Energy Union Choices

A Perspective on Infrastructure and Energy Security In the Transition

Post-launch coverage

- FAZ (German daily) - article in print edition (PDF enclosed)
- Vrij Nederland (Dutch mag) - https://www.vn.nl/nord-stream-2-nieuwe-gaslijnen-zijn-niet-nodig-en-kosten-veel-geld/
- Rzeczpospolita (Polish daily) **-** http://www.rp.pl/Energianews/303039950-Energy-Union-Choices-przekonuje-ze-UE-powinna-ograniczyc-inwestycje-w-nowa-infrastrukture-gazowa.html
- Politico (Brussels Bubble) - http://www.politico.eu/pro/politico-pros-morning-energy-environment-ministers-in-town-green-light-for-gas/ (behind paywall, see below)
- Interfax Europe (Newswire) - http://interfaxenergy.com/gasdaily/article/19487/europe-overbuilding-on-gas-infrastructure-report
- ENDS Europe - http://www.endseurope.com/article/45341/more-gas-pipelines-not-answer-to-eu-energy-security (behind paywall, article enclosed)
- Nature - http://www.nature.com/articles/nenergy201631 (no explicit mention of the study but messages all there)
- Portal Gospodarczy - http://gazownictwo.wnp.pl/rozbudowa-europejskich-gazociagow-i-gazoportow-nie-ma-sensu,268642_1_0_0.html
- Wysokien Apiecie (Polish energy news website) - http://wysokienapiecie.pl/gaz-ziemny/1342-czy-infrastruktura-gazowa-ue-potrzebuje-wielkich-inwestycj
- Energy Live News (UK energy news website) - http://www.energylivenews.com/2016/03/04/eu-can-save-e11-4bn-with-less-gas-infrastructures/
- Finanztreff.de (German finance news website) - http://www.finanztreff.de/news/pressespiegel-zinsen-konjunktur-kapitalmaerkte-branchen/11119808 (picked up FAZ story)

Politico Newsletter I:

NO NEW PIPELINES: Europe's existing gas infrastructure is sufficient to deal with most supply shocks and high gas demand, raising the risk that new investments up to 2030 could become stranded assets by 2050, according to a draft analysis by French consultancy Artelys that is due out in March. The exception is Southeastern Europe, which is vulnerable to disruptions on the Ukraine transit route and needs to improve links with other markets, the study finds. It suggests constructing one or two LNG terminals and gas storage facilities in the region, as well as gas links to strengthen the network in Central Europe and help de-congest entry pipelines from Austria and Slovenia to Southeastern Europe. Boosting energy efficiency to 30 percent in the region, where energy infrastructure is mostly outdated, would "halve the investments required to ensure security of supply," and make gas infrastructure more flexible in case of shocks.

http://www.politico.eu/pro/politico-pros-morning-energy-more-regional-cooperation-wind-surge-oil-pains/

Politico Newsletter II:

WHAT SUPPLY SECURITY RISK? The bloc's energy system is largely resilient, can handle high gas demand as well large disruptions, and only requires limited new gas infrastructure, especially in Southeastern Europe, according to research published yesterday by Energy Union Choices. The authors, presenting the study in Brussels, said reducing energy demand and hitting energy efficiency and renewables targets will have a "massive impact on requirements for infrastructure," drastically reducing its need. Failure to "take smart energy choices based on robust demand projections could lead to €11.4 billion in redundant infrastructure investments," according to the study. http://bit.ly/1L6Lxxh

It's about alternatives: Any discussion about gas infrastructure in Europe usually leads to discussions about the role of Russia as a (future) gas supplier to the bloc. And so it was yesterday. Mechthild Woersdoerfer, director at DG Energy, said the issue wasn't Russia as such — the bloc "always imported Russian gas" and will continue to do so as "it's relatively cheap" —. but that Brussels' efforts to diversify routes, sources and suppliers was about creating options for the most dependent countries. And that also means additional infrastructure, which in the case of Lithuania, for instance, also led to lower gas prices.

http://www.politico.eu/pro/politico-pros-morning-energy-environment-ministers-in-town-green-light-for-gas/

ENDS Europe

Europe's environmental news and information service

News

More gas pipelines 'not answer to EU energy security'

Claire Churchard, 4 Mar 2016

> Only 32% of existing LNG terminals and 58% of pipeline capacity are currently in use

The EU could save €11.4 billion if it opts against building new gas infrastructure and increases renewable energy instead, a report from consultants Artelys and Climact has concluded.

The report suggests that policy makers should put more emphasis on renewable energy sources rather than relying on the existing strategy to build more gas pipelines.

The current strategy is based on ensuring energy security for Europe in the wake of energy scares following the stand off between Russia and Ukraine that led to gas supplies to the latter being turned off repeatedly since 2009.

The researchers point out that demand for gas has actually fallen by 23% in the past five years and will continue to fall if EU energy efficiency and climate targets for 2030 are met. This means that much of the planned infrastructure will become redundant before the end of its lifetime. Only 32% of existing liquid natural gas (LNG) terminals and 58% of pipeline capacity are in use at the moment.

The report said that current pan-European infrastructure can cope with wide-ranging demand levels and potential supply disruptions.

Even if coal was phased out by 2025, something the EU will be consulting on shortly, the report said it would not lead to gas supply issues if conducted in an orderly way.

Gas is seen as a bridging energy source as the EU looks to decarbonise its energy systems. But, the report found that gas supply projects, like the huge Nord Stream 2 development that spans multiple countries, could become high-risk financial assets, it warned.

Imke Lübekke, director at WWF European Policy Office, which backed the report, said: "Europe is at risk of throwing its money away on unnecessary gas infrastructure. The keys to true energy security are renewables and energy efficiency, rather than yet more gas pipelines."

Agora Energiewende senior associate Matthias Deutsch added: "The findings give confidence to policy makers in Germany and across Europe that the gas system can handle an accelerated coal phase-out without significant new infrastructure investments."

