for renegotiating, while an Exxon representative said it was unlikely to revise the contract until the designated period.

Shunning additional Australian LNG, Indian importers have instead signed up for Henry Hub-linked supplies from the US – which they believe will be more affordable despite the longer travel distance – and taken stakes in shale gas-producing fields. Energy is therefore expected to be high on the agenda when Modi travels to Washington, DC later this month, where he plans to discuss ways in which the countries can cooperate on nuclear energy, shale gas and renewable power production. ■

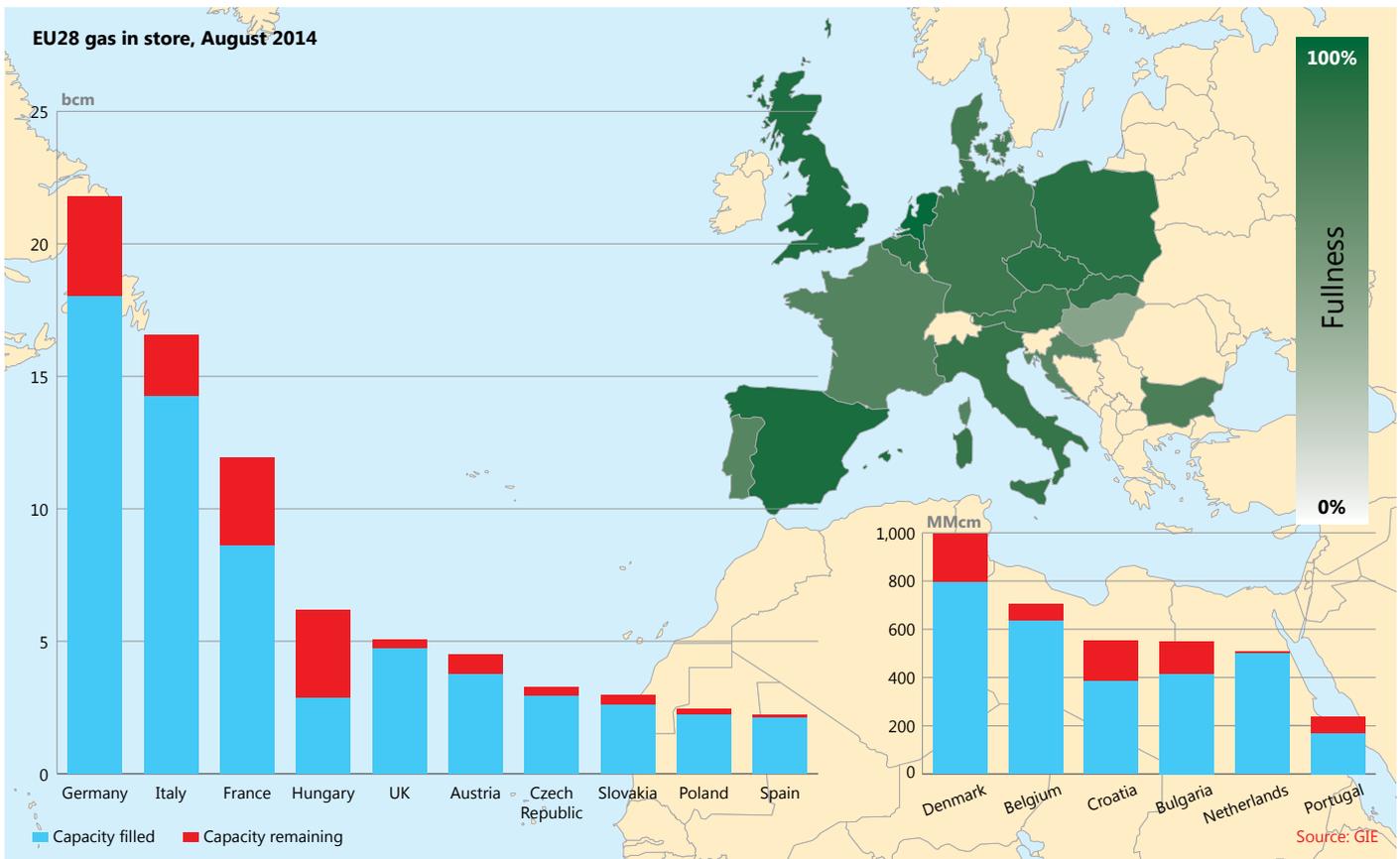
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## STORAGE NUMBER CRUNCH

