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WORLD GAS INTELLIGENCE®

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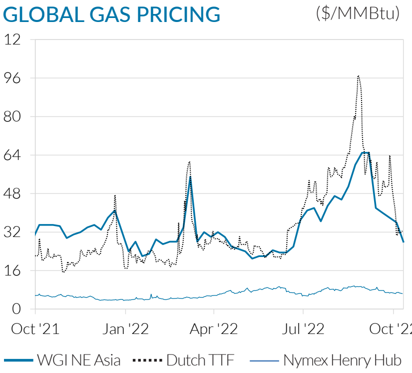
GLOBAL GAS PRICING ($/MMBtu)



VIEWPOINT

EU Industrial Demand Cuts Needed — But at What Cost?

Fears that the energy crisis will permanently cripple Europe's industrial sector, a heavy consumer of natural gas, have escalated in the last few months. And it seems that urgent and mandatory industrial demand cuts will need to occur in order for Europe to make it through the next two winter periods without Russian gas supplies. How to cut European industrial gas consumption efficiently without permanently obliterating it on the other side of the crisis was a widespread concern heard on the sidelines of last week's Energy Intelligence Forum.

Europe's industrial workhorse Germany is especially feeling the pain as it was dependent on decades of dirt-cheap Russian gas. "German industry is fighting for survival," Graham Weale, professor of economics and politics at the Ruhr University Bochum told the Forum. Large industrial companies can move production abroad depending on their supply chains, but small and medium-sized companies, which make up the bulk of German industry, could close shop forever. A recent survey by German industry association BDI found that roughly one in 10 medium-sized businesses in the country has pared back production or stopped it completely because of high gas prices. "If we look back at the current energy crisis in about 10 years, we could see this time as the starting point for accelerated deindustrialization in Germany," Deutsche Bank said recently.

It's not only in Germany, of course. Dutch gas grid operator GTS said last week it expects the Netherlands will use 20%-25% less gas next year due to voluntary consumption cuts but mostly due to industrial demand destruction. The production of ammonia, fertilizers and other chemical products could move out of Europe due to the crisis and might never come back. Half of the EU's aluminum and zinc production capacity has been forced offline in the last 12 months, trade association Eurometaux said. Closing a plant is likely to remain permanent as reopening it requires "considerable time, costs, and the right competitive conditions," it said.

EU countries have introduced mandatory consumption cuts to public buildings and voluntary ones for the residential and commercial sectors. Even then, German gas use increased once the weather turned cooler. But even if these curtailments become mandatory, they will likely not be enough — making cuts to industrial gas use a priority. Germany meanwhile has continued to throw money at the problem. This week, a German expert panel has proposed a €91 billion ($89 billion) plan to help German consumers, expected to come out of Berlin's €200 billion relief package announced last month. Under the plan, large industrial users will get their gas for 7 cents per kilowatt hour for 70% of their gas consumption from January 2023 until April 2024. This will give a temporary lifeline but will most likely spur consumption — exactly the opposite of what Europe needs to get through these next two years of hardship.

There is no clear consensus on how to implement these cuts in industrial consumption. The EU has not presented any plans to do so. Compensating industry to not burn gas through competitive processes such as tenders or auctions could be an option. But consumption quotas will likely be the preferred tool, the long-term effects of which are unknown.

QATAR

QatarEnergy Aims to Expand Trading Ambitions

Partner selection for Doha's looming 48 million ton per year LNG liquefaction expansion has captured all the headlines. But just as significant is Qatar's downstream and trading expansion as state-owned QatarEnergy is positioning itself to become a major portfolio player. The giant LNG exporter is pursuing this through major liquefaction additions in Qatar and the US, clinching significant new regasification and shipping assets, and a massive expansion in trading. "Our marketing and trading organization is going to be huge," Qatar's Energy Minister and QatarEnergy CEO Saad al-Kaabi told delegates at last week's Energy Intelligence Forum in London. "We will be, in the next five to 10 years, the largest LNG trader in the world by far."

Efforts are ongoing to integrate the firm's trading operations into the QatarEnergy Trading entity that was established two years ago. Currently it is trading some 5 million-10 million tons/yr, including third-party volumes, but a massive marketing expansion is envisaged. Profits already have been around 20 times those envisaged at this stage, al-Kaabi said.

QatarEnergy holds a significant regasification position in Europe, where it is the region's second-largest LNG supplier after the US. The company is a a co-owner of the South Hook terminal in the UK and Italy's Adriatic LNG terminals and holds regasification capacity at the UK's Isle of Grain and France's Montoir-de-Bretagne. It is also in talks, together with Shell, to build a regasification terminal in Pakistan. On the shipping side, QatarEnergy has already ordered 65-70 new LNG-fueled LNG tankers, with al-Kaabi saying it could reach close to 100 by investing $20 billion in shipping alone. Around 15 million tons of Qatari LNG are expected to go to Europe this year, with 12 million-15 million tons in 2023.

Al-Kaabi has a track record of delivering on public proclamations and the company he leads has both the resources and incentives to expand on trading. As both the top regulator, chief government decision-maker and head of QatarEnergy, al-Kaabi is in a unique position to implement policy decisions with a minimum of bureaucratic obstacles. Doha's international marketing push also mirrors moves at rival national oil companies Saudi Aramco and the Abu Dhabi National Oil Co.

QatarEnergy is also poised to be a significant producer outside Qatar, having built up an empire of large minority stakes in offshore blocks across a number of prospective basins in recent years. Discoveries have been made in Cyprus, South Africa and most notably Namibia, where al-Kaabi was visiting this week.

NFS Partner Selection Continues

Three companies, all partners in Phase 1 of Qatar's LNG expansion, are expected to be selected to hold equity stakes in the 16 million ton/yr Phase 2, dubbed North Field South (NFS), al-Kaabi said. TotalEnergies already won a 9.375% stake in NFS after getting a 6.25% stake in Phase 1. Other Phase 1 winners include ExxonMobil and Shell with 6.25% each and Eni and ConocoPhillips with 3.125% each.