Follow-up:

Energy Choices Report

Frankfurter Allgemeine Zeitung vom 03.03.2016

Frankfurter Allgemeine
ZEITUNG FÜR DEUTSCHLAND

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Bau von Nord Stream 2 überflüssig

Studie: Versorgungssicherheit ohne Pipeline sichergestellt

hmk. BRÜSSEL, 2. März. Der Bau der umstrittenen Nord-Stream-2-Pipeline von Russland in die EU ist für die Versorgungssicherheit der Europäischen Union nicht nötig. Dasselbe gilt auch für alle anderen geplanten großen Pipeline-Projekte, die Gas aus Russland oder anderen Regionen in die EU bringen sollen - also auch den von der EU vorangetriebenen "Südlichen Korridor" von Aserbaidschan über die Türkei bis Italien. Zu diesem Ergebnis kommt eine von einen Konsortium um die Berliner Stiftung Agora Energiewende und den Umweltschutzverband WWF in Auftrag gegebene Gasmarkt-Studie, die an diesem Donnerstag in Brüssel vorgestellt werden soll. Die Autoren kommen darin zu dem Schluss, dass das bestehende Leitungsnetz der Europäischen Union auch im Krisenfall, sprich bei Lieferunterbrechungen aus Drittstaaten, ausreichen, um die Mitgliedstaaten mit Gas zu versorgen. Nur in den südosteuropäischen Staaten müssten einzelne Verbindungen gebaut werden, um die Abhängigkeit von Russland zu verringern. Nord Stream 2 sei zwar ein rein privatwirtschaftlich finanziertes Projekt, sagte Matthias Deutsch von der Agora Energiewende zu den Ergebnissen der Studie. Allerdings müsse man genau überprüfen, ob dadurch zum Beispiel Leitungserweiterungen notwendig würden, die dann von der Öffentlichkeit bezahlt werden müssten. Der Schlüssel für die Energiesicherheit der EU seien nicht mehr Pipelines, sondern der Ausbau der erneuerbaren Energiequellen und der Energieeffizienz, sagte Imke Lübekke vom WWF.

Wenn die Europäische Union den Ausbau ihrer Erdgasleitungen und von Flüssiggasterminals wie geplant vorantreibe, drohe sie große Überkapazitäten aufzubauen, heißt es in der Studie. Dadurch drohten Mittel von 11,4 Milliarden Euro verschwendet zu werden. Die Planungen für den Ausbau der Gasinfrastruktur beruhen nach Ansicht der Autoren der Studie auf einer Fehleinschätzung der Nachfrageentwicklung in der EU. Schon heute würden die bestehenden Flüssiggasterminals nur zu 32 Prozent und die Pipeline-Kapazitäten zu 58 Prozent ausgenutzt. Die Nachfrage nach Gas sei zudem in den vergangenen fünf Jahren um 23 Prozent gesunken. Wenn die Europäische Union ihre Klimaziele erreichen wolle, führe das automatisch zu einer weiteren drastischen Reduktion der Nachfrage. Weil das bisher nicht berücksichtigt sei, werde der Bedarf im Jahr 2030 zwischen 30 und 55 Prozent zu hoch angesetzt.

Die Autoren gehen davon aus, dass die EU zur Erreichung ihrer Klimaziele die Energieeffizienz bis 2030 um 30 Prozent steigert. In diesem Fall würde die Gasnachfrage in der EU von momentan 410 Milliarden Kubikmeter auf 320 Milliarden Kubikmeter sinken. Tatsächlich haben sich die EU-Staaten bisher nur auf eine Steigerung von 27 Prozent geeinigt. Selbst unter der Annahme, dass sich die Nachfrage bis 2030 auf 535 Milliarden Kubikmeter erhöht, ist die Versorgungssicherheit der EU nach der Studie nicht gefährdet.

Wörter: 411

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Natural gas insight and analysis
Interfax Information Services Group
interfaxenergy.com

LNG shipping sector facing acute skills shortage

Höegh

A Höegh LNG tanker. The LNG shipping sector faces new guidelines and a looming skills gap.

Annemarie Botzki / Cannes

THE LNG SHIPPING sector is facing a serious shortage of skilled workers that will be compounded by a one-third increase in the number of LNG vessels over the next three years, a leading industry figure has said.

Speaking at an international LNG summit in Cannes on Monday, Andrew Clifton, chief executive of the Society of International Gas Tanker and Terminal Operators, said a lack of training has slowed the development of potential fleet staff.

"There is an acute shortage of trainers. It is important that these positions are made more attractive," said Clifton. "There is no option but to invest in training," he added.

There are around 450 LNG vessels in service worldwide, each of which needs 14-20 officers. The skills gap is set to widen further because an additional 168 new vessels are on order, Clifton said.

Clifton also addressed what he perceived to be the primary challenges facing the global LNG industry. He said the sector was up against a well-funded anti-LNG lobby and faced numerous commercial difficulties.

"The anti-LNG lobby is very well organised and very well funded – particularly in North America and British Columbia," Clifton said.

Public confidence in the safe shipment of LNG will be key for the industry in the future, he said, adding that LNG shipping's "unprecedented" track record on safety – with around 4,000 cargoes shipped every year with no loss of tank containment – would need to be maintained.

The construction of LNG ships will face stricter guidelines when the new international code for the construction and equipment of ships carrying liquefied gases in bulk – known as the IGC Code – takes effect in July this year. The code will affect the design and construction of new vessels.

Commercial challenges

Other speakers at the conference turned their attention to the commercial barriers facing the LNG industry.

The global LNG glut has led more and more companies to renegotiate their supplies, with trade increasingly being done on a short-term rather than a long-term basis.

"The consequences of this could be quite dramatic, making LNG much easier to trade and allowing the spot market to expand significantly," Howard Miller, director of LNG at Lyndon Energy, told conference delegates.

But the pressure to renegotiate prices and move to new contract terms will shift more risks to sellers and could have a profound impact on new projects, Miller suggested.