Storage offers European supply security solution



The importance of gas storage as an asset to hedge against political risk has become increasingly evident in the light of the Ukraine crisis.

While an immediate disruption to supply remains unlikely, the fear that Russia could use energy and energy prices as a political weapon against the EU puts pressure on the European community to not only diversify its gas supplies further, but also to expand its storage system.

The EU's regulation on the security of gas supply from 2010 highlights storage as one method to enhance supply security, but it does not set out binding rules.

This is because geology varies across member states, making it difficult to build large underground storage facilities, such as salt caverns and depleted gas fields, in some countries.

However, according to the Council of European Energy Regulators, some member states have already taken

action to increase storage levels. The Czech Republic introduced a storage obligation under new supply standards from October 2013.

In the UK and Denmark there are ongoing debates on further security of supply measures, and on how to close the gap between low seasonal price spreads and the real value of storage.

"Storage is the most reliable source for security of supply and plays a major role in covering peak demand in winter – but it is not valued by the market, as seasonal price spreads do not reflect the value of storage," Sylvie Cornot-Gandolphe, senior economist at Cedigaz, told *Interfax*.

### Parliamentary debate

"First we need to prepare for the next energy winter, having in mind a possible cut in imports from Russia. We will pay particular attention to the level of storage," Dominique Ristori, director general of the Directorate General for Energy within the European Commission, told the European Parliament last week.

Europe has 80 billion cubic metres of storage capacity, which is 61.5% full, according to the commission.

MEP András Gyuerk (EPP, Hungary) said his country had introduced obligatory gas stockpiling after it was severely hit by the 2006 and 2009 gas crises.

"That means that there is a 1.2 bcm mobile gas storage capacity in Hungary that can be accessed only in case of an emergency," Gyuerk said.

"I ask the commission to study this stockpiling, which is similar to compulsory oil stockpiling – introduced after the oil crisis in 1973 by the International Energy Agency [IEA]," he said.

"We will insist on increasing the level of storage across Europe and discuss the possible evolution of a 'strategic stock model' based on the model developed by the IEA in regards to crude oil," Ristori told parliament.

**Annemarie Botzki**  
Brussels correspondent

## SUPPLY &amp; DEMAND | JORDAN

## Noble plans to seal binding SPA with Jordan within four months

**Leigh Elston**  
Middle East & Africa editor

NOBLE Energy plans to sign a binding deal to sell Leviathan gas to Jordan's National Electric Power Co. (NEPCO) before the end of the year, the Texas-based company said in a statement on Wednesday.

Gas will be sold based on a Brent oil price-link, and the price specified in the letter of intent (LOI) signed on Wednesday is in line with the export prices the partners have negotiated under other agreements – according to Delek Group, a 45% shareholder in the field. This means prices are likely to be around \$7/MMBtu, with a floor price of \$6.5/MMBtu, valuing the 15-year contract at around \$15 billion.

Sales volumes under the agreement are expected to begin at a rate of 300 million cubic feet per day (8.5 million cubic metres per day: MMcm/d) and are expected to reach 45 billion cubic metres in total.

Ministry officials from both Jordan and Israel are aware of the details of the LOI, which should help smooth the government and

regulatory approvals for the final deal. The partners are also working in "coordination with, and [with] the support of, the United States Department of State," Noble said. US Deputy Assistant Secretary of State for Energy Diplomacy Amos J. Hochstein was a key negotiator on the deal, according to Israeli TV.