With an overall 25% of NFS available, it is likely that Exxon and Shell could grab 6.25% each due to their engagement with Qatar. Either ConocoPhillips or Eni will likely snatch the remaining 3.125%. ConocoPhillips CEO Ryan Lance strongly values his firm's historical Qatar relationship, sources say, while Eni's energy transition strategy relies heavily on gas, having made getting access to low-cost Mideast reserves a priority. Replacing Italy's dependency on Russian gas imports would also make these volumes attractive for Eni.

Expanding North Field further is also up in the air, with al-Kaabi saying earlier last month that a decision could be taken in the next two years. Total CEO Patrick Pouyanne let it slip that he would be interested in joining what he called "North Field West."

The fate of existing Qatari projects is also unresolved. Al-Kaabi has made it clear that firms will have to demonstrate tangible value to stay in their concessions after expiry. Exxon, which had almost 3 billion cubic feet per day of net gas output and 144,000 barrels per day of oil production from Qatar, has stakes in nine of Qatar's LNG trains. And these contracts all are due for renewal in the next few years.

The North Field expansion remains attractive as a low-carbon project, with QatarEnergy investing heavily in decarbonizing its LNG through carbon capture and storage (CCS) and the solarization of its facilities. "The fact there was CCS was absolutely critical for us as one of the components that made it the right project for us," Shell's Executive Vice President for LNG Cederic Cremers told reporters on the sidelines of the Forum.

Rafiq Latta, London

CORPORATE

Total Says EU Should Tap Portfolio Players for Supplies

European governments should rely on portfolio players to help resolve the gas crisis, according to Patrick Pouyanne, the CEO of the world's second-largest LNG portfolio player TotalEnergies. Approaching private companies directly rather relying on than government-to-government diplomacy will help Europe tap much-needed supplies. "In Europe, I've been surprised that none of the governments asked the two largest LNG players ... to commit to bring LNG. Nobody came to us. We are doing it by ourselves," Pouyanne told delegates at last week's Energy Intelligence Forum. He added that Total alone has a portfolio of 40 million tons per year of LNG. Shell, the world's top LNG portfolio player, sold some 60 million tons of LNG last year.

European leaders are scrambling to secure additional gas supplies and potentially lock in long-term contracts as the EU seeks to reduce its dependency on Russian gas imports. Qatar has earmarked 12 million-15 million tons of LNG to Europe out of its 77 million tons available, while Algeria has agreed to supply an extra 9 billion cubic meters per year of piped gas to Italy by 2023-24.

But Europe would need to import around 100 million tons of LNG out of the 400 million tons available globally if it wanted to completely replace Russian gas imports, which is a "huge shock" for the region, Pouyanne told the Forum. Pouyanne warned that the proposed EU wholesale gas price caps could work against Europe accessing these supplies. "I don't recommend at all to take an action which will be unilateral from Europe, because the consequences could be really damaging for the supply of the market, and for the consumers," he said. Total decided to invest in regasification assets in Europe when others were selling them, Pouyanne said. This led to the French major now holding the largest regasification capacity in the region. Some 95% of that regasification capacity is currently being utilized, Pouyanne added.

In terms of global supplies, Western sanctions on Russia have forced Total to step back from its LNG expansion projects in the country. Pouyanne said Total would continue to ship LNG from Russia as long as there were no sanctions preventing it from doing so because these volumes "contribute to the security of supply for Europe." But he insisted that Total's global LNG business would thrive even without Russian gas. Total was the first company to win equity stakes in Phase 2 of Qatar's 48 million ton/yr LNG expansion project, also known as North Field South. This is on top of its 6.25% stake in Phase 1, known as North Field East.

In Africa, Total still hopes to make a decision early next year on whether it will lift the force majeure in place since April 2021 on its $20 billion Mozambique LNG project. Pouyanne said security in the northeast region of Cabo Delgado appears to be improving and Total is making efforts to improve conditions for the local population devastated by the violence, to give them a stake in the project's future.

In Iraq, Pouyanne said political stability and the appointment of a new government were prerequisites for Total to begin work at the Ratawi gas gathering project in the south, as agreed with the current prime minister. Political deadlock has gripped the country since last year's elections, preventing any progress on the $10 billion project that was signed in September 2021. Ratawi seeks to capture and process 600 million cubic feet per day of associated gas that is currently being flared, equivalent to 35% of the total gas flared in the country last year.

When asked how Total planned to spend its windfall profits, Pouyanne told the Forum it created an opportunity to invest more in the energy transition. But he was adamant that LNG played a key role in that. "I'm very comfortable with the strategy of TotalEnergies, which is to maintain all that the world needs, to increase LNG, which is becoming a star in the whole energy debate ... and to invest in electricity, renewables and biofuel," he said. A key component of the Ratawi project, for example, is the installation of a 1 gigawatt solar power plant.

Simon Martelli, London

MARKET DYNAMICS

LNG Executives Urge EU to Increase Investments

More investment in gas and LNG infrastructure, as well as long-term contracting, are crucial to provide energy security across Europe as the continent rapidly cuts its dependence on Russian supplies, global LNG executives told delegates at the Energy Intelligence Forum last week. "I think in the short term, our focus is on investments required for infrastructure and on some of the intra-market inefficiencies that can be addressed as well," Shell's Executive Vice President LNG Cederic Cremers told the conference. "It's more regasification capacity, more pipeline connections." Similarly, the CEO of Belgian energy infrastructure firm TES Marco Alvera called for more investment to build underground storage sites in Europe, adding that LNG infrastructure can be modified and used to import green molecules in the future.

On the other side of the Atlantic, US LNG exporters are also looking to boost their gas and LNG infrastructure. Dan Brouillette, president of US developer Sempra Infrastructure, said that more investment is needed in US pipeline capacity and added that it is "important for us to think about permitting processes that would allow even more export opportunities in the United States."

Up until recently, some US LNG project developers were struggling to obtain the necessary financing due to the lack of long-term supply commitments, particularly from European buyers. While the ongoing energy crisis has helped various US projects to get back on track, the bulk of the long-term contracts came either from global portfolio players or Asian buyers.