"The risk of too many renegotiations could undermine the viability of LNG

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project developments by damaging the financial prospects of new LNG trains. This could lead to higher prices in the long term, which is not in the buyer's interest," Miller added.

Portfolio players are already struggling to find buyers for the volumes they have signed up for. More than 100 mtpa of LNG under flexible contracts – most of it from the United States – is still looking for a home, according to Edward Gomersall, business intelligence manager at shipping brokerage Poten & Partners.

The global oversupply has left sellers looking for new markets. For example, although Europe still has little demand for LNG, it is sensitive to lower prices for the fuel and its imports could double year on year, Gomersall said.

Niche markets in Pakistan, Jordan, West Africa, Indonesia, Bangladesh and Uruguay – where FSRUs and small-scale LNG is seen as a short-term solution to energy supply problems – could also increase demand for the fuel. "The role that FSRUs can play to help find a home for surplus LNG has been underestimated," Gomersall said.

However, in Asia – which is still the world's biggest consumer of LNG – contracted supply is set to peak in 2019.

"These contract expirations are a significant source of uncertainty in the LNG market. Some production aimed at Asia could face delays and the timing will depend on when buyers sign sale and purchase agreements," Gomersall added.

However, one silver lining for LNG is that demand for its use as a fuel in the marine sector is expected to increase.

Jan Tellkamp, principal consultant for project management at classification body DNV, said the market for LNG-powered ships was expanding beyond Europe.

"Seventy-five percent of the 85 new LNG-fuelled ships ordered are for European and global consumers, which shows that it has become a global trend," Tellkamp said.

Even countries such as Germany, which have been lagging behind the global market, are catching up, sending clearer policy signals to the shipping industry. ■

Further reading

- Low LNG demand fosters shipping glut
- Europe poised for LNG bunker lift-off
- Hybrid tech could join LNG as a marine fuel

On interfaxenergy.com

Editor's choice

Iran seeks $6-7 billion for LNG investment

Iran wants investors to fund the remaining construction on Iran LNG and to agree supply contracts for the offtake. Both tasks are likely to prove challenging.

US LNG exports divide opinion

Experts are split over whether US LNG exports will transform the market or only add to the global supply glut.

Trending

1. Competition heating up to pipe Mozambique gas south
2. India's budget offers gas exploration incentives
3. Iran seeks $6-7 billion for LNG investment
4. Indonesia's Abadi FLNG mired in politics
5. Aussie oil and gas investment takes a dive

Europe overbuilding on gas infrastructure – report

Andreas Walstad / Brussels

Europe may end up with more gas infrastructure than it needs as demand for the fuel could be much lower than anticipated.

EDF

The Dunkirk LNG terminal in France. Europe's import infrastructure may remain underused.

EUROPE MAY BE constructing too much gas infrastructure as future demand for the fuel could be much lower than previously thought, according to a study presented in Brussels last week.

The report – published by Energy Union Choices, an umbrella organisation started by the European Climate Foundation – said pipelines and LNG terminals under development could collectively lead to a 58% increase in EU gas import capacity, much more than is needed.

"Despite the recent fall in gas demand, a significant quantity of gas infrastructure is being planned in Europe. This includes both new import capacity and strengthening internal gas transmission networks in the EU," the report said.

It added that forecasts for gas demand had been "consistently overestimated in recent years", by the European Commission, the European Network of Transmission System Operators (ENTSOG) and the International Energy Agency. Furthermore, projections for gas demand are often poorly aligned with EU targets for energy efficiency, carbon dioxide emission reduction and renewables, it said.

"Europe's current pipeline of gas infrastructure projects is based on the expectation of rising gas demand. By contrast, gas consumption in Europe has been falling and by 2014 was 23% lower than its peak in 2010," the report said, citing data from industry association Eurogas.

The report also concluded that Europe's current infrastructure is sufficient to handle major disruptions to gas supplies with a good margin. It highlighted that the utilisation of import pipelines and LNG terminals stood at 58% and 32% respectively in 2014.

Other analysts have also downplayed the security of supply risks in Europe, particularly with the startup of new LNG terminals and the Nord Stream 1 pipeline bypassing Ukraine.

"Security of gas supply is mainly an issue for southeastern Europe today, which is dependent on one supply route," Fabio Genoese, a research fellow with the Centre for European Policy Studies, told *Natural Gas Daily*. "For other regions, security of supply is not such a pressing issue anymore since new infrastructure was deployed following the extreme scenarios witnessed in 2006 and 2009," he added.

Strengthening security of supply and completing the internal energy market is nevertheless high on the EU's agenda, with Brussels keen to reduce its dependence on Russian gas.

Appetite for investment

Institutional investors such as pension funds are still showing an appetite for investing in gas infrastructure, although not necessarily in LNG terminals and mega-projects, Jiri Zrust, managing director at Macquarie Infrastructure and Real Assets, told *NGD*.

"There is plenty of LNG capacity available in Europe. I don't think we need to build much more new capacity," Zrust said.

"It is more about completing the internal energy market than investing in new mega-projects. Everybody wants more security of supply, and for that you need more flexibility facilitated by, for example, reverse flows – which again requires investment in new high-pressure stations," he added.

Improved energy efficiency has helped reduce European gas consumption, but lower prices would stimulate demand, Zrust said. "Lower fossil fuel prices are also making gas more competitive as a fuel. It will help keep demand in check. Our long-term view is that gas demand will be stable, or perhaps with a minor reduction," he added.

Gas demand in the EU28 amounts to around 400 billion cubic metres per year and is expected to remain relatively stable, although with increased dependence on imports, according to the commission. However, the commission has also noted that demand may decline depending on the level of energy efficiency achieved and the electrification of the heating sector.

The commission's gas security package – released on 16 February – also included a heating and cooling strategy that foresees lower gas consumption in the sector. However, moves to phase out gas in heating have not gone down well in the European gas industry.