Noble intends to set up a marketing company which will be responsible for buying the gas from the Leviathan partners and selling it to NEPCO. The company is close to finalising the technical and commercial terms for the development of the 620 bcm field, and could still meet its target of reaching FID in Q4 2014 and bringing the field online by 2018.

"This LOI and other recent regional export arrangements are advancing the first phase of development at the Leviathan project, which is being designed with capacity for 1.6 billion cubic feet [45.3 MMcm] of natural gas per day. We now have over 60% of Leviathan's initial capacity and 80% of targeted initial sales volumes secured with LOIs," Keith Elliott, Noble's senior vice president for the Eastern Mediterranean, said on Wednesday. ■

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## POLICY &amp; REGULATION | ISRAEL

## Israeli government offers \$30 million in grants to speed conversion to gas

**Leigh Elston**  
Middle East & Africa editor

The Israeli government has approved \$1.3 million in grants to 16 small, local industries to help the facilitate their conversion from fuel oil to gas – which is expected to reduce energy costs by 50%.

The grants will be worth around \$70,000-210,000 each – covering 30-50% of conversion costs – Constantine Blyuz, deputy director of the Natural Gas Authority in the Ministry of Energy and Water Resources, told *Interfax*.

Companies that consume 100-500 thousand cubic metres per year (Mcm/y), will receive around \$210,000. Those that consume between 500 Mcm and 1 million cubic metres (MMcm) per year will receive \$112,000; any that consume more than 1 MMcm/y are

eligible to receive \$70,000.

Since the launch of the programme in 2013, 32 companies have received grants, but the government is planning for up to 500 to be eligible for funding.

Switching from fuel oil to gas is expected to reduce energy costs by 50% and significantly reduce air pollution in Israel, the Ministry of Energy and Water Resources and Ministry of Economy said in a joint statement this week.

"We estimate that four or five years from now, the economy will save about \$250 million per year on fuel costs, compared with the current situation," Blyuz said.

The current budget for the programme is \$33 million, which is expected to be enough to cover all conversions over the next two-to-three years. ■

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# Gas-solar combination winning converts in China

While some experts back one fuel over the other, many are coming round to the idea that a combination of gas and solar is the future for China's power generation base. **Zhang Yiping** reports from Shanghai.

THE path to more electricity production from renewable energy sources in China will need to include gas for reliability during periods of peak user demand, a number of industry experts have told *Interfax*.

Experts are divided on whether gas or solar has the more promising future, but a consensus is beginning to emerge in China that a marriage of the two will be the future trend for distributed generation in the country.

Distributed generation refers to electricity generation in small amounts at or near the point of use. Solar and gas are seen as the leading contenders for distributed generation in China.

The main attraction of gas is a result of the intermittency of solar as output drops to zero at night. Gas is more reliable than solar, although rising gas costs are problematic, said Feng Jianguo, president of Beijing Energy-net DE – one of the first companies to work on distributed generation in China.

"Solar is only available during the day and doesn't make sense without gas or energy storage at night. A combination of these three will be able to handle the supply of cooling, heating and power simultaneously," GCL-Poly Energy Holdings Chairman Zhu Gongshan told state media recently.

Gas will become a necessary component if China wants to build more solar generation

capacity in the future, Xiang Lei, an investment manager at Tian'an Property Insurance, told *Interfax*.

"Another possible measure is to develop energy storage facilities, but the cost of lithium-polymer batteries is too high, so it is more reasonable to turn to a combination of solar and gas," said Xiang.

Electricity from solar projects costs RMB 0.9-1/kWh (\$0.15-0.16/kWh), while gas-derived power ranges between RMB 0.6-1/kWh depending on the size of the power station, according to Xiang.

## Gas versus solar

However, other experts are siding with one energy source over the other. Gas poses less risk than solar at this stage of China's development, said Mao Rulin, chairman of the board at Shanghai Hongqiao Commercial Area New Energy Investment.

But Zhang Ping, director of the China Renewable Energy Industry Association, argued solar generation has a brighter outlook as gas-fired power in China suffers from supply issues.

