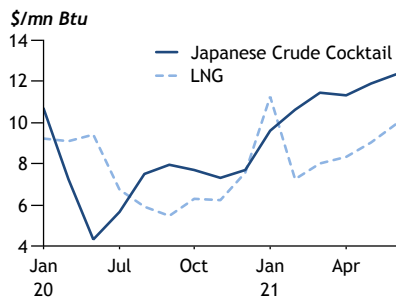


Regulatory and investor concerns might prolong the pause in development triggered by last year's low LNG prices

Japanese LNG vs crude



Key price points	\$/mn	
	Jul	Aug
Zeebrugge gas month-ahead	10.17	12.47
US Nymex month 1	3.21	3.78
China LNG import price	9.98	11.46
Japanese Crude Cocktail	13.05	na
Japanese LNG import price	9.92	10.20

– Markets and data pp13-28

CONTENTS

Australia restarts developments	2-3
Qatari exports near five-year low	4
Wide US-world price gap: Tellurian	5
Feedgas for Sabine Pass train 6	6
Trinidad's Atlantic in critical talks	7
China gets storage and supply boost	8
China to rely less on LNG by 2025	9
Japan destination clauses in retreat	10
Petrobras, Excelebrate sign deal	11
Call to regulate carbon-neutral LNG	12

LNG producers cautious despite price surge

Surging gas prices may not be enough to spur a revival in LNG investment, as policy makers send conflicting signals over gas demand during the energy transition.

Leading industry executives say underinvestment in LNG capacity is already exacerbating supply tightness, adding support to a surge in global gas prices ahead of the northern hemisphere winter, and that policymakers in key consuming countries could make barriers to investment even higher by raising uncertainty over the role of gas alongside renewables in the energy transition.

Qatari energy minister Saad Sherida al-Kaabi hopes that the current market tightness and higher prices will not continue in the long term as they harm consumers, although the low prices seen during last year's Covid-19 slump dented investments, he said on the sidelines of the Gastech conference in Dubai in September. "We don't want \$2/mn Btu and we don't want \$20/mn Btu. We don't think this is a crisis, but I don't think it is something we want to [see in the] long term, and we want to see more reasonable prices," he said.

Qatar has kept on track its own plans for a massive \$28.75bn investment in [expanding its LNG capacity to 110mn t/yr by 2025](#), from 77mn t/yr now, with state-owned Qatar Energy – formerly QP – planning to award construction contracts in the first quarter of 2022 for two further trains to take total Qatari capacity to 126mn t/yr by 2027. The design of these includes carbon capture facilities, with Qatar aiming to reinject 9mn t/yr of CO₂ by 2030, al-Kaabi says.

Leading [US and European energy firms are still waiting to hear](#) whether they will win a combined stake of up to 30pc in the first phase of the expansion, to gain access to what Qatar touts as the world's lowest-cost, lowest-carbon intensity gas resources, and those best placed to compete in the energy transition.

But al-Kaabi and UAE oil minister Suhail al-Mazrouei also say governments need to explain to consumers the potential cost of that transition if it accelerates a shift in demand away from gas towards zero-carbon alternatives. "I don't think anyone is talking about that cost association," al-Mazrouei says. "We're already convinced that the transition is happening, and more of us are supportive of that transition. But I think we need to be honest with consumers." Using hydrogen for power generation could cost two to five times as much as gas, al-Kaabi says. "Who's going to pay that gap? It's either the government is going to make you pay more taxes, or the consumer base [pays more]. Somebody has to pay."

In the meantime, the recent lull in investment in liquefaction facilities has stoked concerns that the market will stay tight in the coming years. Low LNG prices for most of last year have made people "shy away from additional investments", al-Kaabi says. Only one project reached a final investment decision (FID) in 2020 – the 3.25mn t/yr Energia Costa Azul on Mexico's Pacific coast. Besides the Qatari expansion, no new LNG projects have been approved this year, although [two Australian backfill projects have got the green light](#).

A number of US FIDs expected for this year have already been delayed to 2022, with some capacity plans scaled down and some operators struggling to finalise commercial deals to underpin investment. Other LNG export projects in [Mozambique](#) and Indonesia have been pushed back even further because of increased uncertainty over investment conditions.

AUSTRALIA

Firms are reviving projects, but now have to deal with investors' demands for smaller carbon footprints, writes Kevin Morrison

Australia restarts developments, faces new challenge

LNG developments in Australia that were deferred last year because of the impact of Covid-19 on energy demand and prices have now restarted. But future developments are complicated by the merger of Australia's largest upstream operations and greater investor and consumer scrutiny of greenhouse gas (GHG) emissions associated with gas projects.

The sanctioning in April of the \$3.6bn Barossa gas backfill project that will feed Australia's 3.7mn t/yr Darwin LNG venture operated by Australian independent Santos was the first of the LNG-related projects to go ahead after last year's deferrals. When Barossa starts in 2025, it will replace gas supply from the Bayu Undan field in the Timor Sea.

The development of Barossa was preceded by a smaller backfill gas project. Japanese trading house Mitsui and its 50:50 partner in Western Australia's (WA) onshore Waitsia gas project, Australian independent Beach Energy, gave the go-ahead in December 2020 for Waitsia's second stage, which will provide backfill to WA's offshore 16.3mn t/yr North West Shelf (NWS) LNG venture, operated by Australian independent Woodside Petroleum. Waitsia will provide around 7.5mn t/yr of gas feedstock for five years from 2023.

Price isn't everything

Go ahead for Barossa and Waitsia stage two came ahead of the surge in global oil prices and spot LNG values, which are higher than upstream firms had forecast when they deferred the gas feedstock projects last year. Ice Brent futures for December delivery settled at \$83.40/bl on 12 October, down from a three-year settlement high of \$84.14 on 11 October. By contrast, Australian upstream firms were factoring in scenarios that involved operating for two years with crude prices at \$35-50/bl.

The sanctioning of the other significant LNG project that was deferred last year – the 13 trillion ft³ (368bn m³) Scarborough development in the Carnarvon basin, offshore WA, that will provide feedstock for a new 5mn t/yr train at the 4.3mn t/yr Pluto LNG venture operated by Australian independent Woodside Petroleum – is expected to be announced by the end of this year. Scarborough is also earmarked to provide backfill for the existing LNG train at Pluto and NWS.

The timing of a final investment decision (FID) has become more complicated following the merger of Scarborough's two partners, Woodside and the petroleum arm of BHP, which are also Australia's two largest oil and gas producers. Woodside has been the most enthusiastic of the two in developing Scarborough and will own 100pc of the project, but at the same time is looking to sell down its stake in Scarborough and a stake in the second Pluto train.

GHG focus

Attracting potential investors is increasingly challenging now that they are demanding upstream firms do more to lower their carbon footprint and transition to a less emissions-intensive energy system. This makes it more difficult for infrastructure investors to justify investments in fossil fuel-based projects that have no meaningful pathway to reducing emissions.

Woodside still plans to approve Scarborough by the end of the year. It deferred the Browse gas project twice last year— initially until the end of this year and then again to 2023.

The company hopes the extra time will allow it to work on carbon capture and storage (CCS) concepts for the three Browse gas fields – each of the fields has a high CO₂ content.

Projects in development/planning			
Gas project (first gas)	LNG project	Operator	Output
Barossa (2025)	Darwin LNG	Santos	3.7mn t/yr
Waitsia 2 (2023)	NWS LNG	Beach/Mitsui	250 TJ/d
Scarborough (2026)	Pluto 2, backfill NWS and Pluto 1	Woodside	8mn t/yr
Browse gas (2028)	NWS LNG	Woodside	12mn t/yr
Surat gas (2021)	QCLNG	Shell/PetroChina	2.55bn m ³ /yr

– Santos, Woodside, Shell and Mitsui

AUSTRALIA

Woodside chief executive Meg O'Neill told *Argus* in August that Browse will require a CCS component in the 30-year project lifespan, as Woodside has pledged to achieve net zero GHG emissions by 2050. The Brecknock, Calliance and Torosa fields have an average CO₂ content of 10pc and expected emissions of 8.8mn t/yr.

"Browse has a carbon challenge in a world that is increasingly focused on decarbonisation, which has challenged the Browse team to really understand what they could do to mitigate that carbon impact," O'Neill told *Argus* in August. "So there is more work on the carbon front. Then there are still some commercial discussions to happen between Browse and NWS [LNG]."

Santos is also looking at building out CCS at Barossa. The field has a carbon content of 18-19pc and is expected to produce 3.4mn t/yr of CO₂ equivalent (CO₂e) through extraction and a further 2mn t CO₂e/yr from processing the gas into LNG. Santos aims to reach net zero GHG emissions by 2040, so it will have to store CO₂ from Barossa to achieve this.

Santos plans to convert the Bayu-Undan field into a depository for CO₂, and the plan has the agreement of East Timor, which jointly administers this region of the Timor Sea with Australia. If Bayu-Undan is converted to a CCS field, it could store CO₂ from Barossa as it is much closer than Santos' other CCS project, at Moomba in South Australia's onshore Cooper basin.

Industry consolidation

Santos is in a merger too, but the transaction is not expected to affect the firm's Australian LNG plans. It will be the major partner in the A\$21bn (\$15.3bn) merger with fellow Australian independent Oil Search, which does not have any operations in Australia. Oil Search has production assets in neighbouring Papua New Guinea (PNG) and Alaska.

Upstream consolidation in Australia has been partly driven by the energy transition. Larger oil and gas producers have the clout to finance their own projects in the face of growing investor reluctance to fund fossil fuel projects. At the same time, countries that buy Australia's LNG have pledged to achieve net zero GHG emissions – Japan and South Korea by 2050, and China by 2060.

Securing backfill for NWS LNG and Darwin LNG heralds the next phase for Australia's two oldest LNG projects. Woodside has warned that if further backfill projects are not signed in the coming year, it may have to consider shutting down some of the five trains at NWS.

There is no talk of expanding any of the seven LNG projects approved in Australia between 2009 and 2012. The largest of these, the 15.6mn t/yr Gorgon LNG venture operated by Chevron, has [given the go-ahead to the \\$4bn Jansz-lo gas compression project](#) in Australia to access low pressure reserves at the field, which already supplies feedstock to Gorgon. Chevron has regulatory approval for a fourth train at Gorgon, but it no longer talks about an additional train at what is its largest LNG venture.

Shell and state-run PetroChina's decision last year [to go ahead with a 90bn ft³/yr \(2.55bn m³/yr\) project](#) in Queensland's onshore Surat basin is another sign that feedstock once earmarked to underpin capacity expansion will instead be used to keep existing trains running. The Surat project will provide gas for the Shell-operated 8.5mn t/yr Queensland Curtis LNG (QCLNG).

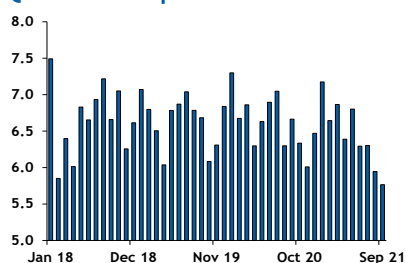
The Australian government last year also unveiled a gas-led economic plan to stimulate growth by encouraging investment in early-stage projects, such as exploration in the onshore Beetaloo basin in the Northern Territory. Analysts have said this only makes sense if Beetaloo is focused on LNG exports, given the relatively small size of eastern Australia's gas market.

Countries that buy Australia's LNG have pledged to achieve net zero GHG emissions – Japan and South Korea by 2050, and China by 2060

QATAR

The drop might have been caused by pre-winter maintenance, writes Ellie Holbrook

Qatari LNG exports mn t



Qatari exports approach five-year low in September

LNG exports from Qatar's 77mn t/yr Ras Laffan complex fell to their lowest in nearly five years last month, while September marked the fourth consecutive month that Qatari loadings have fallen from a year earlier.

Qatar loaded 5.76mn t of LNG last month, down from 5.94mn t in August and 6.66mn t a year earlier, preliminary ship tracking data from oil analytics firm Vortexa show. Volumes from Ras Laffan were previously lower in November 2016, when the facility exported 5.72mn t. Monthly loadings have consistently fallen on the year since June and averaged 6.46mn t/month in January-September – just above nameplate capacity of 6.41mn t/month, but down from 6.74mn t/month across the same period a year earlier.

Lower output from Qatar in recent months comes amid record-high spot LNG prices and increased demand, with the drop in Qatari exports possibly the result of regular maintenance activities that Qatargas typically carries out ahead of the winter. The country's energy minister, Saad Sherida al-Kaabi, said last month that LNG production at the Ras Laffan complex is running at nameplate capacity, and that Qatar has not changed its maintenance schedule.

A larger share of Qatari LNG was shipped to Asia-Pacific last month – at 75.7pc of the total volume, up from around 70.8pc in August and 71.2pc a year earlier. India received the most Qatari LNG last month, at 877,000t, while South Korea imported 868,600t and Japan took 834,600t. But spot demand from India has waned in recent weeks amid the high price environment, with several spot tenders left unawarded.