"What is the real alternative to gas? Gas cannot be easily substituted by electricity in all sectors such as heating. Look at the externalities – if gas is replaced by electricity generated by coal and lignite, what are we really gaining?" Jan Ingwersen, general manager at ENTSOG, told *NGD*.

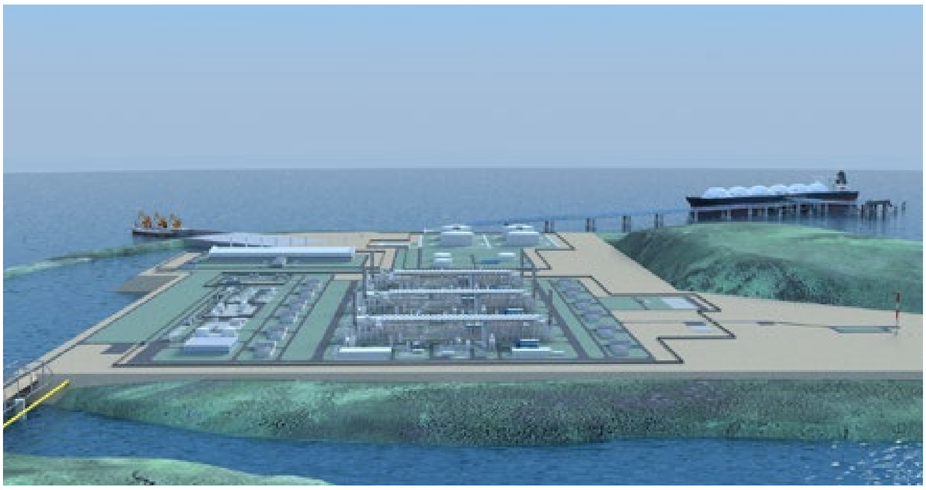
Gas will retain an important share in the EU energy mix – and not just as back-up for intermittent renewables – he said.

"Back-up capacity for renewables is not the only role for gas. Gas also has a role in itself. It is quite a big market, representing more than 23% of EU energy consumption. That situation will not change dramatically. Gas will be there for many years to come," said Ingwersen. ■

Russia is losing the Asian LNG game – analyst

Damon Evans / Singapore

Russia may have missed the boat in terms of exporting LNG to Asia as prices continue to drop and demand in the region falls.



Gazprom

A 3D model of the Vladivostok LNG project. The plant has been postponed indefinitely

RUSSIA HAS HIGH hopes of carving out much of the Asian LNG market, but its plans are close to failure, a leading analyst has said.

Tatiana Mitrova, head of oil and gas at the Energy Research Institute of Russia, told the LNGgc conference in Singapore last week that the start of LNG exports from Cheniere's Sabine Pass plant means there is little chance Russia will increase its gas exports to Asia by 2020.

All the proposed LNG export plants on Russia's Pacific Coast – including the Vladivostok project, which is aimed at customers in Japan, South Korea and China – have been postponed indefinitely because they cannot compete on price, she said.

The only Russian projects still in the running are Novatek's Yamal LNG and the potential expansion of Russia's sole liquefaction plant on Sakhalin Island, which remains mired in uncertainty, Mitrova added.

The proposed third train at Gazprom's facility on Sakhalin island, which is close to the markets of northern Asia, will not happen before 2021. Western sanctions have effectively stymied the expansion, which otherwise would have been economically competitive and offered supply flexibility, she said.

Not only have the embargoes prevented Russian projects from raising finance internationally, sanctions on oilfield equipment use have left Gazprom struggling to acquire the technology needed to push forward Sakhalin's development and with not enough gas to support the Sakhalin 2 plant's expansion.

Even the price for supplies to China through the huge Power of Siberia gas pipeline – which is under construction, but likely to be delayed – could be renegotiated. The mega-deal, which was signed in May 2014, seems less favourable after the oil price collapse, and there are rumours of a strong price review clause in the contract, said Mitrova.

Building work on the pipeline has started on both sides of the border, but gas is not expected to start flowing before 2021 rather than the initial 2018 target. With Chinese gas demand growth looking weaker than expected and low oil prices making the economics more challenging, both sides could mutually agree to push the startup date further down the road, said Mitrova.

Western sanctions on Russia have made progress more difficult at Yamal LNG. However, Novatek remains hopeful that financing will be concluded for the $27 billion Arctic complex and that production from the plant will start in the second half of 2017.

Mitrova said Yamal LNG will happen, but again that it was a question of timing. Market analysts told delegates they did not expect the project to start exporting until the early 2020s. The plant – in which Total and China National Petroleum Corp. are shareholders – is being built, but only half the project finance has been secured so far.

Caught off guard

Russia has been caught off guard by the sudden emergence of the United States as a potential major LNG exporter in recent years. Consequently, Russian President Vladimir Putin has made it a priority to hasten the development of his country's LNG sector.

However, the industry faces increasing difficulties in the wake of plunging oil prices and economic sanctions. There is a certain level of desperation from the Russian side, highlighted by the proposal for a third gas pipeline to China, Mitrova said. Aside from Power of Siberia – which she said will proceed, albeit slowly – a proposed deal for a second pipeline to China via the Altai route remains in limbo.

The Kremlin views Asia as an integral part of the development of its energy sector, and the project delays are a blow to Russia's expansion strategy. Demand in northern Asia was seen as a bridge to help cover potential revenue losses in Russia's traditional European markets.

Nevertheless, Russia holds a big competitive advantage in European markets because of its producing assets and infrastructure in the west of the country. "There we can go for a real price war – dropping the price to $3/MMBtu if Gazprom and the Kremlin decide to get an edge over the competition," suggested Mitrova.