Gas was a popular fuel last year for combined heat and power generation projects in northern China, but has not been promoted more widely because of an inadequate supply and high prices, said Xiang. Continued supply shortages mean

developers may continue to shy away from gas-fired distribution energy projects, with China National Petroleum Corp. predicting last month the country will experience a shortfall of 13.6 billion cubic metres this year (see *China to meet 93% of gas demand in 2014 – CNPC*, 19 August 2014).

Solar power also has a more promising future economically, as technological advances have lowered the cost it substantially, said Guo Changjie, an expert in emerging technologies at Shell's subsidiary for projects and technology in China.

"Most gas-fired distributed energy projects are losing money. I think only government will be able to do this kind of project," said Guo.

The price of photovoltaic modules has fallen significantly in recent years, from RMB 10 to RMB 4 per unit. "[This] was absolutely unimaginable in the past," said Yingli Green Energy Holding spokesperson Liang Tian. "Coupled with government subsidies, the cost of using solar power is quite practical now."

China should further promote the development of distributed solar power generation, National Energy Administration director Wu Xinxiang said at the start of August at an industry meeting in Jiaying in the province of Zhejiang.

"There is a promising future for China to use solar power, especially in developing distributed solar power generation on the east coast and in the inner regions. However, China's solar industry has long been reliant on international markets, which has resulted in imbalanced industry development with huge market risks," said Wu.

But the growing view is that gas and solar are complementary and a mix of the two is the best option.

The two energy sources are too different in nature to be comparable, and instead of arguing which will win out, efforts should be made to innovate so that both can be better used, said Han Xiaoping, vice chairman of the distributed energy committee at the China Energy Research Society. ■

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A gas-fired distributed generation project in Shanghai's Hongqiao area. (Interfax)

## LNG

## Kunlun Energy denies reports of LNG plant closures

**Li Xin**  
Shanghai

KUNLUN Energy – the gas supply unit of state-owned PetroChina – has rejected recent speculation it has closed two of its biggest LNG processing plants, but has admitted some parts of its LNG business will come under review.

“We noticed the reports, but in fact we didn’t shut them down,” Bi Fengdong, deputy director of Kunlun’s operation management department, told *Interfax* on the sidelines of the China International LNG Conference in Beijing.

Kunlun operates 15 LNG plants and has more under construction, according to Bi. “We will stick to our previous plans for LNG projects that are under construction, but for those in pre-phase work we may consider slowing down the pace depending on market conditions,” Bi said.

Bi also said Kunlun will back away from a previously stated goal of building 1,500 LNG filling stations by 2015, without giving further details. The company operates around 750 stations.

*Reuters* reported on 18 August that Kunlun had closed two large-scale liquefaction plants in Hubei and Shaanxi provinces, amid a review by PetroChina of its efforts to push LNG as a transport fuel for vehicles and ships.

One of the LNG plants – located in the city of Huanggang in Hubei – is China’s largest, with a capacity of 5 million cubic metres per day (MMcm/d). It started selling LNG in early June. Analysts with Bernstein Research said Kunlun shut the plant within two months because of oversupply in the LNG market (see *No relief in sight for China LNG industry*, 11 August 2014).

Bi said the plant is still in the trial operation phase, while the 2 MMcm/d facility



Kunlun Energy’s Daguan Road LNG filling station in Guangzhou. (Kunlun Energy)

in Ansai in Shaanxi had resumed production before the report was published. “The Ansai plant stopped production for about 43 days until 13 August,” he said.

Bi acknowledged Kunlun’s LNG operations are facing challenges from the rising cost of gas. He complained Kunlun is not facing “fair competition” because many smaller rival plants are paying lower prices for so-called existing volumes, as a result of agreements with

local governments.

“Kunlun’s sales of LNG are facing risks and operational pressure from the market, which has sharply squeezed our profit,” he added.