Stronger exports to Asia-Pacific left Qatar with less LNG to deliver to Europe. Qatar's flows to Europe in September accounted for a 20.6pc share, down from 24pc in August and 25.4pc a year earlier. Belgium was the largest recipient of Qatari cargoes in September, receiving 284,000t, followed by Italy with 263,000t. Spain and France took 161,000t each.

Qatar, CNOOC sign 15-year LNG term deal

State-owned Qatar Energy – formerly QP – has signed a long-term agreement to supply China's state-owned CNOOC with 3.5mn t/yr of LNG.

Under the deal, Qatar Energy will supply 3.5mn t/yr to CNOOC over a 15-year period, starting in January 2022. The contractual volume is equivalent to around 4.5 standard-size LNG cargoes a month, although Qatar typically ships its LNG on larger vessels.

Qatar Energy has signed eight term deals that will start in 2022 over the past couple of years, covering a total of 16.6mn t/yr. Part of these deals may replace existing agreements expiring at the end of this year, for a combined volume of 9.2mn t/yr, suggesting the firm may increase its term sales by approximately 7.8mn t/yr.

Qatar plans to boost liquefaction capacity at its 77mn t/yr Ras Laffan complex to 110mn t/yr by 2025. About 76.15mn t/yr of Ras Laffan production is contracted under long-term deals, but some of the firm's agreements have substantial volume flexibility.

Qatari energy minister Saad Sherida al-Kaabi said last week that Qatar Energy does not adjust maintenance schedules to boost production.

The company is finalising engineering work on its further expansion at Ras Laffan to 126mn t/yr by 2027 as part of its North Field South project. Construction contracts will be signed in the first quarter of next year, al-Kaabi said.

US

Souki also criticised short-sighted energy policies globally, writes Haik Gugarats

'If we build the infrastructure, we get energy at a reasonable price for the rest of the world' – Tellurian chairman Souki

Tellurian chief sees wide US-world gas price gap

US natural gas prices are likely to decline next year with projected upstream growth, but the country's export capacity is insufficient for exploiting substantial price differentials with the rest of the world, LNG developer Tellurian's chairman, Charif Souki, says.

"US exports are now operating at full capacity," Souki told an audience at Washington thinktank the Center for Strategic and International Studies. "We will probably add another 4bn-5bn ft³/d (112mn-140mn m³/d) [of gas output] and there is no market for it, so prices will come back down after winter." US marketed natural gas production is to rise by 3.7bn ft³/d to 103.5bn ft³/d in 2022, according to the US Energy Information Administration's (EIA) latest short-term outlook.

Souki, who launched the first successful US LNG export project a decade ago as then-chief executive of Cheniere, said the price rally currently causing consternation across major gas-consuming countries was inevitable. A long period of relatively low gas prices has lulled the market and policymakers into complacency, he says. Compounding the issue are energy policies pursued by governments around the world that are "equivalent to a prayer": "We are hoping for a warm winter around the world. And that's the energy policy of the world today."

US LNG exports averaged 9.6bn ft³/d in January-June, according to the EIA. "The only limitation for the US is infrastructure," Souki said. "If we build the infrastructure, we get energy at a reasonable price for the rest of the world." But in his current position at Tellurian, Souki said he found it difficult to sign up customers, including from China and other countries that are experiencing a sharp demand-driven increase in prices.

"We gave them an opportunity, as you know, to come and actually own gas resources that would have made their gas affordable for the next 30 or 40 years," Souki said. "And you saw how well we did with this."

Tellurian's business model involves investing in upstream capacity to secure its own supply for the 27.6mn t/yr Driftwood LNG project in Louisiana it proposes to build. The company has signed contracts with Shell and trading firms Vitol and Gunvor totalling 9mn t/yr, but is yet to make a final investment decision on the project. An earlier deal with TotalEnergies was terminated after the terms were deemed inconsistent with subsequent offtake agreements signed by Tellurian.

The horror, the horror

The big gap between US and global LNG prices is allowing US exporters to cash in, but it is also likely to result in a political backlash, Souki said. "I am horrified by the fact that Tellurian is going to make too much money because politically it is not exactly acceptable." LNG exporters are interested in stable prices because "you know what is going to happen, we are going to be called pandemic profiteers or something like this, and I am horrified at that thought".

The increase in US domestic natural gas prices has already inspired the US industrial sector to renew its case against allowing LNG exports. "Some have recently tried to suggest that LNG exports are the singular cause of the current increase in domestic natural gas prices," industry group Center for Liquefied Natural Gas said in a letter to energy secretary Jennifer Granholm last month. The group urged President Joe Biden's administration to reject "hyperbole and fear" in energy policy discussions.

In light of the administration's climate agenda, LNG exports are a "very significant part of what happens in the rest of the world", Souki said. "What are we going to do about our critical position [as a top gas producer]? Are we going to keep it for ourselves, or are we going to share it with the rest of the world?"

US

Cheniere's new train could load its first cargo by the end of this year, writes Konstantinos Pitsilis

Ferc authorises feedgas to Sabine Pass train 6

The US Federal Energy Regulatory Commission (Ferc) has authorised the introduction of feedgas to the sixth 5mn t/yr liquefaction train at the Cheniere-operated Sabine Pass LNG terminal.

Ferc authorised the introduction of feedgas for the commissioning of “certain portions” of train 6, as requested by Cheniere. The project developer requested that the authorisation be granted no later than 21 September to ensure the train’s commissioning schedule remains on track.

Train 6 was expected to begin production by the end of this year, barring any downtime during the hurricane season, Cheniere announced in May. The facility has not experienced major disruptions recently, with both Hurricane Ida and tropical storm Nicholas having little impact on operations.

The introduction of feedgas suggests that the new unit might be able to load its first cargo before the end of the year. The third 5mn t/yr liquefaction train at the Cheniere-operated Corpus Christi liquefaction facility in Texas [exported its first full cargo in early December 2020](#), after the facility [began receiving feedgas in late September](#).

Calcasieu Pass nearly complete

Separately, US operator Venture Global is about to start commissioning its 10mn t/yr Calcasieu Pass export project, the firm’s chief commercial officer, Tom Earl, said on 22 September.

LNG production at the new terminal in Louisiana “will start shortly”, Earl said at last month’s Gastech conference in Dubai.

Venture Global requested permission from Ferc in April to bring into service the 23.4 mile (38km) TransCameron pipeline, which will supply gas to Calcasieu Pass, from 7 April.

Venture Global issued a tender during February, offering 12 fob LNG cargoes for loading between October 2021 and September 2022, suggesting Calcasieu Pass could load its first cargo this month. This would be ahead of the firm’s scheduled start-up in late 2021 or early 2022.

And construction at the company’s planned 24mn t/yr Plaquemines LNG plant – its second site in Louisiana – will start “imminently”, Earl revealed, adding that some preparation work on the site has already started. Venture Global has yet to reach a final investment decision on Plaquemines, although this is expected by the end of the year.

Cameron LNG eyes FID on expansion project in 2022

A final investment decision (FID) on the US’ Cameron LNG expansion project will be taken before the end of next year.

The project would add a 6mn t/yr fourth liquefaction train, increasing the terminal’s overall LNG export capacity to around 21mn t/yr.

US operator Semptra Energy had originally planned to add two 5mn t/yr liquefaction trains to the three similarly-sized existing trains at Cameron LNG, but decided to downscale the planned expansion [earlier this year](#). The fourth train will be the “most optimised train” at the facility, allowing Semptra to debottleneck the existing three trains, the firm said in June.

Another US expansion project – the third stage of Cheniere Energy’s Corpus Christi facility in Texas – is expected to be given the go-ahead next year, the project developer said in August.

TRINIDAD AND TOBAGO

Talks about Atlantic's future are at a critical stage, but Trinidad hopes a series of upstream projects can revive the firm's flagging output, writes Canute James

Atlantic faces make-or-break talks

Trinidad and Tobago's beleaguered LNG producer, Atlantic, has seen its output slump amid a [natural gas supply shortage](#). It is working with the government on a crucial restructuring to ensure the facility's commercial viability, according to major shareholders Shell and BP.

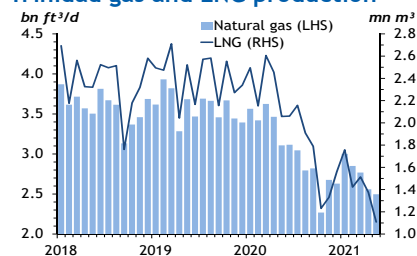
The 14.8mn t/yr Atlantic complex at Point Fortin has been beset by chronic feedstock curtailments that led to the mothballing of the oldest of its four trains in December, taking down a fifth of capacity, while Covid-19 has exacerbated its commercial challenges. Trinidad's LNG production of 1.1mn m³ (450,000t) in May was down by 19pc from April, and marked the lowest monthly output in 18 years, according to the energy ministry. Gas output in January-May fell by a fifth from a year earlier to 2.73bn ft³/d (76mn m³/d).

The disparate ownership structure of each of Atlantic's trains, and demands from other industrial gas users, have complicated feedstock allocation since Trinidad's gas production started falling over a decade ago. Train 1 was closed after BP – the country's biggest gas producer that supplies all the feedstock for the unit – said an infill drilling project had underperformed.

And an earlier preliminary gas supply deal with neighbouring Venezuela that would have rejuvenated Trinidad's gas-based industries failed to materialise despite Shell's participation in the energy chain. Trinidad's Port of Spain planned to import 150mn ft³/d of gas from Venezuela's offshore Dragon field to help address its domestic shortages. This would have involved the delivery of gas to Shell's Hibiscus platform in Trinidad's east coast marine area, linking up with Trinidadian state-owned NGC's distribution network. Once up and running, supplies were supposed to have increased to 300mn ft³/d.

Shell last year decided to proceed with the [development of Trinidad's portion](#) of the 10.25 trillion ft³ (285bn m³) Loran-Manatee gas field, which it shares with Venezuela, without the involvement of state-owned PdV.

Trinidad gas and LNG production



Complex future

"Discussions about the future of Atlantic are very complex," the energy ministry tells *Argus*. "At one level, the shareholders have to reach an agreement that will allow a unified operation, and then a decision has to be made as to whether train 1 will be reopened – with all of this dependent on the availability of natural gas."

Negotiations on Atlantic's future are "at a critical and sensitive stage", Trinidad's state-owned NGC says. NGC and Chinese state-owned fund Summer Soca are minority shareholders in Atlantic.

Atlantic's offtakers have so far not felt any effect from the shut-in capacity. "Restructuring will enable longer-term investments in the upstream sector and in Atlantic," says Shell, which holds an average 53pc interest in the complex. BP, which holds an average 39.2pc stake, is seeking "a competitive energy sector that can continue to attract the investments required to keep the production profile needed to satisfy downstream and LNG demand."

Neither Shell nor BP have commented on reports of disagreements among the partners over the financial arrangements needed to keep the operation afloat.

Trinidad has been pinning its hopes on a series of [domestic upstream projects](#) to revive its flagging output. Shell in July started producing gas at the Barracuda project in the east coast marine area. UK-Australian firm BHP's Ruby development, followed by BP's Matapal and Cassia compression projects in mid-2022, are expected to add to Trinidad's production profile. Shell also expects first gas from the 250mn ft³/d Colibri development in the north coast marine area next year.

CHINA

Imports and production have risen as Beijing moves to ensure there is enough gas to cover winter heating demand

The country has a range of gas supply options at its disposal to ensure it is not overly reliant on a single source

Gas storage and supply boost for China

China has accelerated gas purchases and storage ahead of winter as the country prioritises meeting its heating needs.

Firm economic growth in the immediate aftermath of the country's initial Covid-19 outbreak last year, coupled with the Beijing Winter Olympics in February 2022, has spurred the central government to shore up gas stocks following a coal shortfall that has prompted electricity rationing in some provinces.

Gas consumption in China could hit 365bn-370bn m³ this year, compared with 328bn m³ in 2020, according to forecasts from China's national energy administration. This has raised concerns among Chinese LNG buyers about supply security during the heating season, with higher spot LNG prices and tighter coal supplies.

Beijing is ensuring that the country has sufficient gas supply even before the start of winter. Natural gas production in January-August totalled 136.1bn m³, up by 10.8pc on the year. Imports for the same period rose even more rapidly, by 22.2pc to 79.31mn t, or 109.4bn m³ equivalent.

City gas accounts for a relatively small percentage of China's total gas consumption – 10bn-12bn m³/yr, according to data from China's main economic planning agency the NDRC. Domestic production is more than enough to cover this, the Beijing Gas Group Research Institute's deputy director, Bai Jun, says.