"But in Asia everything has to be built from scratch. It's going to be very expensive. I really doubt Russia will be ready to compete on price. We are price takers. Many of the projects will be postponed because they are just too expensive for this market," she added. ■

Further reading

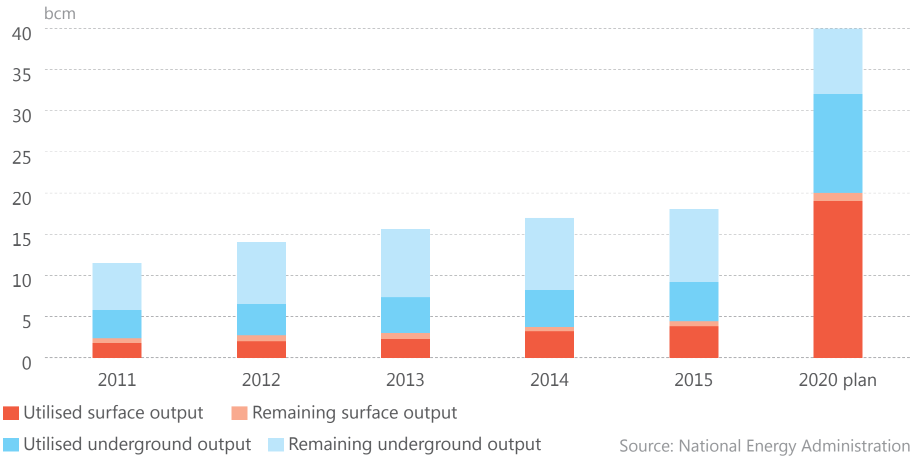
- The price of Gazprom's pivot to the east
- China-Russia HOA 'a face-saving act' – OIES academic
- The deal heard round the world

Surprise subsidy hike shows China's faith in CBM

Li Xin / Beijing

An unexpected hike to a CBM production subsidy could revive the stalled sector and suggests China is committed to developing the fuel.

Chinese CBM production and utilisation



Source: National Energy Administration

CHINA'S ANNOUNCEMENT LAST week that it will raise a CBM subsidy by 50% underlines the government's confidence in the unconventional resource and could revive momentum in the sector, which has stalled after more than a decade of development.

The current production subsidy of RMB 0.2 per cubic metre ($0.88/MMBtu) will be increased to RMB 0.3/cm until 2020, the finance ministry said last week.

CBM companies had sought a level of RMB 0.4-0.6/cm, but hopes of an increase had all but faded after the government said in May 2015 that it would cut a similar subsidy for shale gas. China's shale subsidy fell to RMB 0.3/cm from RMB 0.4/cm at the start of this year, and it will drop to RMB 0.2/cm during 2019-2020.

"The increase will not only boost financial support for CBM, but more importantly, it shows the government thinks CBM is as important as shale gas – or even more important," Liu Chaohui, an analyst from energy consultancy Sublime China Information, told *Natural Gas Daily*.

The hike takes on greater significance in the context of China's economic woes, Pan Jiping, a researcher with the Ministry of Land and Resources (MLR), told *NGD*.

The government hopes the subsidy will help CBM become a major source of gas production growth in the future as conventional gas output has limited room for growth, said Liu. China is believed to have 36.8 trillion cubic metres of CBM resources.

Industry players welcomed the move. "The pace of development in [the] CBM sector will be accelerated and the future utilisation rate of CBM will generally increase," said Dai Xiaobing, chairman of Sino Oil and Gas Holdings, which is developing the Sanjiao CBM project in central China's Shanxi province.

Dai added that it will have "a direct positive impact on the entire industry in the long run".

CBM is China's most viable unconventional gas resource because the country's reserves of the fuel are vast and the industry has many years of experience in developing it, said Liu. But the relatively low production subsidy is one factor that has held back development, he added.

Other reasons why progress has lagged expectations include complicated geological conditions, a lack of key technology and uncertainty over mineral rights because coal mine and CBM resources frequently overlap, non-profit group China Energy Research Society (CERS) said in a report released last week.

CERS forecast China will use 10 billion cubic metres of CBM and coal mine methane (CMM) by 2020, significantly less than the 32 bcm envisaged by the National Energy Administration (NEA). Usage will hit 20 bcm by 2030, said the group.

Missed targets

China's CBM sector failed to achieve its government production target for 2015, which was set in 2011. The country produced 18 bcm of CBM and CMM last year and used 8.6 bcm of this, according to the NEA. That compares with a production goal of 30 bcm and a usage target of 24.4 bcm.

The country also missed its goals for 2010, when the government targeted 10 bcm of production and 8 bcm of usage. The sector managed only 9 bcm and 3.5 bcm respectively.

CBM producers struggled last year after the government cut domestic pipeline gas prices to revive gas demand growth. Sino Oil and Gas and AAG Energy, both of which are listed in Hong Kong, warned investors last month that they expected to incur a loss for 2015.

AAG Energy said the average realised sales price for its CBM fell by 13.5% in H2 2015, to RMB 1.56/cm from RMB 1.77/cm in H1, because the market had become more competitive before the government's price cut. CBM prices are not regulated in China, although producers tend to set their tariffs against pipeline gas.

The subsidy hike could soften the blow dealt by the price cut, said Liang Jin, gas manager at commodities consultancy JYD Information. Unconventional gas projects – including CBM – have been under pressure since the price cut as their production costs are higher than conventional fields, China National Petroleum Corp. (CNPC) said in January.

Other experts said the government had an ulterior motive for the subsidy increase. The move is likely to enhance coal mine safety by removing explosive CMM, a leading cause of accidents in China's coal mining industry.

The higher subsidy will encourage China's coal mining firms to extract CMM, improving workplace safety and lowering casualty rates, a government researcher told *NGD*.