Portfolio players like Shell will continue to play the role of signing up for longer-term contracts with US exporters, which will permit them to supply Europe in the short term and also deliver to Asia in the long term, Cremers told delegates at the Forum. "We need 30-40 million tons of more LNG, and this requires, if we were really to sprint into action, probably \$50-60-70 billion of capex," Alvera said. Permitting, taxonomy issues and the reluctance of European buyers to sign up for 25-year LNG supply contracts were all hampering US LNG developments. "No one in the US is going to build liquefaction with a 10-year contract," Alvera said. While US supply contract durations had dropped in recent years due to buyers' fears to commit to projects that might become stranded assets in 20-25 years, there is now "a reversion back to the more standard 15- to 20-year term for these contracts," Brouillette said.

There was a broad consensus by participants of the Forum that the real threat for Europe will be getting through the 2023-24 winter period as there is an expectation that there will be no Russian gas to fill storage tanks during the upcoming summer season. If this is not dealt with in time, the effects of the energy crisis will filter rapidly through to the political landscape across Europe and are expected to cause major governmental turmoil. "The short and medium term is gloomy. There is a political crisis, which in my mind, is much bigger than the price crisis," Alvera said. Mike Anderson, senior vice president of sustainability and external affairs at US independent Kosmos Energy, went even further, arguing that "every democratic government will be voted out next time round because they have failed with energy security."

Daniel Stemler, London

INTERVIEW

E.ON Official Wants EU to Cut Red Tape to Attract More Gas

Europe will have to think on its feet to survive the acute natural gas supply shortage expected for the next two winter periods and to attract extra molecules into the region. Patrick Lammers, member of the board of management at E.On SE, spoke to Energy Intelligence on the sidelines of last week's Energy Intelligence Forum about potential solutions and how it is coping with a lack of supplies from the Nord Stream pipeline, in which it owns a 15% stake.

Q: What is the situation with the Nord Stream pipelines?

A: We are one of the minority shareholders in the Nord Stream 1 pipeline. The shareholders got notified that service was interrupted and [Switzerland-based operating company] Nord Stream AG remains in contact with the relevant authorities, in particular from Sweden and Denmark, running state investigations on the incident.

Q: Who is in charge of repairing the pipeline?

A: Nord Stream AG is responsible for the operations of the pipeline, so they need to assess what to do.

Q: What has been the financial effect of the Nord Stream pipeline shutdown?

A: The gas supply for our customers is not directly affected by the pipeline shutdown since we are sourcing our gas on the European wholesale markets. In line with the increased uncertainties, the valuation of the investment in Nord Stream AG as of Jun. 30, 2022, declined by around €700 million ($683 million) compared with Dec. 31, 2021.

Q: How has it been to replace the gas from Nord Stream?

A: We are buying on the European wholesale markets from a portfolio of partners and then of course optimizing our position. In general, we don't buy from gas producers like Gazprom directly, so there is no need for us to replace supplies. We also announced a deal with TES and Engie to get LNG to Europe. Our portfolio is around 500 terawatt hours [45 billion cubic meters] and therefore we always need to buy and to optimize.

Q: Can you talk a bit more about E.On's agreement with Engie and TES?

A: It's being developed in Wilhelmshaven and backed by the German government. We have a concept with TES, starting with a floating unit and then we make a connection to the grid. Meanwhile, we have earmarked the land there [for an onshore terminal for green gas]. And then together with TES, in which we are a shareholder, we can go from realizing an LNG terminal and then go into green methane, ammonia and hydrogen. That's really the creative and fungible way to get into green molecules. The whole thing is around molecules because you can't electrify the whole society. That's just impossible in the way we are constructed and in the way we are industrialized. You don't want to deindustrialize. And I am sure that jeopardizing common wealth is not on the agenda of the German government nor on the European Union.

Q: Is E.On getting support from the German government?

A: No, we are not getting financial support from the German government since we don't play at the gas import level. We are healthy and stand on our own feet. We have our own cash pooling, we have our own collateral, we have all of that secured. Our energy procurement strategy has been to source and hedge forward, although even we can't evade higher wholesale prices on a permanent basis. What we do is not only sourcing but optimization — we are not a merchant trader, but a total optimized integrator, this is how we look at our business. That way we know what kind of value is created in every step of the value chain and more importantly I know where I will lose or gain money. That's a much more balanced approach than other companies. We are more in tune with our users.

We have a European portfolio, we source and supply customers in the Netherlands, UK, Scandinavia, etc., so we have a mix. In general, we don't buy from producers like Gazprom directly. And we're looking to diversify our sourcing portfolio as well.

Q: Does E.On want to be more involved in LNG?

A: LNG plays a much higher role for Europe than before, so we are more involved in new supply options than we were. We are now in partnerships with people who play in LNG and could provide supply for our customers in Europe. We're not going to engage in the upper parts of the LNG value chain, say, to invest in a gas field in the Middle East to make sure we can liquefy the gas. That's not our play. Our play is to be part of solutions in Europe and always in partnership. We do that where we can play a role to add value to the partnership or the consortium we are working with. We are an optimized integrator, we don't trade so we can leave it to other people, but we can be the counterparty for those traders.

Q: How does Europe get past these next two winters?

A: I think people need to realize that we are, as Europe, at an economic war with Russia. In that sense, we also have to think how we get energy security. So, lower the hurdles of permits, get really quickly on your feet on allowing people to bring in products and molecules. Make sure that you suspend some of the processes so it doesn't take up time and afterwards we can look how to move on forward as industry and governments. It's not something we haven't done before. It's not something completely new. But we have to make sure we sail through all the bureaucracy and actually apply laws that exist for crises or emergencies. They should apply it to make sure there are coordinated efforts on getting molecules in. Not only on LNG but also the build-out of renewables and the necessary infrastructure for this.

Q: Any views on EU plans on joint procurement plans on gas, LNG and hydrogen?

A: I've heard as much as you. It's a global market and European gas import companies compete there against global competitors, but also against each other. This is a topic to be solved by politicians and the import companies, not us.

Q: Is there an energy security challenge as Europe relies on imported hydrogen and ammonia?