But a colder than expected winter could affect gas demand and is something that will require constant monitoring, market participants say. China has increased storage capacity as much as it can before winter. Underground gas stocks hit a record high of 14.4bn m³ before the start of winter 2020-21, 4bn m³ higher than before winter 2019-20. Stocks were already at 80pc of capacity in August 2021, data show.

State-controlled PetroChina's Tangshan terminal in Hebei province, private-sector ENN's Zhoushan terminal in Zhejiang province and state-controlled Sinopec's Qingdao terminal in Shandong province have also added an additional 1.28mn m³ of LNG storage capacity this year.

The third phase of PetroChina's Rudong terminal has been operational since 27 September, adding another 400,000m³ of LNG storage.

Multi-pronged approach

China has a range of gas supply options at its disposal to ensure it is not overly reliant on a single source. Aside from ensuring sufficient storage capacity, the government is boosting pipeline imports and increasing domestic production.

Russian pipeline gas imports this year are expected to increase by about 5.91bn m³ to 10bn m³, based on term contract volumes. Domestic gas production will also be strong and maintain a growth rate of about 10pc this year, Bai says.

China's domestic natural gas production this year should hit 210bn m³, in line with the targets set out in the 2021 gas development report. For China's gas production to reach 230bn m³ by 2025, domestic gas production this year will need to exceed 200bn m³.

China's LNG imports in September-December could total 37.4bn-39.6bn m³, up from 34bn m³ a year earlier, assuming that the country's LNG-pipeline gas proportion is unchanged from January-August and its pipeline volumes are similar to last year – except those from Russia. Imports accounted for 44.5pc of China's total gas supply in January-August. Pipeline imports during September-December last year totalled an equivalent 11.635mn t (16.05bn m³), according to customs data.

China's combined pipeline and LNG receipts were 10.6mn t in September, according to Chinese customs data, up from 8.66mn t a year earlier. A breakdown of supply by type was not yet available.

CHINA

Aggregate gas demand will grow steadily until 2030 but LNG's share of supply will fall, writes Samuel Good

China may rely less on LNG by 2025: CNPC

Growth in Chinese domestic gas production and imports of gas by pipeline between now and 2025 are set to squeeze the country's LNG imports as a share of total supply, forecasts by state-owned CNPC suggest.

The country's aggregate gas demand will continue growing steadily over the course of the coming years, reaching 450bn-480bn m³/yr by 2025 and some 550bn-580bn m³/yr by 2030, vice-president of CNPC's economics and technology research institute, Jiang Xuefeng, told the LNG producer consumer conference on 5 October. Aggregate demand in 2020 was around 331bn m³, judging by customs data and figures released by China's statistics bureau.

But LNG imports should account for just 20pc of the country's total supply by 2025, Jiang said, with stronger domestic output and pipeline imports set to bear the brunt of the additional demand. This would be equivalent to 89bn-93bn m³/yr of gas imports as LNG.

Domestic gas production should reach 250bn-260bn m³/yr by 2025, representing around 56pc of the country's total gas supply, while pipeline gas imports are set to make up a further 24pc of supply, Jiang said. This would put pipeline exports at 107bn-111bn m³/yr.

But the supply mix that was outlined by Jiang would total around 446bn-464bn m³/yr. This is slightly short of the aggregate demand projections, which suggests that there would be a greater reliance on LNG imports to meet a shortfall in less flexible domestic production and pipeline imports during periods of stronger Chinese gas demand.

Increasing storage capacity could also reduce China's call on the LNG market to meet winter demand peaks. The country has expanded its storage facilities considerably in recent years – although the 14.4bn m³ currently in operation is still a small proportion of overall Chinese demand.

The CNPC projections would represent a significant shift in where China gets its gas supply by the middle of this decade – most notably a sharp reduction in LNG's share of the supply mix.

In any event, China plans to increase its aggregate regasification capacity to around 190mn t/yr in import capacity, Jiang said – which would be more than double the existing capacity. China's aggregate LNG import capacity is expected to reach around 93.3mn t/yr next month, once the expansion of the Tianjin terminal is completed.

Unchanging imports

Domestic gas production in 2020 totalled approximately 190.5bn m³/yr, according to data from China's statistics bureau – 59.5bn-69.5bn m³/yr less than is expected by the middle of this decade. Customs data show pipeline imports totalling 34.5mn t, or around 47.7bn m³, last year. And China imported a further 67.3mn t of LNG during 2020, or 92.9bn m³ of pipeline-equivalent volumes.

But the 2025 expectations suggest that LNG imports by the middle of this decade could be little changed from 2020, while their share of the supply mix is set to fall to 20pc, from around 28pc last year. Domestic gas production's share of total supply is also set to fall slightly, to 56pc from 57.4pc, although pipeline gas' proportion is set to jump by around 9.5 percentage points to 24pc, from 14.5pc last year.

Much of the increase in pipeline gas supply is expected to come from the **38bn m³/yr Power of Siberia pipeline** that links Russian fields with Chinese markets. The Power of Siberia line is scheduled to reach full nameplate capacity by 2025. Russian pipeline flows to China were around 4.09bn m³/yr last year.

JAPAN

Contracts without destination clauses allow the resale of LNG cargoes, meaning buyers can offload surplus supplies, writes Reina Maeda

Japan LNG contracts, 2020-21						
	After 2017		Before 2017		Total volume	
		%		%		%
With destination clause	5	22	45	71	50	58
Without destination clause	18	78	18	29	36	42
Total volume	23		63		86	

LNG destination clauses in retreat

Term LNG contracts with destination clauses have become less common between Japanese buyers and overseas producers since the country's anti-monopoly watchdog the Japan Fair Trade Commission (JFTC) released a review of the practice in June 2017.

Only 22pc, or 5mn t, of newly signed or revised sales and purchase agreements were covered by destination clauses after the JFTC review of LNG contracts for the fiscal year ending 31 March 2021, according to a survey of Japan's 22 LNG buyers by state-owned energy agency Jogmec. This compared with 71pc, or 45mn t, of contracts before the JFTC review.

Destination clauses prevent the resale of cargoes, so Japanese LNG buyers are not able to offload the term LNG supplies they do not need. But destination clauses in term contracts are becoming less common, in line with increased US LNG shipments that allow cargoes to be shipped freely to any destination. The JFTC and Japan's trade and industry ministry have argued for an end to or the relaxation of destination clauses because of their impact on LNG supply security and increased liquidity.

Japan imported 76.4mn t of LNG in 2020-21, which was about 10mn t less than the total volume of term contracts it held for the fiscal year.

Jogmec last month failed to post prices for spot LNG contracts agreed during August as the survey failed to meet its methodology. It requires at least two deals to be concluded by two companies each month. The reason for the failure to post spot prices was ample supplies. LNG inventories across Japan have held high on the back of term contracts and weaker demand. The country's LNG buyers currently have no space for spot purchases, Jogmec said.

JAPAN

Receipts from most regions rose, although Russian imports fell, writes Reina Maeda

LNG imports rise in August

LNG imports in August rose by 7.8pc from a year earlier and by 1.8pc from July to 6.3mn t. Forecasts of hotter than normal weather created additional requests by Japanese utilities for cargoes.

Japan upped its take from most regions in August. Imports from the Middle East rose by 25.2pc from a year earlier to 1.26mn t, according to preliminary data from the finance ministry. Japan also bought more cargoes from Asia-Pacific countries, with imports totalling 1.46mn t, up by 18.5pc. US supplies totalled 541,000t, nearly double the 271,000t in August 2020.

Supplies from other countries – including Australia, Papua New Guinea and Brunei – were also higher, up by 5.8pc from a year earlier, at 2.9mn t.

But Japan scaled back its receipts from Russia, which in July had hit their highest since December 2017. Russian supplies in August fell by 75.8pc on the year to 144,000t.

Average LNG import costs on a delivered basis for Japanese importers rose in August to \$496.50/t, or \$9.55/mn Btu, up by 61.2pc from a year earlier.

Despite the forecasts, Japan experienced cooler than usual weather in August, which cut the country's power demand to 107.3GW, down by 5.6pc from August 2020 and by 0.3pc from the previous month, according to the organisation for cross-regional co-ordination of transmission operators.

Power demand was weak throughout September as the weather remained cool. Electricity consumption in Japan's 10 service areas averaged 95.6GW in September, down by 4.3pc from the same month a year earlier and by 13.8pc from August.

BRAZIL

Excelerate has been cleared by regulator ANP to import 30mn m³/s through Bahia, writes Elizabeth Johnson

Petrobras, Excelerate sign deal for Bahia LNG terminal

Brazilian state-controlled Petrobras signed a long-awaited contract with US LNG company Excelerate Energy to lease its 20mn m³/d Bahia regasification terminal in an important step towards opening Brazil's natural gas market.

The lease agreement will begin as soon as Excelerate has obtained all of the operating licences necessary for a new floating storage and regasification unit (FSRU) at the terminal and will end in December 2023. The contract is valued at roughly 102mn reals (\$18.8mn).

In a statement last month, Excelerate said it would deploy one of its existing FSRUs to the Bahia terminal. As soon as Excelerate is cleared to operate at the terminal, Petrobras says it will transfer one of its two FSRUs from the Bahia terminal to the Pecem terminal in Ceara state, which is currently idle.

Petrobras announced a tender process in September for a short-term lease for the Pecem terminal amid rising government pressure to increase gas supply to mitigate the record drought that is threatening hydroelectric power supplies.

Excelerate [has already been cleared by hydrocarbons regulator ANP](#) to import up to 30mn m³/d of regasified volumes through the Bahia terminal. The agreement comes as gas distributors in northeastern Brazil seek supply agreements starting in 2022, after Petrobras said it would [not renew their contracts](#).

The lease is part of a broader agreement between Petrobras and anti-trust regulator Cade requiring Petrobras to exit natural gas transport and distribution. Petrobras' exit from these sectors is seen as a fundamental step towards opening up the gas market to more competition, following the approval of the new gas law earlier this year.

BAHAMAS

The administration aims to increase renewable energy use and diversify supply, writes Canute James

Bahamas reviewing Shell LNG-to-power project

The new government of the Bahamas is reviewing a preliminary agreement with Shell to develop an LNG-to-power project, utilities minister Alfred Sears says.

The administration of the Progressive Liberal party, which took office after a 16 September parliamentary election, plans to reduce the archipelago's reliance on imported fossil fuels in favour of renewable energy, Sears says.

Shell had been [negotiating the venture with state-owned utility BPL](#) and the previous administration of the Free National Movement party. The company tells *Argus* it remains committed "to working with the government to develop a reliable, affordable and cleaner source of electricity for the people of the Bahamas".

Under the November 2018 agreement, Shell would take a majority stake in a planned LNG terminal and associated 222MW gas-fired power plant from BPL.

The estimated \$300mn project would include a floating storage and regasification unit (FSRU) and pipeline network. Shell would receive a 20-year power purchase agreement from BPL, which currently operates 29 oil-fired plants on 25 Bahamian islands with combined installed capacity of 438MW.

The country's only other generator is GBPC, a subsidiary of Canadian utility Emera, which has 98MW of oil-fired capacity on Grand Bahama Island.

The LNG terminal and gas-fired power plant, which would be built near BPL's existing Clifton Pier plant, would also supply local commercial and industrial enterprises, while LNG bunkering would service cruise ships. The new administration plans to diversify Bahamian energy supply to incorporate renewables that would deliver at least 30pc of power by 2030. Other Caribbean countries have already moved to replace oil with LNG for power generation, while building up wind and solar capacity.

EMISSIONS

Market participants are concerned about the lack of standardised practices surrounding carbon emissions in LNG cargoes, writes Ellie Holbrook

Industry calls for regulation of ‘carbon-neutral’ LNG

Industry participants have called for more transparency on sales of so-called “carbon-neutral” LNG cargoes, saying they could result in the creation of a “two-tier market”.

Participants voiced concerns at a recent event over the lack of regulation or standardised practices over such deals, which have gained traction in recent months. At least 27 carbon/greenhouse gas offset LNG cargoes have been delivered since July 2019 (see table). Concerns focused on the lack of standardised measurement of the carbon emissions associated with an LNG cargo, as the carbon-neutral label suggests full-chain emissions have been offset. But this requires new regulatory frameworks for monitoring and verifying such deals, TotalEnergies’ LNG Trading vice-president, Patrick Dugas, said at last month’s Gastech conference in Dubai.

As the majority of carbon emissions associated with an LNG cargo take place in the shipping and consumption of the gas, all stakeholders in the LNG chain should be included in the regulatory framework, he said. End-use combustion of regasified LNG accounts for around 60-80pc of a cargo’s emissions.

LNG producers have been striving to find ways to enable their product to compete with renewable energy, and may be in favour of more regulation, US engineering firm KBR’s business development manager, Mona Bhagat, said. But this is still in its “early days” and there is no standard definition of “clean energy”, she said. The European Commission is expected to present legislative proposals for a compulsory monitoring, reporting and verification (MRV) framework for all “energy-related methane emissions” this year.