But he remained confident about the Chinese LNG market. “If the most recent price hike of RMB 0.4 [\$0.06] per cubic metre to existing volumes is put into place, our profitability will see a great rise,” Bi said. ■

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## LNG

## Guanghui Energy to transport LNG by rail

**Li Xin**  
Shanghai

INDEPENDENT energy producer Guanghui Energy plans to begin transporting LNG by rail from its processing plants in remote northwest China to the southern seaboard, *Interfax* has learned.

The plan is still in its initial stages but will see one train depart every day from Xinjiang to Guangdong province, according to Hua Ben, director of the Research Centre for Natural Gas at the South China University of Technology.

The distance between the capital cities of both areas is 3,200 km, around the

same distance between the UK and Cyprus.

The LNG will be loaded into containers that can hold 40-50 cubic metres, and the trains can carry up to 50 containers, said Hua.

Xinjiang-based Guanghui has been interested in shipping LNG by rail since 2003, when it entered the LNG business with the launch of its first plant. It was forced to abandon the idea as China’s state railway operator has no experience of transporting the fuel, a Guanghui representative told *Interfax* last year.

“Transporting LNG by train has no technical difficulties...

the [Guanghui] plan was refused at the time for the sake of safety by the Ministry of Railways, which had mistaken LNG as being a very dangerous load,” Hua said. The company was forced to turn to trucks to move LNG as a result.

Hua said shipping LNG by rail is much cheaper than trucking it. The cost can be low enough to compete with pipelines under the right conditions, depending on the distance travelled.

Guanghui is moving the LNG by rail to a gas-fired power plant in Guangdong, a source familiar with the plan told *Interfax*.

Guanghui operates three LNG plants in Jeminay, Kumul

and Shanshan in Xinjiang, which produced 432.67 million cubic metres (MMcm) of LNG in the first half of the year – an increase of 163.76% year on year. The company sold 451.58 MMcm of LNG over the same period, up by 114%.

Guanghui is not the only company interested in sending LNG by rail. Last year, China National Petroleum Corp.’s Qinghai Oilfield subsidiary successfully transported an LNG shipment by rail from Qinghai to Tibet (see *CNPC conducts trial LNG shipment to Tibet via rail*, 24 September 2013). ■

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## THE BRAZIL BRIEF

News, views and rumours from Latin America's rising giant

### Too little, too late?

Is Brazil underachieving, or just overpromising? President Dilma Rousseff can't be blamed for the country's inglorious World Cup exit, but the country's energy sector is falling well short of her ambitious targets.

Rousseff aimed the country's energy sector too high in 2009, when she was chairwoman of state-run Petrobras. She said the company would achieve average production of 3.9 million barrels of oil equivalent per day (MMboe/d) by 2014. Its actual output this year has been 2.6 MMboe/d, 33% lower than forecast.

It looks as if Rousseff overpromised by around two years. The industry, fuelled by Brazil's enormous pre-salt prospects, has found the biting point after years of stagnation, and output growth has

accelerated in 2014. Brazil produced 2.27 MMboe/d in July 2014, up by 14.8% from the 1.97 MMboe/d in July 2013, according to ANP data released on Tuesday. *Interfax* estimates that, if production grows at the same clip, Brazil will achieve Rousseff's original forecast sometime around May 2016.

Rousseff deserves some credit for presiding over the development of Brazil's pre-salt fields, which are now producing nearly 20% of the country's gas. However, it may be too little, too late. Her perceived failure to deliver over the long term is easy ammunition for her political opponents, with only five weeks remaining before the country goes to the polls for a general election. To compound matters, Brazil slipped into recession last week, with economic growth contracting for the second consecutive quarter.

### A Silva bullet

Recent polls have indicated popular environmentalist Marina Silva, one of 11 children from a community of Amazonian rubber tappers, could beat Rousseff in a second-round run-off in the upcoming election.

Despite Silva's green credentials, she won't be an industry bogeyman, experts have said. In fact, energy analyst Adriano Pires told local press this week that a Silva victory "could possibly attract more private companies [because] she may not protect Petrobras's monopoly as much".