A: There will always be geopolitics. It will start as an emerging market with low liquidity, as a market that needs some help and assistance to develop. In the end, Europe will always be dependent on other sources outside Europe. If we don't want to use coal or lignite, then Europe cannot stand on its own two feet. So you also need imports from somewhere else. This can be, for example, from the US: they have sun, they have wind, they are large. But we should always take care of import diversification. And Europe has a lot of resilience. We have a lot of highly educated people, knowledge, and a lot of domestic and export demand. So that will not die out. But be pragmatic and start somewhere, is my message. A lot of politicians have long-term objectives but don't know how to get there.

Q: What is your opinion on price caps?

A: I understand that some people call for price caps to protect customers against historically high energy prices. But they are not a sustainable long-term solution. We've had our fair share of price caps in the UK. And we had some in Hungary as well. And they were destructive to markets and companies. If a company can't make money after a price cap is in place, then that company will cease operating. All those efficiencies that have been created over decades of a really liquid, free market are being destroyed by not thinking about all the effects. I know it's a political decision, I'm a citizen too. If they decide to implement this, then we need to communicate with the government and say that if you do a retail price cap whilst prices on wholesale markets stay high, then it needs compensation. And it needs to be paid instantly otherwise the working capital of companies will shoot up high. And then it will lead to demand destruction and the destruction of efficiencies because the real price incentive is not percolating through the market.

Jaime Concha, London

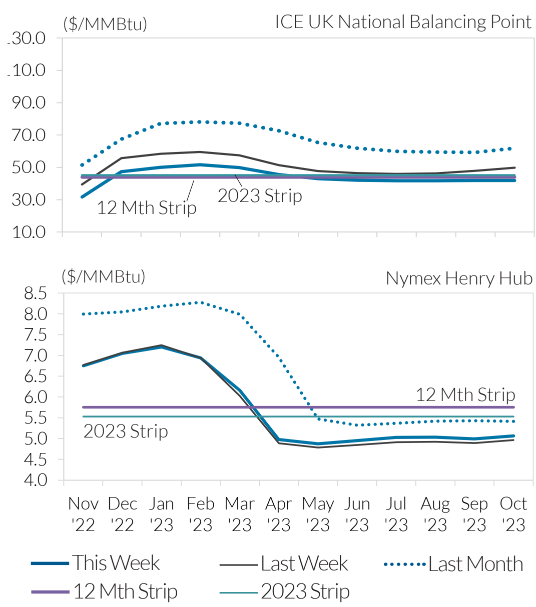
MARKET INSIGHT

Asian LNG Prices Turn Bearish Amid Capped Demand

Asian spot LNG prices have been softening steadily for over a month despite a widespread expectation that the global LNG market will heat up during winter. Traders are expecting supply-demand fundamentals to return to provide stronger pricing direction during the next few months in a market that has largely been sentiment driven since Russia's invasion of Ukraine in February. The Japan Korea Marker, Asia's de facto benchmark, dropped from a peak of $71.25 per million Btu on Aug. 29 to $27.62/MMBtu late last week, under the circa $35/MMBtu seen during the same period last year.

Several recent supply events have failed to move the market. A soil movement causing a leak on the Sabah-Sarawak Gas Pipeline led to Petronas declaring force majeure on gas supply to the three-train 9.6 million ton per year Malaysia LNG Dua facility in Bintulu. "I think there is so much uncertainty on the extent of the problem, whether it's just limited to the said pipeline, but there is quite a bit of supply yet to clear," a trader said. "And the pipeline feeds about two to three cargoes worth of production, which in the scheme of how many cargoes there are, feels like it will offset some of the length." Sources say the pipeline is expected to complete its repair work by the end of the year. This would mean a loss of up to 10 cargoes over the next three months.

NATURAL GAS FUTURES



Similarly, the suspected sabotage blasts on the Nord Stream and Nord Stream 2 pipelines in Europe also did not prompt protracted volatility. Global gas and LNG prices went up marginally but mainly because of Russian gas giant Gazprom's threats to stop transit flows via Ukraine rather than because of the damage to the idle pipelines in the Baltic Sea. "The market was planning for no Nord Stream for winter, so [it] doesn't change the fact that gas isn't going to flow," a trader said.

After much price agitation over the past few months, the market now seems to be following a bearish trend as demand remains capped in Asia. Demand destruction is a key factor of the ongoing fall in prices, two traders agreed. One of the traders added that "comfort on storage levels into winter and new LNG volume from US" were contributing to the downward trend. Inventories are indeed understood to be high in Northeast Asia, reaching unprecedented levels in Japan where the main utility companies hold 2.67 million tons of LNG. But traders remain on their guard. "I think we will only truly see the impact once winter comes into play. If it's cold, then I think we are going to have serious problems," a trader said.

August Imports Rise Further

LNG imports into Northeast Asia in August continued to recover on the back of winter restocking and higher summer demand, customs data showed. Total August LNG imports rose by 2.7% to reach 16.4 million, a 9% decrease year on year.

Japan maintained its spot as the world's largest LNG importer in the first eight months of the year. Imports slightly rose by 1.8% on the month and averaged 6.2 million tons in August, while year-on-year volumes were stable. Chinese imports were stable in August, averaging 4.7 million tons, but falling by 29% compared to the same period last year. South Korean imports rose by 17% from July to 3.8 million tons, up 10% from last year.

In Southeast Asia, Thailand's LNG imports sharply increased by 46% on the month to 646,000 tons but fell 7% from the same period last year. Singapore's imports rose 5% on the month to 401,000 tons, up 39% year on year. In India, customs data show a 20% month-on-month fall in August imports at 1.5 million tons, while year-on-year volumes fell 32%.

Marc Roussot, Singapore, Yousra Samaha, Dubai

SPOT LNG

Lower Spot Prices Revive Asian Demand for Winter Cargoes

Northeast Asian spot LNG prices dropped by $8 to $28 per million Btu, according to *World Gas Intelligence* assessments for deliveries four to eight weeks ahead. Spot prices in Southwest Europe fell by $6.15 week on week to $23.85/MMBtu. The UK National Balancing Point (NBP) day-ahead price fell by 14¢ since Sep. 26 to $18.79/MMBtu, while the November front-month NBP ICE contract was down $2.36 at $31.32/MMBtu.