Carbon/GHG-offset LNG continues to gain traction

Date	Seller	Buyer	Source	Destination	Volume	Offset scope	Mechanism
Jul 19	Shell	Tokyo Gas	QCLNG, Australia	Japan	1 cargo	CO2 well-to-wheel	Shell project portfolio
Jul 19	Shell	GS Energy	QCLNG, Australia	S. Korea	1 cargo	CO2 well-to-wheel	Shell project portfolio
Jul 19	JERA	-	Das Island, UAE	India	1 cargo	CO2 end-use combustion	CER
Mar 20	Shell	CPC	Sakhalin, Russia	Yung-an, Taiwan	1 cargo	CO2 well-to-wheel	Shell project portfolio
Jun 20 (announced)	Shell	CNOOC	-	China	2 cargoes	CO2 well-to-wheel	Shell project portfolio
Oct 20	Total	CNOOC	Ichthys, Australia	Dapeng, China	1 cargo	CO2 well-to-wheel	VCS
Nov 20	Shell	CPC	Bonny, Nigeria	Yung-an, Taiwan	1 cargo	CO2 well-to-wheel	Shell project portfolio
Mar 21	Mitsui	Hokkaido Gas	Sakhalin II, Russia	Ishikari, Japan	1 cargo	CO2 well-to-wheel	Mitsui portfolio
Mar 21	Gazprom	Shell	Yamal, Russia	Dragon, UK	1 cargo	GHG well-to-wheel	VCS
Mar 21	RWE	Posco	Pluto LNG, Australia	Gwangyang, S. Korea	1 cargo	CO2 well-to-tank	VER
Apr 21	Diamond Gas	Toho Gas	Cameron, US	Chita, Japan	1 cargo	-	Carbon credits
Apr 21		Pavilion Energy	Corpus Christi, US	Jurong, Singapore	1 cargo	CO2 well-to-tank	VCS+CCB
Apr 21	Cheniere	Shell	Sabine Pass, US	UK	1 cargo	GHG well-to-wheel	Shell project portfolio
Jun 21	Oman LNG	Shell	Qalhat, Oman	-	1 cargo	CO2 well-to-wheel	Verified nature-based carbon credits
Jun 21	TotalEnergies, OMV	Gate terminal	-	Netherlands	1 cargo	-	-
Jul 21	Shell	Osaka Gas	Brunei	Japan	1 cargo	-	Verified nature-based carbon credits
Jul 21	TotalEnergies, Ichthys	Inpex	Ichthys, Australia	Japan	1 cargo	GHG well-to-wheel	Carbon credits
Aug 21	Eni	CPC	Bontang, Indonesia	Yung An, Taiwan	1 cargo	GHG well-to-wheel	Verified nature-based carbon credits
Aug 21	Petronas	Shikoku Electric	-	Sakaide, Japan	1 cargo	-	VCS
Sep 21	Inpex	Shizuoka Gas	-	Sodeshi, Japan	1 cargo	CO2 well-to-tank	Carbon credits
Sep 21	Inpex	Toho Gas	Ichthys, Australia	Chita, Japan	1 cargo	GHG well-to-wheel	VCS
Sep 21	BP	CPC	-	Yung An, Taiwan	1 cargo	GHG well-to-wheel	BP carbon trading portfolio
Sep 21	Petronas	Shenergy	Bintulu	Shanghai	3 cargoes	-	-
Sep 21	-	Naturgy	Qatar	Spain	1 cargo	-	CER

CER = Certified Emission Reduction; VCS = Verified Carbon Standard; VER = Verified Emission Reduction; CCB = Community and Biodiversity Standard

— IEA

MARKET OVERVIEW

The rise was driven by north Africa and by Russia, where runs had ramped up after maintenance, writes Ellie Holbrook

Smaller producers boost September LNG exports

Global LNG loadings quickened in September compared with August, as countries with smaller production capacities lifted output, offsetting drops from the world's biggest producers.

Total LNG exports rose to 29.7mn t last month from 29mn t in August and 27.7mn t a year earlier, preliminary ship-tracking data from oil analytics firm Vortexa show. Loadings were still down from 30.4mn t in July and below the 33.4mn t exported in January – the highest this year.

Facilities west of Suez upped production to around 11mn t, from 10.4mn t in August, while east of Suez loadings increased to 18.7mn t from 18.5mn t.

Australian loadings fell to 7.08mn t in September from 7.21mn t in August, while Qatari output slid to 5.77mn t, the lowest monthly tally for the country since November 2016, when it loaded 5.72mn t. US production slipped slightly to 5.73mn t from 5.76mn t in August, amid maintenance at the 15mn t/yr Cameron and 5.75mn t/yr Cove Point facilities.

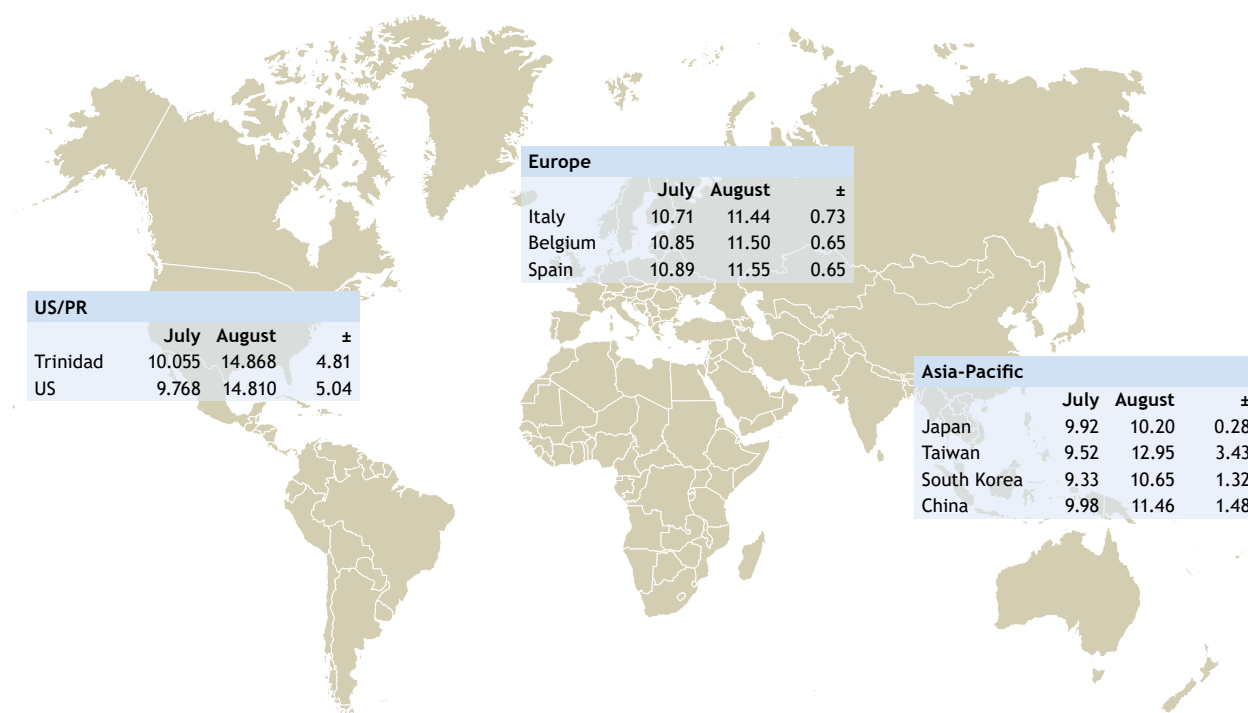
In contrast, Russian LNG production rebounded last month following the end of maintenance at the 17.44mn t/yr Yamal LNG export plant. The Sakhalin export terminal in Russia's far east also saw a rebound in loadings after prolonged maintenance earlier this summer. Yamal exports rose to 1.56mn t in September from 1.09mn t in August, while Sakhalin loadings climbed to 790,000t from 400,000t.

North African production rose sharply in September, with combined Egyptian and Algerian output doubling on the month to 1.4mn t. This contrasted with west African loadings, with Nigeria and Angola producing a combined 1.6mn t, down from 2mn t in August. Cameroon and Equatorial Guinea's output also slipped.

A drop in production in Indonesia last month capped production from the Pacific's smaller exporters. Indonesia exported 724,800t in September, down from 1.08mn t in August, while Malaysian loadings rose to 1.8mn t from 1.4mn t.

Global LNG prices at a glance

\$/mn Btu



MARKET OVERVIEW

LNG prices												\$/mn Btu	
Importer/source	Aug 20	Sep	Oct	Nov	Dec	Jan 21	Feb	Mar	Apr	May	Jun	Jul	Aug
Japan													
Abu Dhabi		6.00	8.93	5.20	11.18	7.44	5.80	6.66			8.12	10.86	10.49
Australia	6.20	5.56	5.65	6.56	7.14	8.77	8.53	7.56	7.77	8.58	9.15	9.47	10.02
Brunei	5.71	5.24	6.01	6.64	7.05	7.20	7.10	7.17	8.26	8.08	9.34	10.22	10.03
Egypt					8.66	15.53							11.58
Equatorial Guinea							22.91	7.04			8.85		
France							24.71						
Indonesia	5.33	4.80	5.39	6.03	7.04	10.25	7.41	8.32	8.32		9.59	10.05	10.54
Malaysia	4.89	4.72	5.70	6.13	6.64	7.81	7.59	6.54	7.04	7.65	8.18	9.19	9.47
Nigeria		5.88	6.85	6.33		8.74	8.55	6.95			9.49		8.44
Oman	4.96	6.83	7.18	5.99	7.63	10.32	7.42	7.15	8.24	8.80	8.71	9.40	9.32
Papua New Guinea	7.50	5.94	5.78	6.30	6.36	6.73	11.88	7.77	8.99	8.97	9.47	10.01	10.38
Peru	9.24	2.53	5.64		6.85	7.66	9.12	6.88	8.41				
Qatar	4.82	4.29	5.09	6.13	6.76	6.70	9.46	6.78	7.51	8.25	8.90	9.45	9.98
Russia	4.98	5.46	5.98	6.31	7.11	8.05	8.20	6.25	6.82	8.00	8.62	9.85	11.54
US	9.34	8.08	7.56	6.92	8.15	9.87	12.98	9.57	8.91	8.26	9.77	10.69	10.63
Unspecified				5.97			16.83						
Average	5.90	5.47	6.29	6.21	7.56		11.23	7.28	8.03	8.32	9.02	9.92	10.20
China													
Abu Dhabi	3.56								6.53		8.38	10.92	11.59
Algeria		4.96							7.32	8.27			
Angola	7.88	2.93		7.23	7.24	7.11	12.00		7.06	7.74	6.98		14.65
Australia	5.17	4.84	5.25	5.82	6.85	7.00	7.43	7.66	6.78	7.14	8.32	9.06	10.39
Belgium											9.09		
Brunei				5.37	5.56	6.57		7.39	7.23	7.07		10.65	15.56
Cameroon	2.20		4.27	8.16	6.90	13.01							13.06
Egypt					4.54	6.91		7.41	8.49	8.00	10.31	10.71	
Equatorial Guinea							7.02		6.32		10.28	10.43	9.59
France		4.30											9.41
Indonesia	5.87	5.94	5.01	5.35	5.31	6.48	6.36	7.77	6.68	7.26	8.37	8.49	9.79
Malaysia	4.97	5.04	5.27	5.98	6.20	7.26	9.35	7.99	6.71	6.95	7.89	7.80	8.90
Netherlands				5.86	7.50		9.74						
Nigeria	4.45	3.34	4.23	5.04	8.35	8.32	12.17	8.11	6.64	6.50	11.25	10.95	11.60
Oman	2.35	3.11	5.97	5.15	6.09	7.84	11.68	9.27	5.92	8.18	8.50	10.35	
Papua New Guinea	5.38	5.51	4.60	5.53	6.30	8.04	7.04	10.50	8.06	8.18	8.72	9.61	10.13
Peru	4.15	6.34		6.37	7.85	5.67			8.68	8.66			
Qatar	4.66	5.76	7.51	6.71	7.14	7.46	6.54	7.56	7.48	8.01	9.93	10.35	10.30
Russia	5.84	5.35	5.50	7.19	7.33	7.84	12.31	7.18	7.16	6.98	8.02	10.20	10.90
Singapore											10.74		
Trinidad						8.39				9.01			
US	7.07	4.83	6.06	7.91	7.59	7.81	12.50	10.50	7.27	7.48	9.13	10.23	11.95
unspecified						8.17	9.15		11.65				
Average	5.20	5.02	5.93	6.26	6.71	7.74	9.48	8.30	7.41	7.70	9.06	9.98	11.46
South Korea													
Abu Dhabi				6.61	6.55		12.56						
Angola			4.55	6.98	6.13		5.96	7.85					
Australia	5.72	4.88	5.26	6.08	7.35	8.41	11.70	9.49	7.36	8.14	8.68	9.78	10.33
Brunei		4.29					5.77			7.73			
Egypt						9.42	7.62						
Equatorial Guinea												9.77	
Indonesia	4.31	4.65	4.21	5.28	4.89	6.19	10.08	5.96	4.97	5.76	7.89	5.87	9.26
Malaysia	4.67	3.74	4.66	5.17	6.41	6.14	5.74	6.28	6.82	7.01	7.55	9.26	8.73
Nigeria				7.60	7.87	7.41	18.16	14.53					8.16
Oman	5.98	4.65	5.04	6.63	7.75	7.72	8.05	7.26	7.65	8.67	9.67	10.34	10.88
Papua New Guinea		9.47	4.50		6.70					8.53			16.22
Peru		4.05	7.30	7.59	7.86	7.63	7.47	11.35	8.25	8.79		9.73	
Qatar	7.77	5.70	4.92	5.87	6.60	8.91	9.26	7.68	7.66	7.88	9.21	9.98	10.77
Russia	2.42	3.01	4.82	5.63	6.43	6.36	6.62	6.68	7.37	7.94	8.71		11.72