Silva has promised to "correct" subsidised fuel prices in the country, which may boost Petrobras's annual earnings by as much as BRL 13 billion (\$5.80 billion), according to Citigroup analyst Pedro Medeiros. The company's stock could also benefit from "the creation of mechanisms that allow visible adherence to market prices", he added in a client note released this week.

Industry's first choice is likely to be the man currently third in the polls, former Minas Gerais governor Aécio Neves, who has slammed Petrobras's minimum 30% stake in drilling concessions.

Brazil's gas-to-power generators may fear a Silva victory. The candidate gave a speech last week in Sertãozinho, the heart of the São Paulo state sugarcane belt, in which she claimed there were cheaper alternatives to thermolectric production. "If this is not happening it is due to a lack of strategic vision for a more sustainable Brazil," she added.

Fortunately for gas-to-power producers, the country's key A-5 power auction precedes the election, taking place in late September. There's also a generous price ceiling for gas, with Brasília paying up to BRL 197/MWh for thermal power generation. That's a 44% premium to the maximum price for wind power of BRL 137/MWh.



Former Environment Minister Marina Silva could defeat President Dilma Rousseff in a second-round run-off in the upcoming election. (PA)

### New LNG era

The extra wiggle-room for gas-to-power is required amid continuing drought, with Brazil importing LNG to plug the shortfall from reduced hydroelectric production. *Interfax* calculates from customs data that the country spent \$1.95 billion on LNG between January and July this year – a figure identical to the same period in 2013, which was also a drought-hit year. However, spending is up 138% compared with 2012.

Reservoirs in the country's southeast and central-west, which account for around 70% of Brazil's total installed hydroelectricity capacity, were under 30% full on Wednesday, according to data from the country's ONS grid operator.

Reservoirs would need to recover to more than 60% fullness to ease concerns over despatch, say experts. *Interfax* estimates

Petrobras will seek up to 10 spot cargoes for the remainder of 2014, in keeping with last year's demand.

A significant change in thinking about terminal build-out has also occurred, with Brazilian conglomerate Bolognesi set to construct two new LNG regasification facilities at opposite ends of the country, depending on the outcome of the A-5 auction. The terminals would cost around \$2.5 billion to build, and supply two proposed 1.2 GW plants.

**Chris Noon**

Latin America editor, Buenos Aires

# Atlantic Coast project offers supply diversity

**Therese Robinson**  
North America editor, Boston

THE proposed 800 km Atlantic Coast pipeline will deliver gas from West Virginia to eastern North Carolina to meet the region's increasing gas demand, offering both states an alternative source of gas supply – as well as replacing coal-fired power generation.

The estimated \$4.5-5 billion project, launched by American companies Dominion, AGL Resources, Duke Energy and Piedmont Natural Resources, is one of the largest interstate projects proposed in recent years.

Project stakeholders expect to file the Federal Energy Regulatory Commission (FERC) application in 2015, and to receive approvals from FERC and the North Carolina Utilities Commission by mid 2016. If approval deadlines are met, the pipeline could be operational by late 2018.

The pipeline will be able to deliver 42 million cubic metres of gas per day to Virginia and South Carolina. Duke Energy