Asian spot LNG prices have been falling for five consecutive weeks to their lowest level since mid-June, essentially tracking a bearish Dutch TTF, Europe's benchmark gas hub. "It is quite an outlier situation considering the [fourth-quarter] period we are entering now," a trader says.

Lower prices could be boosting demand for November and December delivery cargoes as interest for October largely faded amid high inventories in Northeast Asia. For instance, Japan's Tohoku secured a Dec. 5-12 cargo from Australia at a fixed price equivalent to a premium to the Japan Korea Marker. Taiwan's CPC was heard to be still looking for December-onward cargoes, but it is not clear if the company secured volumes. Thailand's PTT is seeking a Nov. 21-25 cargo.

In South Korea, the government reiterated plans to do everything it can to ensure demand is met by ordering private importers to "adjust the scale and timing of imports" and to sell and exchange volumes with Kogas. The country is also doubling down on its energy efficiency strategy. The government held a meeting with 16 companies and institutions including Kepco to limit demand during winter. The goal is to achieve 10% energy savings compared to the average energy consumption for the past three years.

Traders are still trying to evaluate how many cargoes will be impacted by Petronas' recent force majeure announcement following a leak on the Sabah-Sarawak Gas Pipeline that feeds its three-train 9.6 million ton per year Malaysia LNG Dua facility in Bintulu. Up to 10 cargoes could be impacted. Japanese buyers are asking Petronas to replace cargoes using volumes from a different project, a source says.

Traders are also keeping a close eye on whether a phased reopening of China could be announced during the Chinese Communist Party's five-yearly congress, slated to start on Oct. 16. "China is the big unknown for me. I think next week will be interesting," a trader says. Such an announcement would most likely mean an increase in Chinese gas demand, driving competition for global spot LNG volumes and pushing prices higher during the winter season.

On the sell side, Diamond Gas International issued a tender for an f.o.b. cargo loading on Nov. 12-14 from Australia's North West Shelf plant. The company is also believed to have sold two Nov. 9-11 cargoes from North West Shelf.

Elsewhere, Australia's Darwin is offering a Nov. 2-4 f.o.b./d.e.s. cargo while Ichthys is expected to offer an Oct. 27-31 loading cargo via a tender. Papua New Guinea is expected to issue a limited participation tender later this week for a cargo to be delivered on Dec. 20-28. Oman is understood to have sold a first-half delivery cargo loading on Oct. 22-24 to a Northeast Asian buyer in the $20s/MMBtu. Egypt's Egas is offering a cargo loading on Oct. 20-21.

In Southwest Europe, spot LNG cargoes for November-delivery continue to be priced at a $20 discount to the TTF. A Europe-based LNG trader said the TTF discount for cargoes for December delivery is at the high-$10s.

Bulgarian state gas importer Bulgargaz awarded its LNG buy tender for one cargo for November delivery to Greece's Revithoussa terminal to Mytilineos and Depa Commercial after receiving offers from eight companies from Europe, Asia and the US. "Within the framework of the conducted procedure, extremely competitive prices were achieved, which will be reflected in the price of natural gas proposed by Bulgargaz for the month of November," the company said.

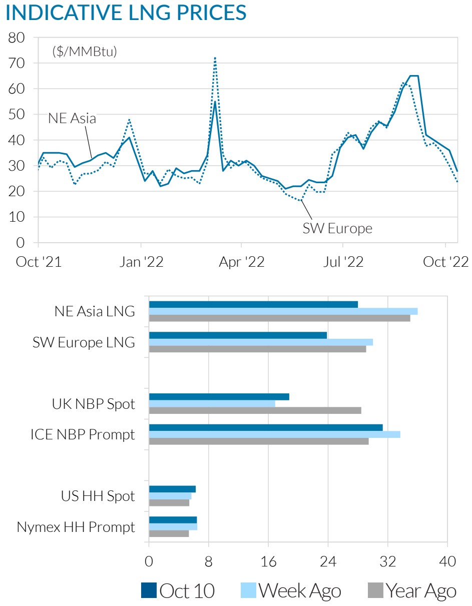
Marc Roussot, Singapore, Daniel Stemler, Madrid

INDICATIVE NATURAL GAS PRICES

($/MMBtu)	Oct 10	Week Ago	Year Ago
NE Asia LNG	28.00	36.00	35.00
SW Europe LNG	23.85	30.00	29.10
UK NBP Spot	18.79	16.92	28.43
ICE NBP Prompt	31.32	33.68	29.44
US HH Spot	6.27	5.69	5.41
Nymex HH Prompt	6.44	6.47	5.35

Source: WGI assessments of spot prices for LNG in NE Asia and SW Europe and for day-ahead gas in the UK. NGW spot assessment for US. All prices are for Mon Oct 10. Note: Dates may vary due to public holidays and availability.