MARKET OVERVIEW

LNG prices													\$/mn Btu
Importer/source	Aug 20	Sep	Oct	Nov	Dec	Jan 21	Feb	Mar	Apr	May	Jun	Jul	Aug
Trinidad					6.82								
US	6.45	5.96	6.95	5.99	7.33	8.96	12.39	8.73	7.88	8.09	8.90	9.34	9.80
unspecified						7.20					9.98	9.92	
Average	6.10	5.05	5.30	5.99	6.88	7.66	9.34	8.58	7.25	7.85	8.82	9.33	10.65
Taiwan													
Abu Dhabi			4.62		4.91								
Australia	5.12	5.15	5.78	5.88	6.68	7.71	10.11	9.34	7.90	8.04	8.09	9.84	
Brunei		2.68											
Cameroon						7.47	16.71						
Egypt		2.56			6.49								
Indonesia	2.43	2.88	4.41	6.01	7.07			9.89	6.79	7.51	8.70	10.51	
Malaysia			3.12	6.01						8.29	9.00	11.97	
Nigeria		2.40		3.69	6.91	7.73	8.66	8.87		6.89			
Oman						8.08				7.20	11.95	8.06	
Papua New Guinea	9.18	5.12	4.68	5.32	6.92	7.34	7.28	7.68	7.48	8.09	8.87	9.54	
Qatar	4.79	4.02	3.85	3.87	4.88	5.12	5.16	5.24	5.16	6.19	6.41	6.58	
Russia	6.08	6.17	8.94	6.53	5.58	6.61	5.50	8.87	5.55	6.75	9.65	8.85	
Trinidad						5.48							
US			5.28	7.41	7.34	8.44	18.79	7.81	8.74	8.04	8.07	10.80	
unspecified								8.57					
Average	4.63	4.81	5.04	5.44	6.28	7.11	11.34	8.28	6.94	7.44	8.84	9.52	
Thailand													
Australia	5.58	4.14							6.02	7.33	12.24		
Brunei					5.24			5.42					8.04
Indonesia		4.35											
Malaysia		3.95	3.97	4.43			5.64	5.74	5.72		7.05	7.46	8.46
Nigeria			3.77		5.35		5.72	5.50	5.79	6.39	7.05	7.42	7.98
Qatar	5.15	4.66	5.58	6.81	7.28	7.19	7.24	7.17	7.45	7.37	9.86	10.31	10.45
Trinidad			4.01	5.59		6.10	6.03						
US	5.56				5.82					6.81	7.37		
unspecified				4.62				5.53	6.45	6.69		7.72	8.23
Average	5.32	4.28	4.33	5.36	5.92	6.65	6.16	5.87	6.29	6.92	8.71	8.23	8.63
India													
Algeria	6.13												
Angola	6.72	3.48	5.25	4.24	5.36	12.98	10.74	7.51			7.41	9.20	
Australia	5.33	7.52	6.39					6.50					
Belgium		6.67	6.36	7.43							12.15		
Cameroon		2.21			5.69				8.25	6.22			
Egypt				9.16	6.25	8.65		6.27		5.65	6.66	8.72	
Equatorial Guinea			2.45		8.02			6.02			9.33		
France					7.04	6.30	16.12						6.67
Netherlands													4.25
Nigeria	4.82	5.16	5.14	6.36	5.88	6.58		6.36		6.91	6.96	13.77	
Oman	4.06	7.28	4.68	4.56	6.78	6.18	8.04	7.12		7.14	8.78	11.21	
Qatar	5.29	6.21	6.35	6.13			7.61	7.55		8.77	9.04	9.83	
Spain							4.99						8.67
Trinidad	7.86	4.88				6.59					6.55	6.05	
UAE	5.37	3.94	5.13	5.18	6.46	6.85		6.84		6.30	7.55	7.18	
US	6.39	6.37	4.57	5.79	8.84	7.12	10.48	12.41		7.50	6.64	9.16	
unspecified							7.16						
Average	5.77	5.37	5.15	6.11	6.67	7.51	9.31	7.40		6.93	8.11	8.61	
Belgium													
Egypt									5.22				
Norway			2.02										
Qatar	1.42	2.04	3.77						5.76	6.80	7.81	8.53	
Russia	1.18	2.06			4.28	5.71	5.63	6.35	5.82	6.81	6.45	8.16	
Average	1.30			4.50	4.60	5.71	5.63	5.86	5.32	6.81	7.13	8.35	

MARKET OVERVIEW

LNG prices												\$/mn Btu	
Importer/source	Aug 20	Sep	Oct	Nov	Dec	Jan 21	Feb	Mar	Apr	May	Jun	Jul	Aug
Greece													
Algeria	2.46				4.48	3.27	5.28	6.75	5.18			6.02	
Norway	1.98												
Qatar	1.82					3.27				7.14		8.58	
US	1.92	2.67	3.07	4.22	4.66	5.68			5.95		7.92	7.30	
Italy													
Algeria	4.44	4.50	7.25	7.22	13.85	13.51	8.48	14.08	9.19	8.50	8.93		
Egypt								6.48		6.81			
Equatorial Guinea			4.05										
Qatar	2.01	2.95	3.39	3.99	4.04	4.03	4.50	5.05	5.11	5.30	6.38		
US	1.78	2.72		7.86				6.03	5.90	6.70	8.77		
Average	3.72	3.43	4.62	5.98	8.95	5.83	7.40	9.25	6.65	6.68	9.49		
Portugal													
Algeria			4.54	4.70									
Nigeria	5.44	4.29	4.15	4.45	5.17	4.61	4.61	4.75	5.00	5.46	5.89	5.68	
Other							7.76		5.57		5.62		
Qatar	6.57	6.49		4.59	4.72	4.72					6.60	6.47	
Trinidad						6.50	6.46						
US	6.51	6.42	4.90	4.17	6.25	6.45	4.84	5.25	5.94	7.63	9.27	10.07	
Spain													
Algeria	2.59	3.48	5.22	4.57	4.57	5.98	3.84	3.92		5.05	5.62	6.36	
Egypt						4.79			5.93				
Equatorial Guinea	3.38	3.09	4.30	4.31	3.60	3.70		4.68		5.64	4.98	5.86	
Nigeria	3.12	3.58	3.82	4.26	4.75	4.43	4.46	5.11	5.10	5.15	5.56	6.55	
Norway	2.41	3.84											
Qatar	2.28	3.28	4.06	4.24	4.50	4.64	5.81	5.31	6.53	4.57	7.09	6.26	
Russia	3.42	3.37	4.29	4.52	5.05	6.03	6.20	4.88	5.44	6.36	8.72	7.36	
Trinidad	3.20	3.95	4.20	3.88		3.22	5.43	2.96	4.68	5.97	3.68	7.91	
UK		3.63		4.54						6.22			
US	5.31	4.90	4.84	5.27	5.68	4.49	7.19	5.55	5.90	6.75	8.51	9.10	
Average	3.21	3.60	4.91	4.45	4.69	4.66	5.59	4.63	5.64	5.71	6.31	7.06	
UK													
Algeria				5.35					6.99	7.12	8.59		
Egypt					5.22								
Nigeria				3.70									
Norway			1.92										
Qatar	1.03	1.34	2.31	5.05				5.30	4.80	5.42	6.56	7.25	
Russia				5.14	4.43	5.63	7.73	7.21	5.77	5.76	7.54	8.92	
Trinidad			2.26		5.29	5.21		2.76		2.95			
US	1.23			5.05	5.14	5.41	5.95	6.49	6.66	5.86		8.86	
Average	1.13	1.34	2.16	4.86	5.02	5.42	6.84	5.44	6.06	6.85	7.56	8.34	
Brazil													
Angola					4.24			5.98					10.55
Trinidad								5.15	5.15		5.74		
US				2.79	5.27	4.75	6.17	9.17	7.03	6.11	6.69	8.54	
Average				2.79	4.76	4.75	6.17	6.77	6.09	6.51	6.22	8.64	
Lithuania													
Norway	1.56	4.87		8.11		8.30			8.63				
US			3.46	4.66	5.64	4.68	7.05	6.74	6.20		9.37		
Unspecified	1.70	2.60	3.82	6.95	4.85	5.79	7.05	5.96	5.96	7.14			
Total	1.63	4.84	5.16	6.67	6.71	6.26	7.05	6.35	6.93	7.14	8.68		
Poland													
Nigeria	3.47	3.94	4.38	5.11	5.23	5.09				6.86			
Trinidad	3.47	3.95	4.38	5.12	5.23								
Unspecified						5.09	6.58	6.47	6.10	6.86	7.79		
Total	3.47	3.95	4.38	5.12	5.23	5.09	6.58	6.47	6.11	6.86	6.12		

These numbers are derived from official sources and are subject to change without notice.

LNG MOVEMENTS

Import volumes												'000t
Importer/source	Sep 20	Oct	Nov	Dec	Jan 21	Feb	Mar	Apr	May	Jun	Jul	Aug
Japan												
Abu Dhabi	56.28	60.43	59.49	68.45	244.46	58.51	182.74			176.35	57.67	243.10
Australia	2,576.45	2,275.98	2,562.64	2,803.22	2,768.95	2,376.85	2,247.58	2,033.05	2,023.77	1,763.71	2,192.71	2,550.52
Brunei	327.20	322.44	253.70	319.25	518.31	451.43	388.61	256.76	325.46	367.55	324.73	381.64
Egypt				63.43	64.70							65.37
Equatorial Guinea						67.10	69.83			67.58		
France						15.23						
Indonesia	357.47	55.40	117.04	365.87	242.20	238.30	189.18	119.04		112.70	190.77	232.79
Malaysia	714.24	673.64	839.22	1,032.77	893.22	1,140.64	1,041.24	839.83	479.30	795.98	928.49	783.49
Nigeria	241.52	204.25	60.61		152.90	199.46	74.51			129.51		62.42
Oman	261.42	191.13	127.72	259.74	251.84	127.84	128.59	126.56	131.93	246.34	188.03	203.54
Papua New Guinea	210.89	360.51	304.49	218.78	299.77	379.54	295.83	218.35	277.94	286.86	294.78	216.94
Peru	59.84	71.40		72.50	125.03	210.88	56.00	141.94				
Qatar	627.39	937.40	626.88	1,030.17	931.68	1,013.68	935.02	387.63	515.80	722.14	640.29	810.19
Russia	652.18	528.98	580.28	750.26	552.60	717.74	640.40	459.82	591.30	488.50	760.63	144.48
US	419.13	198.61	457.25	674.14	952.85	948.06	815.30	391.62	544.90	541.67	610.86	540.58
unspecified	59.84		29.57			60.65						
Total	6,504.01	5,880.17	6,018.89	7,658.58	7,998.51	8,005.91	7,064.83	4,974.60	4,890.40	5,698.89	6,188.96	6,235.06
South Korea												
Abu Dhabi		58.70	58.23		183.35							
Angola	65.78	62.30	58.40		57.45	70.30						
Australia	694.18	886.70	551.09	561.49	888.69	1,154.26	569.39	394.48	577.33	936.08	759.49	759.49
Brunei					67.09			129.73				
Egypt				58.60	68.29							
Equatorial Guinea										62.27		
Indonesia	223.41	245.01	193.97	301.56	194.42	174.70	119.21	121.54	165.53	187.35	303.40	
Malaysia	478.61	347.20	747.31	410.62	236.03	401.93	349.72	599.32	288.52	301.62	121.72	
Nigeria		68.47	71.29	184.90	60.91	147.82					54.15	
Oman	409.14	410.87	352.19	416.96	426.00	415.92	356.61	294.51	354.10		351.48	
Papua New Guinea	74.25		65.89					10.38			12.42	
Peru	213.51	59.46	138.32	280.50	54.22	206.35	52.23	127.13		149.79		
Qatar	930.35	909.43	930.93	1,234.93	1,473.59	1,038.53	671.49	1,004.13	619.98	878.19	957.80	
Russia	"183.992086	"	191.16	189.97	258.81	199.38	182.13	263.25	260.51	200.72		135.26
Trinidad			56.55									
US	518.48	352.23	857.16	610.17	1,263.47	414.50	464.65	470.40	875.22	977.99	784.17	
unspecified				112.15					65.38	71.64		
Total	3,852.06	3,591.54	4,271.30	4,448.59	5,172.90	4,206.44	2,846.55	3,412.13	3,146.78	4,043.81	3,479.89	
China												
Abu Dhabi			61.74				60.91		120.65	61.68	120.97	
Algeria							127.94	63.76				
Angola		67.96	128.98	10.45	184.04		62.50	125.38	55.05			
Australia	2,325.42	2,755.33	2,500.91	2,731.94	2,192.92	2,512.50	3,056.47	2,924.64	2,440.34	2,070.62	2,780.56	
Belgium									74.07			
Brunei		64.45	130.66	69.27		64.86	133.89	60.00		90.08	27.82	
Cameroon	57.81	70.60	68.02	64.32							66.26	
Egypt			64.31	372.49		265.16	62.20	56.51	58.94	130.85		
Equatorial Guinea					66.95		74.32		64.22	61.24	59.04	
France											67.27	
Indonesia	308.76	366.20	271.48	589.56	310.69	364.33	520.56	568.63	409.34	309.02	279.99	
Malaysia	524.34	419.40	556.67	753.73	482.61	783.01	841.45	875.47	937.34	421.60	756.56	
Netherlands			70.21		68.88							
Nigeria	198.55	61.01	138.38	286.18	74.84	71.63	134.81	136.04	72.59	269.52	203.34	
Oman	8.70	120.68	128.00	399.21	126.71	141.00	130.20	204.99	260.18	74.32		
Papua New Guinea	238.91	237.89	235.99	375.51	158.35	230.17	306.73	317.87	238.09	223.24	225.37	
Peru		152.89	68.42	62.87			66.01	69.31				
Qatar	390.85	1,266.77	1,429.00	1,208.07	1,102.85	595.74	545.00	543.86	563.93	855.58	685.93	
Russia	684.44	543.78	661.26	506.44	186.80	328.70	265.37	258.35	321.48	348.74	501.11	
Singapore									58.97			