The researcher expressed pessimism about CBM's prospects in China over the next five years. He pointed out that CNPC continues to control most of the large long-distance trunk lines that pipe gas from remote fields to demand centres, making it harder for independent producers to sell their CBM. ■

US LNG export applications: the state of play

Therese Robinson / London

US LNG EXPORT PROJECTS – STATUS AS OF 23 FEBRUARY

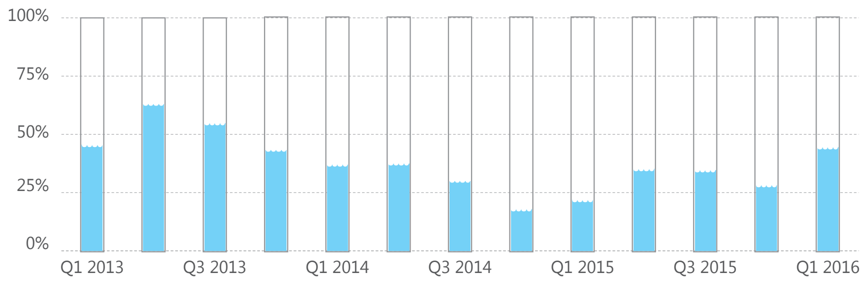
Project	Status
Sabine Pass, trains 1-4	Train 1 shipped its first cargo on 25 February – it was sold on the spot market and will be delivered to Brazil. The three remaining trains will be completed on a 6-9 month staggered basis. Trains 3 and 4 are estimated to come online in 2017.
Sabine Pass, trains 5 and 6	Construction on Train 5 began in June 2015 with startup expected in 2019. Train 6 has received its regulatory approvals and is expected to make an FID once financing and offtake contracts are agreed.
Dominion Cove Point	The Maryland Court of Special Appeals upheld FERC's approval of the $3.8 billion project following two years of delays by environmental groups that opposed FERC's decision.
Corpus Christi, trains 1-3	First two trains under construction. First train expected to start up in 2018.
Corpus Christi, trains 4 and 5	Expected to start up in 2021.
Cameron LNG, trains 1-5	Three trains expected online in 2018. FERC approved trains 4 and 5 in February, and construction is expected to start in June with both trains operational by 2019.
Jordan Cove LNG	The $7 billion project received its environmental impact statement (EIS) from FERC last October. Gas will be sourced from Canada and the US Rocky Mountain region via a planned pipeline. Delays and permit extensions have made the launch date uncertain.
Golden Pass Products	Startup is due in 2018. The project is undergoing the FERC approval process, and there are no details on when it will make an FID.
Lavaca Bay	Excelerate cancelled its floating liquefaction project in September because of lower oil and gas prices.
Live Oak LNG	Former Cheniere Chief Executive Charif Souki has formed a new company, Tellurian Investments. It is unclear whether the Live Oak LNG and Louisiana LNG projects will continue. Both were originally scheduled for construction in 2021 and were expected to start up by 2025.
Louisiana LNG	
Freeport LNG, trains 1-3	Three trains under construction. First two are scheduled to begin service in 2019, the third in 2020.
Freeport LNG, Train 4	Construction of Train 4 is expected in 2017 subject to regulatory approvals.
Lake Charles, Train 1	Startup due in 2020. Approved by FERC but construction has not started. FIDs from BG Group and Energy Transfer are expected in 2016.
Oregon LNG	Startup due in 2021. FERC originally planned to release the final EIS in February, but has pushed it back to 3 June as additional information is needed.
Magnolia LNG	Startup due in 2018. KBR and Magnolia LNG signed a $4.35 billion EPC contract in November to build the plant. KBR will begin construction in Q1 2016, contingent on regulatory approval.
G2 LNG	Startup due in 2019. G2 LNG awarded a contract to KBR in November to develop the proposed $11 billion two-train project.
Alaska LNG	The future of the project is uncertain. ExxonMobil, ConocoPhillips and BP are negotiating with the Alaska state government, but if an agreement is not reached soon it will be too late to discuss commercial terms during the state's spring government session. The vote will then have to wait for the general election in 2018 – creating another two-year delay.
Elba Island	Startup due in 2017. Pipeline company Kinder Morgan's $2 billion Elba LNG project received environmental approval from FERC in February despite objections from local communities and environmentalists.
Rio Grande LNG	Startup due in 2020. NextDecade expects to make an FID in early 2017.
Port Arthur LNG	Startup due in 2021. Woodside Petroleum and Sempra LNG & Midstream signed a PDA in February. Sempra signed an MOU last June with Woodside Energy USA to discuss development of Sempra LNG's proposed liquefaction project.
Gulf LNG	Startup due in 2021. No news since June 2015 when Kinder Morgan and its project partners submitted an application to FERC for approval to build the $8 billion project.
Annova LNG	Startup due in 2020. FERC is conducting its environmental analysis.
Downeast LNG	Downeast asked FERC to put proceedings for its Maine project on hold in November while investors reconsider their plans in response to low global LNG and gas prices.
Texas LNG	The Department of Energy lists the application as withdrawn as of 25 September 2015.
EOS LNG	No updates reported since mid-2015.
Barca LNG	No updates reported since mid-2015.
Delfin LNG (offshore)	Startup due in 2019. FERC issued a notice in January requesting comments on the offshore project. FERC is supporting the US Coast Guard in preparation for the EIS.
SCT&E LNG	Startup due in 2022. SCT&E LNG signed an MOU in February to sell 1 mtpa of LNG to an Asian utility.

This is not an exhaustive list as company and project names change and projects may submit more than one application to increase export volumes.