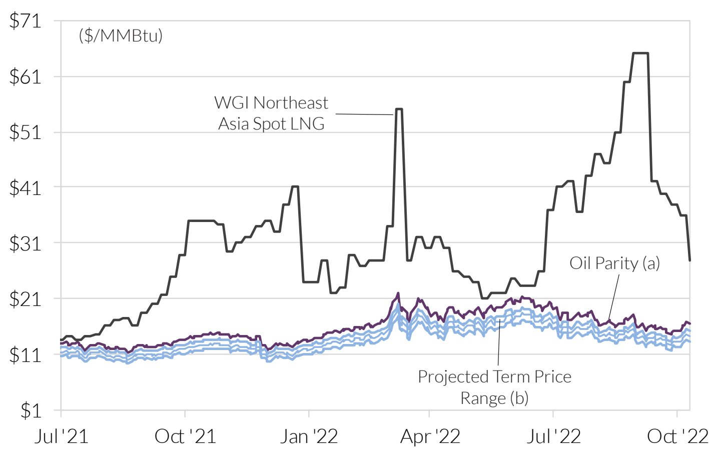
INDICATIVE LNG PRICES



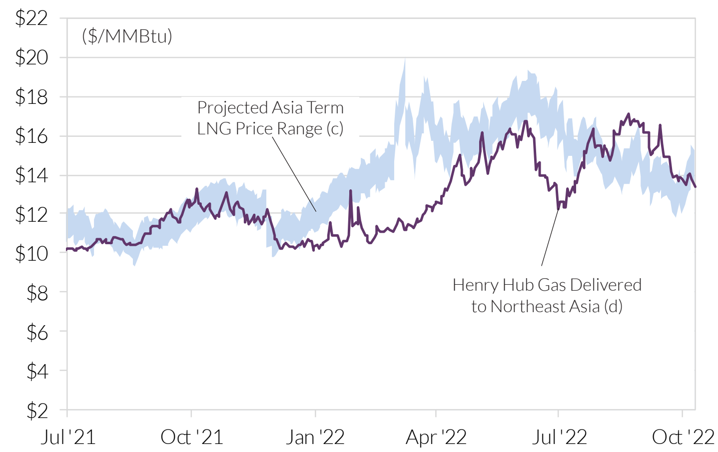
WORLD GAS INTELLIGENCE LNG ANALYTICS

The following graphs provide weekly comparative insights into key LNG market relationships over the previous 12 months, with particular emphasis on the price of competing supplies in Asia and key inter-market price spreads.

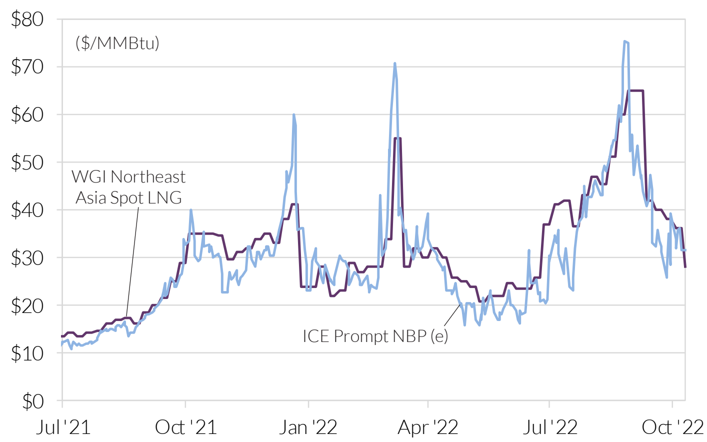
NORTHEAST ASIA SPOT LNG VERSUS ASIA TERM LNG



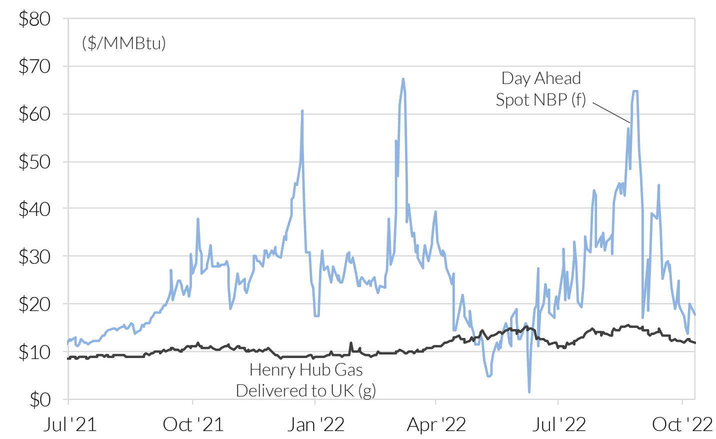
HENRY HUB NE ASIA VERSUS ASIA TERM LNG



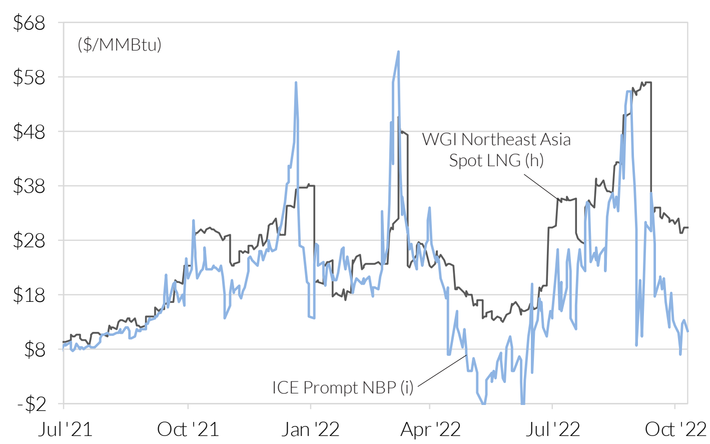
NBP VERSUS NORTHEAST ASIA SPOT LNG



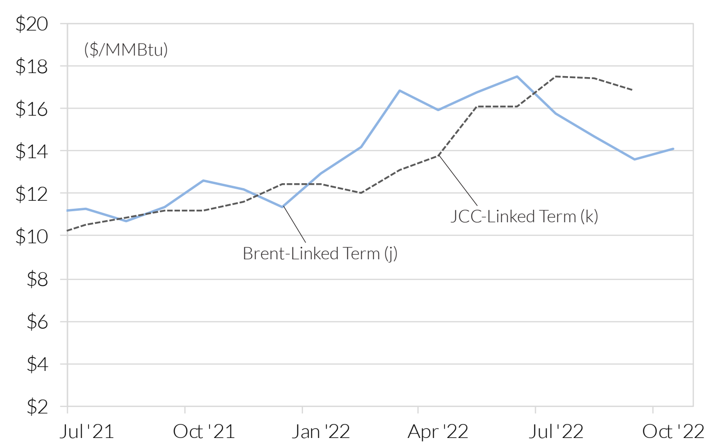
HENRY HUB GAS DELIVERED TO UK VERSUS NBP



REGIONAL PRICE DIFFERENTIALS TO NYMEX HENRY HUB PROMPT



TERM JCC VERSUS TERM BRENT



(a) Oil parity - 17.24% of Brent-Linked Asian Term. (b) Estimated low, middle, and high cases for contract terms: 13.5% of Brent+$0.50, 14.5% of Brent+$0.50, and 14.85% of Brent+$1.00, respectively. (c) Brent-Linked Asian Term LNG, high and low cases. (d) Per Cheniere formula: 115% Henry Hub plus $3.50 for liquefaction and $2.50 for shipping. (e) ICE prompt NBP converted from pence/therm to US$/MMBtu. (f) Thomson Reuters Day Ahead NBP converted from pence/therm to US$/MMBtu. (g) Per Cheniere formula: 115% of Henry Hub plus $3.50 for liquefaction and $1.00 for shipping (h) Northeast Asia Spot vs Nymex Henry Hub Prompt. (i) Day Ahead UK NBP vs Nymex Henry Hub Prompt. (j) Term prices based on current month average against mid-case formula for delivery 3 months later; (k) JCC is Monthly Japan Crude Cocktail Price reported by Japan's Ministry of Finance.