LNG MOVEMENTS

Import volumes												'000t
Importer/source	Sep 20	Oct	Nov	Dec	Jan 21	Feb	Mar	Apr	May	Jun	Jul	Aug
Trinidad				62.54				68.73				
US	283.68	419.05	1,080.22	938.64	598.59	285.27	337.62	758.40	1,041.44	755.26	852.12	
unspecified				55.12	0.54							
Total	5,021.48	6,610.15	7,594.25	8,486.34	5,554.77	5,642.37	6,726.02	7,031.94	6,716.63	5,671.75	6,651.75	
Taiwan												
Abu Dhabi	58.86		59.12									
Australia	292.89	500.11	644.66	406.91	365.92	632.63	629.06	472.55	401.78	557.27		
Brunei												
Cameroon				58.56	140.92							
Egypt			63.10		61.69							
Indonesia	173.95	111.28	60.08			55.57	118.45	171.88	125.21	173.81		
Malaysia	63.12	111.28						123.31	64.91			
Nigeria		54.30	71.32	59.17	178.31	58.64		67.42				
Oman				62.10				64.47	64.62	67.90		
Papua New Guinea	158.33	141.62	158.43	80.38	77.16	158.55	78.53	80.39	160.80	172.07		
Qatar	437.36	440.77	315.50	382.59	382.23	472.02	509.63	505.62	438.98	381.17		
Russia	69.06	129.74	193.13	129.80	65.70	51.19	128.73	129.38	128.99	198.02		
Trinidad				52.80								
unspecified						66.30						
Total	1,310.67	1,634.44	1,749.73	1,419.52	1,341.85	1,624.81	1,594.41	1,814.38	1,636.29	1,618.91		
Thailand												
Australia							67.51	64.36	73.59			
Brunei			65.06			59.45					64.60	
Indonesia												
Malaysia	179.89	57.46			60.15	118.15	59.87		113.88	117.14	56.74	
Nigeria	60.32		57.91		71.58	61.02	139.85	68.08	58.70	58.73	72.40	
Qatar	185.98	187.16	180.48	182.62	272.74	93.07	393.06	367.94	276.03	180.84	185.45	
Trinidad	69.00	59.58		59.21	118.32							
US			68.97						137.06	69.63		
unspecified		53.28				70.04	62.25	65.71		133.70	63.40	
Total	495.19	357.48	372.42	241.83	522.79	401.73	722.54	703.15	591.83	490.41	442.59	
India												
Angola	200.40	204.24	126.80	65.54	136.43	138.53			66.69	65.72		
Australia	215.66					145.53						
Belgium	71.09	69.83							68.52			
Cameroon			66.37					138.90				
Equatorial Guinea	61.24		40.57			132.44		70.09				
Egypt		52.91	65.58	204.86		132.44		126.94	64.52	65.61		
France			137.88	70.89	60.36					120.64		
Malaysia										60.97		
Nigeria	276.31	289.49	60.47	73.58		125.06		132.50	118.18	77.19		
Oman	273.86	135.27	136.85	61.63	191.47	198.56		66.90	68.04	126.26		
Peru						757.88						
Qatar	981.78	611.76	951.17	914.73	1,122.44			770.33	624.62	768.11		
Spain					22.98						66.55	
Trinidad				66.96					76.72	64.38		
UAE	469.36	368.02	191.68	307.76	62.63	313.07		499.66	317.38	310.67		
US	69.87	351.12	345.72	271.29	326.38	150.68		199.22	645.84	308.73		
Total	2,619.57	2,082.64	2,123.09	2,037.24	1,922.69	2,103.75		1,934.45	2,120.60	2,034.83		
Belgium												
Egypt							58.77					
Norway	7.57											
Qatar	61.58						337.08	252.31	180.29	124.95		
Russia			88.94	74.76	13.45	145.83	224.43	93.36	274.30	4.04		
Total		61.41	158.66	74.76	13.45	214.34	687.56	347.49	454.59	128.99		
Greece												
Algeria			33.27	64.02	66.60	65.34	33.31			65.20		
Qatar	577.51			121.95				18.46		133.63		

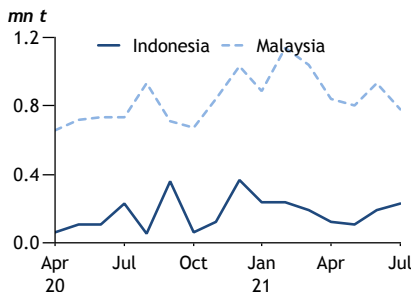
LNG MOVEMENTS

Import volumes												'000t
Importer/source	Sep 20	Oct	Nov	Dec	Jan 21	Feb	Mar	Apr	May	Jun	Jul	Aug
US	99.80	33.88	67.67	65.46			45.88	51.98	128.00			
Total	99.80	33.88	236.03	251.43	66.60	65.34	79.19		128.00	198.83		
Italy												
Algeria	88.67	90.39	89.94	30.05	90.60	90.71	181.18	215.15	65.77			
Egypt						131.01		63.16				
Equatorial Guinea	56.23											
Qatar	577.51	499.73	444.63	312.54	384.86	379.52	512.35	319.47	444.72			
Trinidad								55.74				
US		69.77				63.54	55.67	72.97	55.25			
Total	782.28	736.65	602.18	365.93	551.78	734.73	213.99	804.34	575.90			
Portugal												
Algeria	21.49	42.30										
Nigeria	228.75	158.88	135.42	126.48	166.35	194.41	239.40	193.40	200.96	196.87		
Other					122.78		23.96		23.91			
Qatar		22.87	60.05	10.11					37.32	24.29		
Trinidad				41.33	17.66							
US	85.54	43.25	57.68	20.20	17.80	90.79	119.89	110.81	111.33	84.88		
Total	378.42	291.15	284.31	304.75	324.59	319.18	383.25	329.29	373.52	353.92		
Spain												
Algeria	66.24	66.18	58.45	197.87	157.96	87.67	65.78	285.64	182.49	182.89		
Egypt				59.44			58.49					
Equatorial Guinea	56.51	62.77	69.17	65.04		63.87		61.48	62.76	71.49		
Nigeria	175.78	191.09	460.33	184.72	125.22	366.18	319.10	132.50	185.81	74.94		
Norway												
Qatar	119.00	59.02	59.04	118.78	122.39	118.10	118.70	57.66	211.08	118.14		
Russia	277.57											
Trinidad	48.46	111.58		119.69	185.25	55.78	115.05	119.29	88.15	106.89		
UK		69.08						63.44				
US	356.07	199.92	198.32	130.80	143.43	215.87	189.30	394.84	184.46	174.92		
Total	1,105.12	1,048.88	916.72	1,115.56	1,122.29	1,172.95	1,064.59	1,256.22	1,274.16	945.51		
UK												
Algeria		32.85					72.52	145.96	189.45			
Australia									550.70			
Egypt			65.81									
Nigeria		68.62										
Norway	56.15					0.98						
Qatar	433.32	90.58				714.82	844.23	667.56	550.70	319.84		
Trinidad	62.40		110.28	71.71		50.52		59.30				
US		323.35	580.99	510.62	570.78	342.91	208.40	271.11		65.59		
Total	551.87	586.74	1,114.80	937.92	928.86	1,323.78	1,410.59	1,426.37	1,023.78	457.11		
Brazil												
Angola			68.62			32.69				67.15		
Trinidad						71.12	0.43		113.16			
US		12.12	124.20	476.15	449.92	697.89	269.24	312.18	648.47	244.97	708.16	
Total		12.12	192.82	476.15	449.92	801.70		312.30	761.63	312.20	708.19	
Lithuania												
Norway		1.13		1.51			1.52					
US	114.34	57.54	126.46	61.69	61.96	117.80	70.70		119.58	66.18		
unspecified	12.40	24.41	19.79	12.83	20.52	19.08	24.60	133.89	16.35	16.08		
Total	126.76	83.11	146.27	76.03	82.48	136.88	96.82	133.89	144.44	83.93		
Netherlands												
Nigeria	28.81	36.12	18.31	68.49				152.00				
Trinidad	34.64	43.40	22.01									
unspecified				37.80	258.95	483.81	603.94	611.24	394.86	200.17		
Total	63.45	79.52	40.32	106.29	258.95	743.70	603.94	763.24	398.33	200.17		

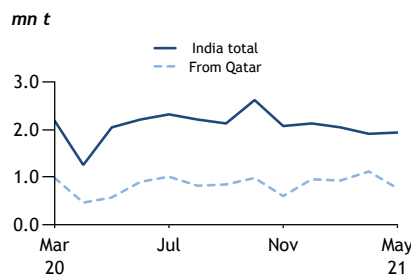
These numbers are derived from official sources and are subject to change without notice.

LNG MOVEMENTS

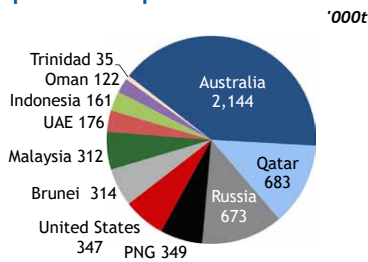
Japanese imports



India imports



Japan LNG import sources



Global LNG receipts edge higher in September

Global LNG deliveries rose on the year for the seventh consecutive month in September, albeit at a slower pace than in recent months.

Worldwide deliveries totalled 28.93mn t last month, up from 28.37mn t a year earlier, but lower than August's 29.47mn t, preliminary data from oil analytics firm Vortexa indicate. The increase was primarily the result of higher receipts in Asian and South American markets, offsetting a decrease in European deliveries.

Asian demand accounted for around 75pc of global LNG deliveries, with the region receiving 21.61mn t, up from 21.17mn t in September 2020. The increase was mainly driven by strong deliveries to China and South Korea that offset a drop in Japanese receipts. China took 6.59mn t last month, up from 5.67mn t a year earlier, marking the 18th consecutive month of growth and again exceeding Japanese receipts, which fell to 5.48mn t from 6.5mn t. Chinese receipts have been consistently higher than a year earlier since April 2020, with the country on course to become the world's largest LNG importer this year. It received 58.5mn t in January-September, compared with Japan's 57.9mn t.

Demand also weakened in south Asia, with deliveries to India and Pakistan falling from a year earlier. Indian receipts have been lower on the year since June, thanks to firmer spot LNG prices and increased domestic supply availability following start-up of new offshore fields in the Krishna Godavari basin.