Brazil bailed out by El Niño rains

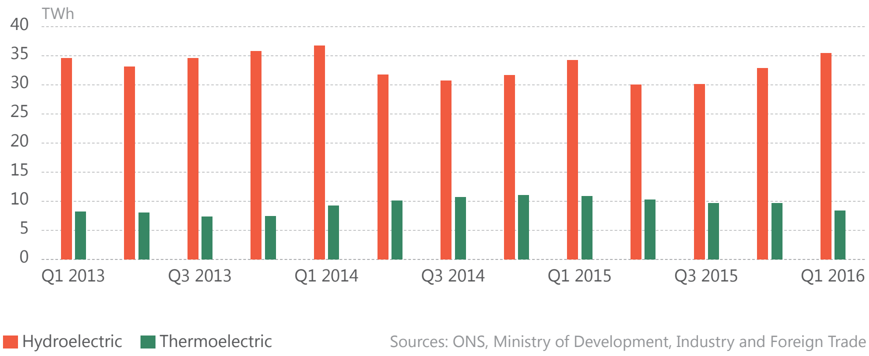
Chris Noon / Rio de Janeiro

AVERAGE MONTHLY FULLNESS OF RESERVOIRS IN BRAZIL'S CENTRAL AND SOUTH-EAST REGION



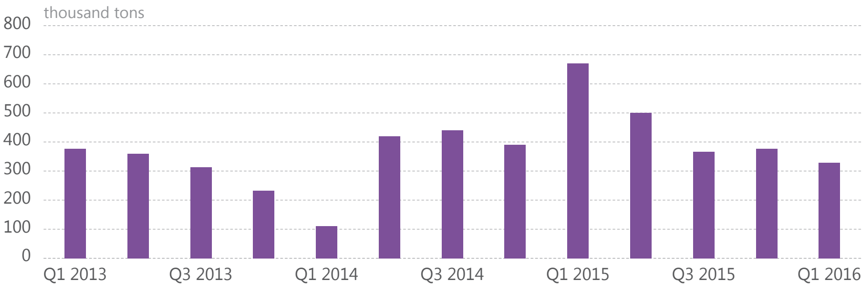
Sources: ONS, Ministry of Development, Industry and Foreign Trade

AVERAGE MONTHLY GENERATION IN BRAZIL



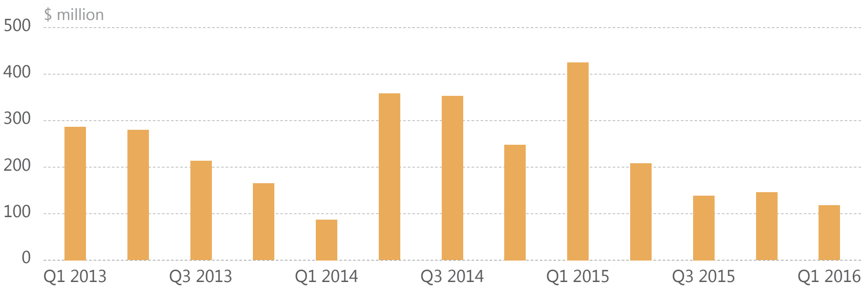
Sources: ONS, Ministry of Development, Industry and Foreign Trade

AVERAGE MONTHLY LNG IMPORTS



Sources: ONS, Ministry of Development, Industry and Foreign Trade

AVERAGE MONTHLY SPENDING ON LNG



Sources: ONS, Ministry of Development, Industry and Foreign Trade

HEAVY EL NIÑO rains have ended a lengthy drought in southern Brazil – restoring the country's hydroelectricity production and reducing its reliance on gas-to-power plants to fill the shortfall. This has allowed Brazil to save millions of dollars on LNG imports.

Average monthly reservoir levels in the country's southeast and central-west region, which accounts for around 70% of Brazil's hydro capacity, have averaged nearly 45% in 2016, according to Brazilian grid operator ONS. These figures are similar to pre-drought levels.

Improved reservoir levels have lifted average monthly hydroelectricity production to 35.42 TWh so far in 2016. This is around 3 TWh higher than the monthly averages in 2014-2015.

The boost has removed the need for extra thermoelectric production to fill the shortfall. The country's average monthly thermoelectric production has been 8.34 TWh so far in 2016, which is nearly 2 TWh lower than in 2014-2015.

Brazil's LNG imports have fallen because of the reduction in demand from the gas-to-power sector. The country imported an average of 328,000 tons per month in January and February 2016, according to trade ministry statistics. This is around 20% lower than in 2014-2015. Brasilia may re-export surplus LNG cargoes in Q1 2016.

Brazil has saved millions of dollars from the combination of lower LNG imports and the continuing bear market. The country spent an average of $118 million per month on LNG imports in the first two months of 2016, which is around 50% lower than spending levels in the preceding three years.

Natural Gas Daily wrote last week that demand has soared in the northern part of South America as drier and hotter weather has hit hydroelectric production. Gas demand is generally lighter in the south during wet weather because reservoirs are replenished.

El Niño occurs at irregular intervals every two to seven years, but can disrupt weather patterns across the Americas for up to two years afterwards. It originates in warm waters off the Pacific coast of South America.

EDF CFO resigns over Hinkley Point C dispute

French utility EDF has confirmed the resignation of Chief Financial Officer Thomas Piquemal over a dispute concerning the UK's Hinkley Point C nuclear plant. Piquemal was reported to have resigned because he thought the project could jeopardise the company's financial position. Last month, the project's director Chris Bakken said he was leaving EDF to "pursue new professional opportunities", the *BBC* reported. EDF's board will assess next month whether Hinkley C is worth financing after postponing a decision several times. Jean-Bernard Levy, chairman and chief executive of EDF, said the board aimed to announce a decision on the FID soon, the *BBC* report said.

Novak says no to Novatek gas exports

Russian gas exports should be delivered through a single export channel, Russian Energy Minister Alexander Novak has said. He was responding to reports of a Novatek proposal to export gas via Arktikgaz – a joint venture between Novatek and Gazprom Neft – through an agent agreement with Gazprom Export. "We have legislation, [and] there is a single gas exporter – this is Gazprom. The sale of gas to foreign markets goes through a single export channel. Novatek did not propose to be a gas exporter," the minister said. It was previously reported that Novatek Chief Executive Leonid Mikhelson had asked Russian President Vladimir Putin to allow Novatek's Swiss trading company, Novatek Gas & Power, to supply European consumers with gas from Arktikgaz.

Georgia not dependent on Russian or Iranian gas – minister

Georgia's recent agreement with State Oil Company of Azerbaijan Republic (SOCAR) to receive an additional 500 million cubic metres of gas per year means Georgia no longer needs to rely on deliveries from Russia or Iran, Georgian Energy Minister Kakha Kaladze said at a briefing last week. "At this stage, there is no longer a need to procure additional volumes of gas for Georgia, since the country's gas supply for the next few years will be met by SOCAR," he said.