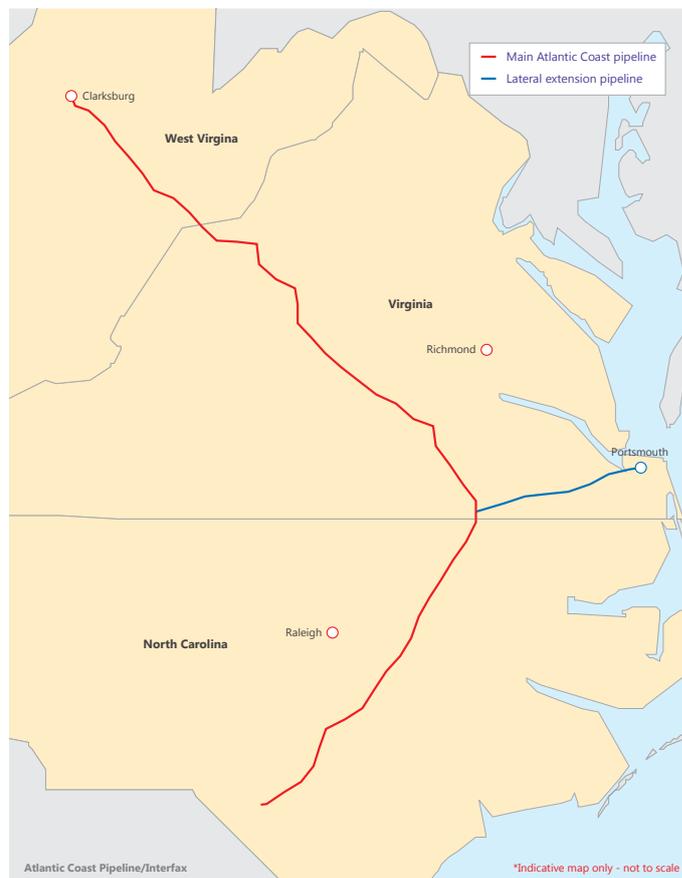
and Piedmont reviewed proposals from five companies and Dominion was selected to build and operate the project.

The pipeline will start in West Virginia at an existing gas transmission facility, then stretch through other West Virginia counties before entering North Carolina. "A separate, 110-km extension pipeline will split off from the main pipeline at the Virginia-North Carolina border. In North Carolina, the pipeline will travel through several counties, and terminate at existing Piedmont natural gas transmission facilities," Dominion said.

### Coal-to-gas switch

A major factor supporting the Atlantic Coast project is the switch from coal- to gas-fired power generation. Duke Energy has retired seven of its 14 coal-fired plants in North Carolina since 2011, and replaced five of those with gas-fired facilities. Duke is planning to launch a sixth gas-fired plant in South Carolina in 2017.

High pollution levels from coal-fired plants and the



The route of the Atlantic Coast pipeline. The \$4.5-5 billion project will stretch 800 km.

Environmental Protection Agency's proposal to lower carbon emissions to 30% below 2005 levels by 2030 have resulted in a change in the energy mix. Many utilities are now using gas as a cleaner-burning option than coal for power generation.

The new pipeline will also provide North Carolina with an alternative gas supply. The state only has one interstate gas pipeline, stretching across its west and central regions, delivering gas supplies from the Gulf Coast. The new project will deliver gas from a second source – the Marcellus and Utica shale plays in West Virginia, Ohio and Pennsylvania.

Virginia will need new infrastructure to meet its growing gas-fired power

generation demands. Supplies from the Marcellus and Utica shale plays via the new project will offer supply diversity and competitive pricing.

The main users of the new pipeline's capacity are six utilities – Duke Energy Carolinas, Duke Energy Progress, Virginia Power Services Energy, Piedmont Natural Gas, Virginia Natural Gas, and PSNC Energy. Other energy companies will also use capacity.

The six utilities are scheduled to purchase long-term 20-year contracts from the four pipeline owners – Dominion holds a 45% share, Duke Energy 40%, Piedmont Natural Resources 10%, and AGL Resources the remaining 5%. ■

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## Americas in brief

The **United States** may limit high-tech exports to Russia's Arctic oil and gas industry as part of additional sanctions against the country. "We are looking at further tightening of restrictions on energy exports and the licensing of high-tech exports, not only to the energy sector but specifically to Arctic oil and gas," Anthony Gardner, US ambassador to the EU, told reporters in Brussels on Wednesday.

**Apache Corp.'s** international assets – including two LNG export projects in Canada and Australia – may become a separate company, as Apache plans to focus on developing its North American assets, Chief Executive Steve Farris said at the Barclays Capital CEO Energy Power Conference in New York. Apache holds a 13% stake in the Wheatstone project, and a 50% share in the Canadian Kitimat LNG, *Reuters* reported.