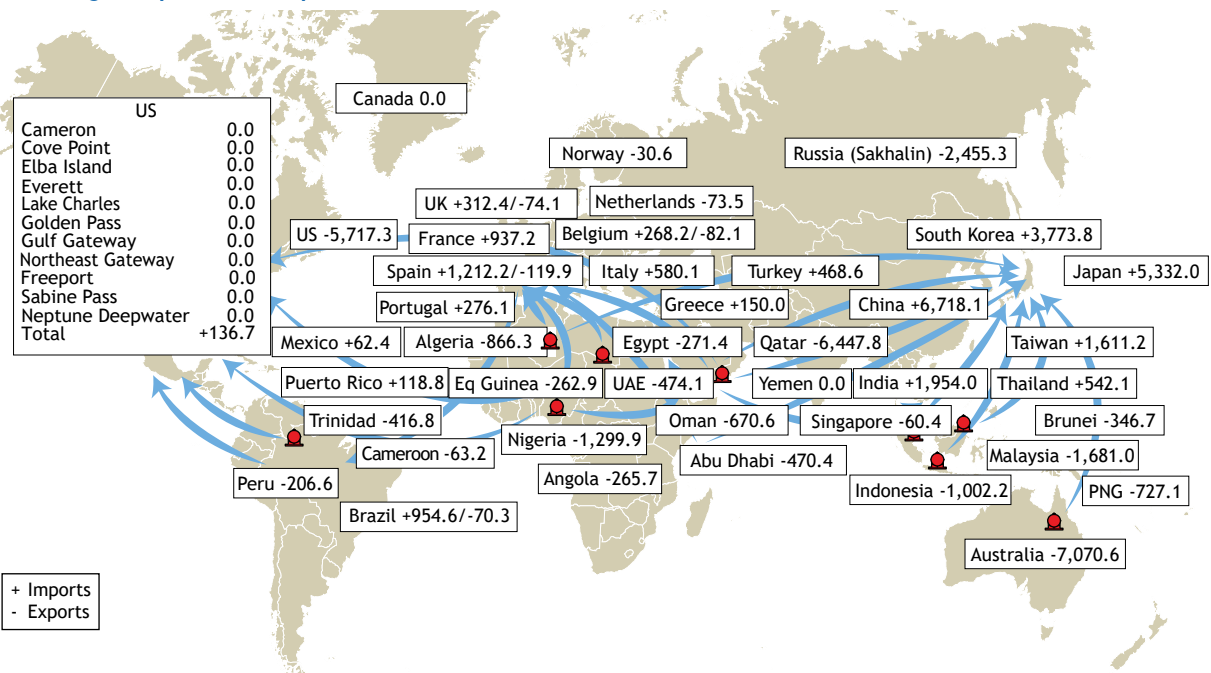
Deliveries to Pakistan fell on the year for the first time this year, possibly as a result of higher LNG spot prices fostering use of fuel oil in power generation. Pakistan's state-owned PSO sought a number of fuel oil cargoes in August for September delivery.

Deliveries to South America rose to 1.44mn t in September from 363,500t a year earlier. Deliveries to Brazil jumped to 1.03mn t last month from just 377,900t in September last year, as severe drought has reduced hydroelectric generation, spurring gas-fired power output.

European LNG receipts rose compared with August and July, but were still 8pc lower than a year earlier.

Latest estimated gas imports and exports

'000 t/month



EUROPEAN GAS WRAP

European gas prices soar

European front-month gas prices set new record highs in September-October amid deepening concerns over storage levels ahead of winter.

Stocks were of particular concern in northwest Europe. Combined inventories in Germany, France, Belgium and the Netherlands were 35.9bn m³ on the morning of 11 October, or about 74.3pc of capacity – well below the 96.5pc average for the date in 2019-20 and 86.9pc in 2018. Injections in these countries would need to stay strong in October for inventories to be sufficient to cover the 38.1bn m³ withdrawn in November 2017-March 2018 – the coldest winter in recent years.

But the risk that injections might not be strong enough to lift stocks this high – or that cold weather or a major supply disruption could increase the call on storage – pushed the price of gas delivering this winter to a huge premium to contracts delivering further forward. And prices pushed higher still as the first long-range forecasts for the fourth quarter raised the prospect of colder weather settling in towards the end of the year.

Meanwhile, continued uncertainty over the availability of additional Russian supply contributed to the volatility. Russian injection demand has been strong after a cold winter 2020-21, and investments that would have bolstered the country's production capacity were delayed during the low price environment of 2019-20, leaving state-controlled exporter Gazprom with little flexibility to supply more gas to Europe in addition to its long-term contract obligations.

At the Dutch TTF – the de facto European benchmark – winter 2021-22 expired at €90/MWh on 30 September, €51/MWh higher than winter 2022-23. First-quarter 2022 supply settled at just over €115/MWh on 5 October, although the contract had retreated to just under €85/MWh by 12 October.

Argus European long-term contract prices												€/MWh	
Delivery month	Jan 21	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov*	Dec*	Jan 22*
Oil index	15.21	15.62	16.15	17.05	18.50	19.70	20.87	22.05	23.10	23.61	24.22	25.41	26.50
+5pc discount	14.45	14.84	15.34	16.20	17.57	18.71	19.82	20.94	21.95	22.43	23.01	24.14	25.18
+7.5pc discount	14.07	14.45	14.94	15.78	17.11	18.22	19.30	20.39	21.37	21.84	22.41	23.50	24.51
+10pc discount	13.69	14.06	14.54	15.35	16.65	17.73	18.78	19.84	20.79	21.25	21.80	22.87	23.85
+12.5pc discount	13.31	13.67	14.13	14.92	16.19	17.24	18.26	19.29	20.21	20.66	21.19	22.23	23.19
+15pc discount	12.93	13.27	13.73	14.50	15.72	16.74	17.74	18.74	19.64	20.07	20.59	21.60	22.53
+20pc discount	12.17	12.49	12.92	13.64	14.80	15.76	16.69	17.64	18.48	18.89	19.38	20.33	21.20
TTF													
Oil index 90pc + 10pc TTF	15.31	16.09	16.26	17.10	18.69	20.23	21.69	23.44	25.24	27.79	33.50	34.62	35.61
Oil index 80pc + 20pc TTF	15.42	16.57	16.38	17.15	18.89	20.75	22.52	24.83	27.38	31.98	42.78	43.83	44.71
Oil index 70pc + 30pc TTF	15.52	17.04	16.49	17.19	19.08	21.28	23.35	26.23	29.53	36.16	52.06	53.04	53.82
Oil index 60pc + 40pc TTF	15.63	17.52	16.61	17.24	19.28	21.81	24.17	27.62	31.67	40.34	61.33	62.25	62.92
Oil index 50pc + 50pc TTF	15.73	17.99	16.72	17.29	19.47	22.34	25.00	29.02	33.81	44.53	70.61	71.45	72.03
NCG													
Oil index 90pc + 10pc NCG	15.28	16.03	16.27	17.14	18.72	20.23	21.69	23.41	25.20	-	-	-	-
Oil index 80pc + 20pc NCG	15.35	16.44	16.39	17.22	18.95	20.76	22.52	24.78	27.30	-	-	-	-
Oil index 70pc + 30pc NCG	15.42	16.86	16.50	17.30	19.17	21.29	23.35	26.15	29.40	-	-	-	-
Oil index 60pc + 40pc NCG	15.49	17.27	16.62	17.38	19.40	21.82	24.17	27.52	31.50	-	-	-	-
Oil index 50pc + 50pc NCG	15.56	17.68	16.74	17.46	19.62	22.35	25.00	28.88	33.61	-	-	-	-
VTP													
Oil index 90pc + 10pc VTP	15.22	15.94	16.23	17.15	18.74	20.23	21.69	23.42	25.19	27.76	33.52	34.61	
Oil index 80pc + 20pc VTP	15.23	16.26	16.32	17.24	18.98	20.77	22.50	24.80	27.28	31.91	42.83	43.82	
Oil index 70pc + 30pc VTP	15.24	16.58	16.40	17.34	19.22	21.31	23.32	26.18	29.36	36.05	52.13	53.02	
Oil index 60pc + 40pc VTP	15.26	16.90	16.48	17.43	19.46	21.85	24.14	27.55	31.45	40.20	61.43	62.23	
Oil index 50pc + 50pc VTP	15.27	17.22	16.56	17.53	19.70	22.38	24.96	28.93	33.54	44.35	70.74	71.43	

*provisional

Please see the methodology for the Argus European Natural Gas Report at www.argusmedia.com/en/methodology

US

US gas prices climb

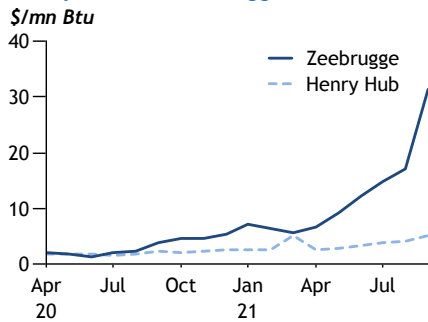
US gas prices rose through September, as storage inventories in the country continued to lag the five-year average (see table).

Strong gas demand for power generation continued to curb the US summer stockbuild through September, despite production rising to an estimated 93.3bn ft³/d (2.6bn m³/d) in the third quarter from 91.6bn ft³/d in the first half the year, according to the US Energy Information Administration (EIA).

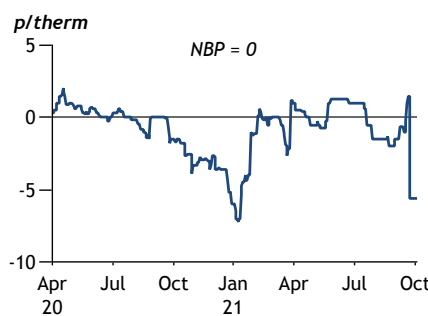
And export demand was strong, with deliveries to LNG terminals averaging 9.3bn ft³/d in September, despite seasonal maintenance and hurricane-linked disruption curbing liquefaction at some facilities. The EIA expects deliveries to liquefaction plants to average a record 10.7bn ft³/d in October-March.

Front-month futures delivering at the Henry Hub averaged \$5.11/mn Btu in September, their highest since early 2014. And the EIA expects Henry Hub prices to average \$5.67/mn Btu over the coming winter – the highest in over a decade – with a high risk of significantly increased volatility, depending on how the weather evolves over the heating season. The strength of US gas prices has even led manufacturing trade group the Industrial Energy Consumers of America to ask President Joe Biden’s administration to limit the country’s LNG exports to avert a “supply crisis”.

Henry Hub vs Zeebrugge



Zeebrugge front month vs NBP



US gas in underground storage						bn ft ³
Region	1 Oct	3 Sep	±	Year ago	Five-year av.	± % 5-yr ave
East	810	703	107	890	855	-5.3
Midwest	971	842	129	1058	990	-1.9
Mountain	206	191	15	235	215	-4.2
Pacific	248	243	5	318	301	-17.6
South Central	1054	943	111	1319	1104	-4.5
Total	3,289	2,922	367	3,820	3,465	-5.1

Spot market natural gas prices (pipeline)													
	Sep 20	Oct	Nov	Dec	Jan 21	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Europe p/th													
UK NBP, 1st month	30.25	39.88	39.62	47.36	59.08	44.61	44.51	51.41	63.44	71.36	89.55	111.42	164.78
UK NBP, 2nd month	36.18	42.07	40.79	48.18	54.42	42.78	42.27	51.83	61.59	71.26	90.52	113.32	170.71
UK NBP, 3rd month	39.73	43.24	41.04	44.67	47.36	40.67	42.54	50.14	61.09	71.92	91.74	116.24	172.93
ICE, 1st month	30.37	39.99	39.66	47.42	58.98	44.70	44.48	51.43	63.61	71.40	89.74	111.28	166.55
ICE, 2nd month	36.30	42.13	40.79	48.07	54.11	42.73	42.37	51.72	61.78	71.34	90.78	113.26	172.34
ICE, 3rd month	39.84	43.29	40.89	44.49	47.18	40.74	42.57	50.14	61.33	71.99	91.97	116.04	174.37
Europe €/MWh													
UK NBP, 1st month	11.27	14.29	13.90	16.44	20.50	17.26	17.39	20.46	24.89	28.82	35.97	44.03	65.21
UK NBP, 2nd month	13.04	14.91	13.99	16.70	19.62	16.71	17.22	20.80	24.74	28.67	36.40	44.05	66.08
UK NBP, 3rd month	14.37	14.41	14.05	16.38	18.31	16.24	17.32	20.14	24.53	28.94	35.16	44.95	66.71
ICE, 1st month	11.37	14.15	13.93	16.25	20.37	17.29	17.52	20.44	24.98	29.13	35.99	44.51	65.45
ICE, 2nd month	13.01	14.44	14.14	16.28	19.59	16.66	17.37	20.42	24.85	28.94	35.92	44.66	65.85
ICE, 3rd month	13.63	14.59	14.19	15.88	17.23	16.44	17.44	20.30	24.67	28.82	35.97	44.74	65.87
US \$/mn Btu													
Henry Hub, 1st month	2.59	2.11	3.01	2.85	2.48	2.70	2.87	2.51	2.92	2.99	3.62	4.01	4.38
NY (Transco Zone 6)	1.26	1.32	1.52	2.82	3.12	5.33	2.27	2.14	2.42	2.69	3.35	3.87	4.41
Columbia TCO	1.41	1.55	1.67	2.21	2.43	4.13	2.20	2.22	2.51	2.76	3.21	3.71	4.42
SoCal border	2.30	2.79	2.97	3.31	2.85	16.02	2.63	2.80	2.89	4.08	5.18	5.19	6.54
Nymex, 1st month	2.26	2.29	2.77	2.92	2.62	2.63	2.90	2.64	2.66	2.95	3.21	3.78	4.00
Nymex, 2nd month	1.81	2.40	2.80	3.20	3.05	2.62	2.61	2.86	2.67	2.73	3.01	3.23	3.76