WORLD GAS INTELLIGENCE LNG ANALYTICS

ASIA LNG MARKETS (PRICES IN $/MMBTU, VOLUMES IN '000 TONS)

To Japan/From	Prices Aug'22	Prices YTD	Prices Aug'21	Volume Aug'22	Volume YTD
Angola	-	13.41	-	-	62.34
Australia	19.36	15.67	10.02	2,889.43	20,832.28
Brunei	15.31	13.36	10.03	194.17	2,276.20
China	23.81	23.81	-	57.36	57.36
Egypt	-	16.99	11.59	-	53.21
Equatorial Guinea	-	19.49	-	-	64.18
France	-	-	-	-	-
Indonesia	15.31	19.46	10.54	55.62	1,994.42
Malaysia	18.61	13.85	9.74	940.91	7,962.89
Nigeria	25.19	18.08	8.44	245.89	733.98
Oman	13.06	14.03	9.32	126.21	1,845.20
Papua New Guinea	16.58	16.63	10.38	208.19	2,627.32
Peru	-	19.68	-	-	198.72
Qatar	21.55	18.49	9.98	532.61	2,164.27
Russia	14.92	13.31	11.55	449.69	4,726.38
Singapore	-	14.69	-	-	73.53
Thailand	-	-	-	-	-
Trinidad and Tobago	-	13.15	-	-	108.16
United Arab Emirates	40.33	25.27	10.49	241.32	1,094.87
United States	19.14	19.21	10.64	333.05	3,100.60
Avg./Total	**19.80**	**15.80**	**10.09**	**6,274.42**	**49,975.91**

To China/From	Prices Aug'22	Prices YTD	Prices Aug'21	Volume Aug'22	Volume YTD
Algeria	-	-	-	-	-
Angola	-	-	14.65	-	-
Australia	15.90	13.54	10.38	1,454.94	14,406.76
Belgium	-	41.56	-	-	70.06
Brunei	-	13.70	15.56	-	192.36
Cameroon	-	26.15	13.10	-	71.98
Canada	-	-	-	-	-
China	-	24.31	-	-	0.14
Egypt	-	10.82	-	-	177.66
Equatorial Guinea	-	18.02	9.59	-	213.81
France	-	-	9.41	-	-
Indonesia	15.34	15.31	9.76	423.14	2,535.04
Japan	-	18.30	-	-	0.01
Malaysia	18.23	17.43	8.88	720.56	5,027.01
Netherlands	-	9.12	-	-	58.09
Nigeria	15.16	12.28	11.59	9.97	382.39
Oman	-	24.91	-	-	656.64
Papua New Guinea	15.19	13.43	10.62	212.22	1,761.76
Peru	14.20	13.54	-	62.78	211.01
Philippines	-	-	-	-	-
Qatar	16.25	13.14	10.30	1,040.43	10,010.31
Russia	21.52	18.02	10.99	671.11	3,418.31
Singapore	-	24.91	-	-	61.73
South Korea	-	-	14.07	-	-
Thailand	-	-	-	-	-
Trinidad and Tobago	9.69	10.72	-	57.01	271.84
United Arab Emirates	-	12.02	11.57	-	59.23
United States	15.85	21.81	11.94	68.08	1,054.52
Avg./Total	**16.95**	**14.87**	**10.53**	**4,720.22**	**40,640.65**

To Taiwan/From	Prices Aug'22	Prices YTD	Prices Aug'21	Volume Aug'22	Volume YTD
Australia	34.69	22.12	10.92	621.79	4,638.78
Belgium	-	-	-	-	-
Cameroon	-	-	-	-	-
Egypt	-	-	13.62	-	-
Equatorial Guinea	-	12.69	-	-	114.56
Indonesia	44.04	29.63	11.01	133.10	716.73
Malaysia	-	25.83	12.02	-	337.29
Nigeria	-	12.34	-	-	105.24
Oman	-	30.93	-	-	332.58
Papua New Guinea	26.85	21.69	11.16	150.80	915.41
Peru	16.90	18.82	-	59.20	171.08
Qatar	9.95	8.98	7.46	374.31	3,553.82
Russia	16.88	14.11	7.65	64.03	895.25
Trinidad and Tobago	-	-	-	-	-
United Arab Emirates	-	35.77	-	-	118.23
United States	12.79	12.29	10.67	244.19	1,559.76
Avg./Total	**24.53**	**17.58**	**10.21**	**1,647.41**	**13,458.72**

To S.Korea/From	Prices Aug'22	Prices YTD	Prices Aug'21	Volume Aug'22	Volume YTD
Algeria	-	11.50	-	-	64.11
Angola	-	-	-	-	-
Australia	29.31	21.99	10.33	914.01	7,515.75
Belgium	-	9.63	-	-	194.43
Brunei	-	12.43	-	-	67.30
Cameroon	-	42.84	-	-	73.38
China	-	9.94	-	-	60.16
Egypt	50.17	23.11	-	68.18	342.75
Equatorial Guinea	12.43	14.44	-	60.77	139.57
Indonesia	11.52	15.81	9.26	312.23	1,761.77
Malaysia	19.75	16.97	8.73	427.94	3,519.03
Netherlands	-	-	-	-	-
Nigeria	39.31	18.03	8.16	56.96	426.90
Oman	22.78	18.69	10.88	492.71	3,403.88
Papua New Guinea	-	36.37	16.22	-	146.53
Peru	-	20.35	-	-	636.01
Qatar	16.99	14.53	10.77	773.25	6,358.43
Russia	14.69	14.21	11.72	64.00	1,396.17
Trinidad and Tobago	-	10.45	-	-	58.58
United Arab Emirates	-	40.03	-	-	70.73
United States	26.44	19.23	9.80	655.30	3,712.89
Avg./Total	**22.97**	**18.25**	**10.28**	**3,825.35**	**29,948.37**