Korean consortium wins Kuwaiti LNG contract

A consortium led by Hyundai Engineering has been awarded a $2.93 billion contract by state-owned Kuwait National Petroleum Co. to build an LNG terminal and storage tanks in Kuwait, according to local reports. The consortium, which includes Hyundai E&C and Korea Gas, will build a 3 billion cubic metre per day regasification facility and eight 225,000 cubic metre LNG storage tanks in Al-Zour, 90 km to the south of Kuwait City. Construction is expected to take 58 months and is scheduled to be completed by 2020.

Petronas's Satu FLNG to be operational by Q2

Petronas's first floating LNG facility will have the capacity to produce 1.2 mtpa of LNG, the Malaysian company said on Monday. The PFLNG Satu vessel is expected to be operational in Q2 2016 and will source gas from the Kanowit gas field, 180 km offshore Sarawak. "The PFLNG Satu is a testament to the engineering capabilities of Petronas and its partners. Today, we have pushed the boundaries and turned our technological aspirations of having an LNG plant on a floating vessel into reality," Petronas President Wan Zulkiflee Wan Ariffin said last Friday at a ceremony for the new facility.

Sasol's headline earnings per share drop by 63%

South African petrochemical giant Sasol's headline earnings per share fell by 24% in H2 2015, to ZAR 24.28 ($1.58), the company reported on Monday. Sasol's earnings per share fell by 63%, to ZAR 11.97, compared with the previous six months. Elsewhere, profits from operations fell by 50%, to ZAR 14.9 billion, as a result of challenging and highly volatile global markets, the company said. Sasol said it plans to spend $1.4 billion on the first phase of its integrated oil, LPG and gas project in Inhassoro in Mozambique, which Maputo approved in January 2016. The project should start operations in 2021 if the company can finalise the sales agreements. Phase one will also see the company develop a fifth train at its existing gas processing facility. Sasol is also investing ZAR 2.7 billion in an expansion of a pipeline that takes gas from Mozambique to the Sasol processing plant at Secunda in South Africa.

CONTINUED ON PAGE 9

Energy front-month futures

	Closing date	Close	High	Low	% change
Brent Crude, $/bbl	4 Mar	38.72	38.95	36.82	4.45
WTI Crude, $/bbl	4 Mar	35.92	36.34	34.40	3.91
Henry Hub, $/MMBtu	4 Mar	1.67	1.68	1.61	1.65
NBP, p/th	4 Mar	27.93	28.75	27.89	-2.44
TTF, €/MWh	4 Mar	11.85	11.92	11.83	-1.53
Gaspool, €/MWh	4 Mar	12.09	–	–	-1.50
NCG, €/MWh	4 Mar	12.22	–	–	-1.29
Central Appalachian Coal, $/t	4 Mar	43.58	–	–	0.00
Newcastle Coal, $/t	4 Mar	51.00	–	–	-0.20
South China Coal, $/t	4 Mar	44.10	–	–	-0.23

Prices provided by GlobalView. GlobalView provides benchmark pricing, news and analytics for the commodities and energy sector. For more information, please contact sales.london@marketview.com.

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CNOOC's Putian gas power plant hits record output

China National Offshore Oil Corp.'s (CNOOC's) gas power plant in Putian in China's Fujian province generated a year-to-date record of 18.59 GWh on 26 February, enough to meet the city's entire electricity demand, CNOOC said on its website. The plant's output hit 1.5 GWh at 11pm CST (GMT: 3pm) on the day, which was enough to meet 10% of Fujian's electricity demand.

Production up by 30% at China's Southwest oil and gas field

Sinopec's Southwest oil and gas field produced 886 million cubic metres of gas in January and February, up by 30% from the previous year. The field is expected to produce 6.1 billion cubic metres of gas in 2016, up by 27% from 2015.

Jiaoye 6-2HF produces 200 MMcm since September

Sinopec's Jiaoye 6-2HF well in the Jiaoshiba Block of China's Fuling shale gas field has extracted 200 million cubic metres (MMcm) since it started producing on 29 September 2013, according to domestic media. The well, the fourth put into production at Fuling, is producing 130,000 cubic metres per day, and the structure it has tapped is estimated to have 300 MMcm of technically recoverable reserves. Fuling has 183 wells in production and is selling 15.5 MMcm/d.

CNPC's Huabei UGS sending gas to Shaanxi-Beijing trunk line

China National Petroleum Corp.'s Suqiao underground storage depot in the Huabei oilfield started supplying gas to the second and third Shaanxi-Beijing trunk lines on Sunday. The depot has a designed capacity of 6.7 billion cubic metres and has 800 million cubic metres in store.

Regulator approves Duke Energy's gas power plans

Duke Energy's $1 billion plan to replace coal-fired power plants in Asheville, North Carolina, with two gas-fired power units has been approved by state regulator the North Carolina Utilities Commission. The gas units will produce 50% more electricity, according to Duke, which is the largest electricity company in the United States. Environmental groups oppose the plans, saying they will make the state dependent on fossil fuels for decades.

United Stated DOJ moves to dismiss McClendon indictment

The United States Department of Justice asked a district court judge to dismiss the indictment against former Chesapeake Energy Chief Executive Aubrey McClendon last Thursday, the day after McClendon died in a car accident. The indictment, which alleged McClendon had rigged bids for oil and gas leases, was made last Tuesday.

The Week Ahead

Monday 7 March

- International LNG Summit, Cannes, France (until Tuesday)

Tuesday 8 March

- RWE full-year results
- Gabon Oil & Gas Forum, Libreville, Gabon (until Wednesday)
- Sixth Annual Energy Trading Regulations & Compliance Summit 2016, London, UK (until Thursday)

Wednesday 9 March

- E.On full-year results

Thursday 10 March

- Ophir Energy full-year results

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