Total All Northeast Asia Buyers/From	Prices Aug'22	Prices YTD	Prices Aug'21	Volume Aug'22	Volume YTD
Algeria	-	11.50	-	-	64.11
Angola	-	13.41	14.65	-	62.34
Australia	21.67	16.66	10.27	5,880.17	47,393.57
Belgium	-	18.08	-	-	264.49
Brunei	15.31	13.36	10.40	194.17	2,535.87
Cameroon	-	34.58	13.10	-	145.36
Canada	-	-	-	-	-
China	23.81	16.72	-	57.36	117.66
Egypt	50.17	18.73	12.57	68.18	573.60
Equatorial Guinea	12.43	16.11	9.59	60.77	532.11
France	-	-	9.41	-	-
Indonesia	18.18	18.08	10.02	924.07	7,007.97
Japan	-	18.30	-	-	0.01
Malaysia	18.71	15.81	9.48	2,089.41	16,846.21
Netherlands	-	9.12	-	-	58.09
Nigeria	27.44	16.35	10.39	312.81	1,648.51
Oman	20.80	18.62	10.31	618.92	6,238.31
Papua New Guinea	18.77	16.98	10.78	571.20	5,451.02
Peru	15.51	18.85	-	121.97	1,216.81
Philippines	-	-	-	-	-
Qatar	16.63	13.40	10.00	2,720.60	22,086.83
Russia	18.56	15.04	10.95	1,248.82	10,436.11
Singapore	-	19.35	-	-	135.26
South Korea	-	-	14.07	-	-
Thailand	-	-	-	-	-
Trinidad and Tobago	9.69	11.28	-	57.01	438.57
United Arab Emirates	40.33	26.39	10.84	241.32	1,343.08
United States	21.46	18.36	10.81	1,300.62	9,427.75
Avg./Total	**20.19**	**16.24**	**10.30**	**16,467.40**	**134,023.64**

To Singapore/From	Prices Aug'22	Prices YTD	Prices Aug'21	Volume Aug'22	Volume YTD
Angola	-	24.82	-	-	70.36
Australia	15.91	16.34	12.56	208.77	1,508.21
Belgium	-	38.25	-	-	73.31
Egypt	-	18.99	-	-	61.40
Equatorial Guinea	-	15.84	-	-	71.58
France	-	-	-	-	-
Indonesia	-	-	-	-	-
Malaysia	-	16.41	-	-	79.89
Nigeria	-	18.56	-	-	4.07
Oman	-	-	-	-	-
Peru	-	16.32	-	-	4.05
Philippines	-	-	-	-	-
Qatar	10.97	12.70	-	59.09	276.73
Russia	-	17.07	-	-	68.10
South Korea	-	22.15	-	-	0.48
Trinidad and Tobago	16.50	16.50	-	67.81	67.81
United Arab Emirates	-	49.32	-	-	0.01
United States	56.70	30.80	10.36	66.28	279.59
Avg./Total	**22.01**	**18.46**	**12.06**	**401.95**	**2,565.58**

To Thailand/From	Prices Aug'22	Prices YTD	Prices Aug'21	Volume Aug'22	Volume YTD
Algeria	-	20.64	-	-	68.69
Angola	-	26.31	-	-	65.50
Australia	35.12	25.83	-	206.16	1,208.15
Brunei	-	32.60	8.05	-	127.95
China	25.71	25.71	-	56.21	56.21
Egypt	-	10.51	-	-	62.01
Equatorial Guinea	-	10.51	-	-	72.92
Indonesia	-	33.18	-	-	79.82
Malaysia	12.29	15.72	8.48	63.32	1,088.58
Nigeria	-	18.83	7.99	-	185.70
Oman	41.62	29.00	8.24	127.28	443.75
Papua New Guinea	48.67	48.67	-	34.19	34.19
Qatar	17.46	15.90	10.46	93.17	1,520.36
Trinidad and Tobago	-	11.73	-	-	350.37
United Arab Emirates	40.62	40.62	-	66.04	66.04
United States	-	25.79	-	-	342.64
Avg./Total	**32.08**	**20.61**	**9.13**	**646.37**	**5,772.89**

To India/From	Prices Jul'22	Prices YTD	Prices Jul'21	Volume Jul'22	Volume YTD
Angola	-	12.92	9.20	-	540.89
Australia	15.79	15.79	-	72.41	220.32
Belgium	-	12.55	-	-	134.62
Cameroon	-	11.43	-	-	376.04
Egypt	-	16.28	8.72	-	171.76
Equatorial Guinea	-	12.83	-	-	143.33
France	39.64	39.64	6.67	70.61	70.61
Malaysia	-	11.21	4.25	-	65.08
Nigeria	14.36	19.59	13.77	201.96	865.65
Oman	18.70	15.76	9.78	133.54	461.93
Qatar	18.72	14.92	9.83	889.68	6,514.69
Russia	-	10.21	-	-	65.76
Spain	-	-	8.67	-	-
Trinidad and Tobago	12.87	12.87	6.05	53.83	53.83
United Arab Emirates	19.16	20.66	7.18	249.70	1,789.24
United States	19.62	15.67	9.16	277.02	1,263.16
Avg./Total	**18.94**	**16.03**	**8.87**	**1,948.74**	**12,736.92**

To Malaysia/From	Prices Aug'22	Prices YTD	Prices Aug'21	Volume Aug'22	Volume YTD
Australia	14.00	13.21	-	209.31	708.66
Brunei	13.55	12.42	8.43	84.88	339.14
Indonesia	-	18.83	-	-	0.25
Nigeria	-	-	-	-	-
South Korea	3812.23	3812.23	-	-	-
Avg./Total	**13.87**	**12.96**	**8.43**	**294.19**	**1,048.05**

Official statistics, companies. Both Japanese and Korean prices are c.i.f., before regasification. Yen exchange rate to the dollar was 135.35 for Aug 2022, 136.64 for Jul 2022, 134.14 for Jun 2022, 129.79 for 2022, and 109.78 for 2021