Please see the methodology for the Argus European Natural Gas report and the Argus Natural Gas Americas report at www.argusmedia.com/en/methodology

COMPETING FUELS

Crude													\$/bl
	Sep 20	Oct	Nov	Dec	Jan 21	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Japanese Crude Cocktail	46.25	44.54	42.31	44.46	50.12	55.86	61.65	66.31	65.56	69.12	71.76	na	na
Tapis	39.48	39.15	42.54	50.88	55.98	63.06	67.16	65.74	69.45	74.00	77.33	72.22	76.30
Dubai (1st month) London close	41.23	40.58	43.51	49.75	54.84	61.04	64.42	63.06	66.60	71.52	72.82	69.28	72.64
North Sea dated	40.58	40.01	42.54	49.72	54.73	62.23	65.56	64.59	68.54	72.96	74.99	70.75	74.40
WTI (1st month)	39.60	39.53	41.10	47.05	52.10	59.06	62.35	61.71	65.18	71.38	72.46	67.73	71.56

Please see the methodology for the Argus Crude report at www.argusmedia.com/en/methodology

International fuel oil prices													\$/t
	Sep 20	Oct	Nov	Dec	Jan 21	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
HSFO 180 fob South Korea	262.38	272.42	287.95	312.02	337.24	376.66	396.10	385.58	389.97	422.20	431.32	424.02	477.36
HSFO 180 fob Singapore	251.38	261.42	276.95	301.02	326.24	365.66	385.10	374.58	378.97	411.20	420.32	413.02	466.36
LSWR fob Indonesia*	305.99	315.42	337.98	376.62	424.80	482.18	487.42	478.65	484.59	520.78	531.60	507.34	538.97
1pc fuel oil fob NWE	254.55	269.63	290.31	322.15	357.31	407.86	425.80	410.59	418.20	442.55	457.11	440.18	475.16
1pc fuel oil fob W Med	259.56	276.91	295.48	324.83	361.29	413.55	431.86	418.01	423.83	447.83	461.48	448.07	481.66
New York 1pc	274.24	282.37	300.48	333.64	361.22	404.49	422.47	416.33	424.71	442.82	455.94	444.55	484.42

*LSWR fob Indonesia changed to 0.45pc sulphur specification with price in \$/t from 31 July. Prices before this date are for 0.35pc LSWR

Please see the methodology for the Argus European Products, Argus Asia-Pacific Products and Argus US Products reports at www.argusmedia.com/en/methodology

International gasoil prices													\$/t
	Sep 20	Oct	Nov	Dec	Jan 21	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
C+F Japan	327.42	331.07	358.38	418.21	449.32	505.86	522.13	515.34	548.24	582.18	588.74	562.63	606.65
Fob South Korea	321.08	323.17	350.92	408.66	441.48	497.36	511.38	504.52	538.09	573.15	581.21	553.98	598.89
German heating oil	319.23	328.51	351.30	409.16	445.00	500.55	517.91	516.00	553.39	588.56	594.05	576.11	626.35
Heating oil fob W Med	314.72	325.89	349.52	408.94	441.49	491.39	509.09	505.83	539.51	579.55	589.55	570.52	616.38
No 2 oil New York	314.65	327.60	356.61	412.01	446.54	507.95	507.26	509.65	551.73	580.35	590.25	554.09	602.64

Please see the methodology for the Argus European Products, Argus Asia-Pacific Products and Argus US Products reports at www.argusmedia.com/en/methodology

International electricity prices													€/MWh
	Sep 20	Oct	Nov	Dec	Jan 21	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
France month-ahead	45.20	47.01	42.55	57.40	62.74	49.58	47.48	53.46	63.15	75.07	80.26	95.79	143.00
Spain month-ahead	43.08	42.37	41.65	51.48	56.20	41.67	42.63	57.48	76.05	85.93	93.78	110.48	157.24
PJM West (off peak)(\$/MWh)	14.37	16.70	18.71	22.60	23.39	38.81	21.21	22.33	22.00	21.96	26.08	29.64	34.86
Entergy (off-peak)(\$/MWh)	14.85	19.45	21.52	21.53	21.93	43.49	23.51	22.79	21.57	22.70	25.04	26.96	33.19

Please see the methodology for the Argus European Electricity report at www.argusmedia.com/en/methodology

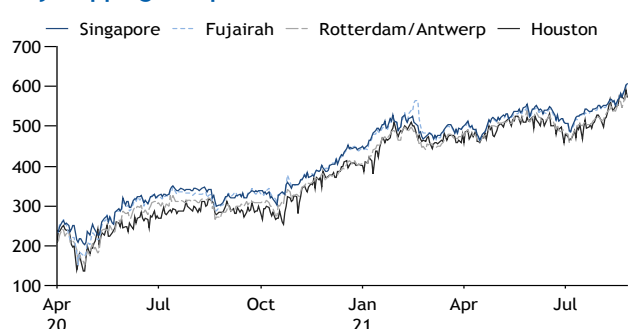
International coal prices													\$/t
	Sep 20	Oct	Nov	Dec	Jan 21	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Japan	60.41	64.82	69.43	87.67	98.16	101.06	107.05	108.47	116.84	143.68	164.03	183.62	198.70
South Korea	58.91	62.38	65.30	82.22	94.82	95.32	96.83	100.75	106.80	117.09	129.08	141.16	161.35
Indonesia	52.88	56.79	58.90	74.73	86.99	86.59	85.27	90.00	94.24	104.14	115.55	127.43	145.74
ARA	53.01	56.22	54.13	66.72	67.49	65.92	68.67	72.25	86.35	110.32	134.80	149.11	181.34
Nymex spec Q1	43.95	46.65	48.93	49.88	50.73	51.38	52.85	53.14	54.48	56.70	59.80	68.44	71.25

Please see the methodology for the Argus Coal Daily and Argus Coal Daily International reports at www.argusmedia.com/en/methodology

International shipping fuel prices							\$/t
	Apr	May	Jun	Jul	Aug	Sep	
Singapore 380cst	487.98	491.39	526.19	541.49	517.19	547.80	
Fujairah 380cst	484.98	488.18	522.75	538.50	513.17	543.55	
Rotterdam/Antwerp 380cst	466.15	477.59	509.05	519.16	489.98	520.18	
Houston 380cst	466.14	474.30	505.82	511.08	485.65	517.17	

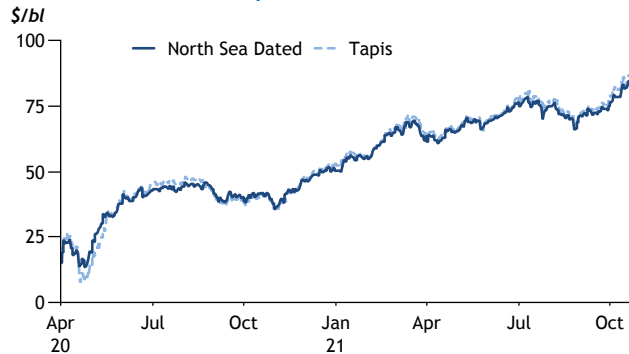
Please see the methodology for the Argus Marine Fuels report at www.argusmedia.com/en/methodology

Key shipping fuel prices \$/t



COMPETING FUELS

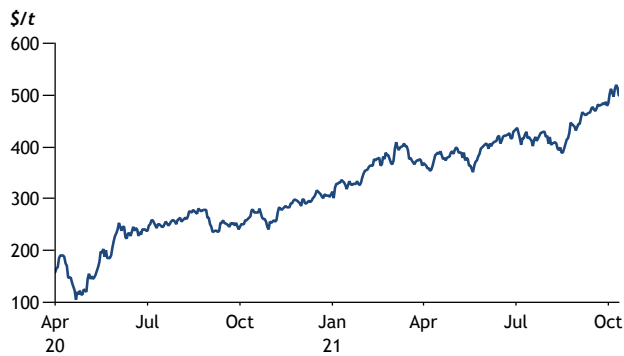
North Sea Dated vs Tapis



Crude prices strengthen

Crude benchmarks rose through September as US production was slow to return following Hurricane Ida in late August. US producers' struggle to restore output weighed on US crude inventories, which in the week to 17 September fell to their lowest since October 2018, according to the US Energy Information Administration. Elsewhere, some countries in Asia-Pacific, including Japan, began to return from Covid-19 lockdowns, spurring a recovery in fuel demand. North Sea Dated rose by \$7.27/bl across the month to end September at \$78.61/bl. WTI increased by \$6.44/bl over the same period to \$75.03/bl.

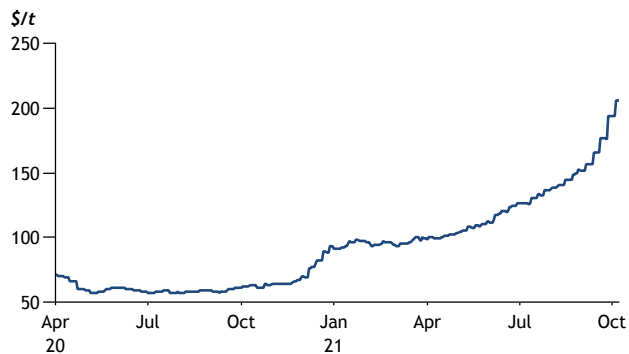
180cst fuel oil fob Singapore



European products firm

European products have been buoyed in recent weeks by strong demand and falling stocks as the refinery maintenance season gets under way. Rising jet demand amid a relaxation of Covid-related travel restrictions, most importantly in the UK and US, has also lent support, particularly given excess jet supply, and its blending into the diesel pool has kept middle distillate refining margins under wraps during the pandemic. Fuel oil prices have risen with stronger demand globally amid incentives to switch power generation feeds away from gas where possible given record high prices.

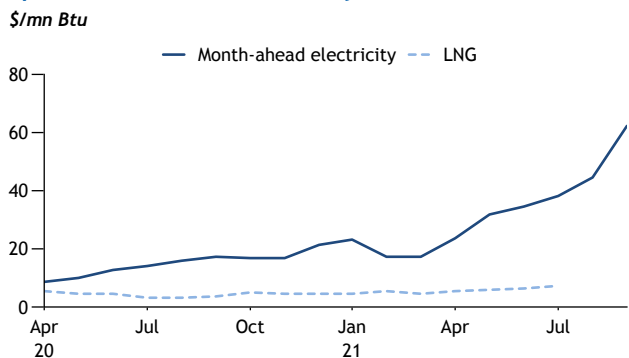
Coal cif South Korea



Coal continues higher

Global coal prices continued rising in September and into October, buoyed by tight gas markets and coal shortages in key markets China and India. Stockpiles in China and India are low, prompting the Chinese government to impose power blackouts across many regions and for some coal-intensive industrial users in India to scale back production. On the supply side, flooding in Indonesia, rail problems in South Africa and Russia, and labour shortages in the US have constrained exports. Meanwhile in Europe, high gas prices have spurred strong coal generation.

Spain: Month-ahead electricity vs LNG



Lower gas, renewables lift coal output

Higher natural gas prices amid subdued renewables output in September spurred coal-fired power generation in the UK, France and Germany, with output in the latter rising by more than 60pc on the year to 9GW. Coal-fired units with the lowest efficiency were priced in for base load for the first time since January and have remained priced in during October. Output in France and the UK rose by more than 83pc and 100pc, respectively. Renewable output in the UK dropped by 2.3GW on the year on lower wind power. In France, reduced gas-fired and renewable output was offset by nuclear output rising by 10GW from September 2020.

SHIPPING

Charter rates rise in late September after slow start

Spot charter rates softened slightly in the first half of September amid a lull in chartering, before rising sharply as the market began preparations for winter.

The Argus-assessed ARV1 prompt rate – for round trips by dual/tri-fuel diesel-electric LNG carriers delivering Australian cargoes to northeast Asia – rose to \$94,000/d by the end of September, up from \$75,500/d at the start of the month. The corresponding rate for US-northwest Europe, ARV2, rose to \$95,000/d from \$80,000/d. And the US-northeast Asia ARV3, continuing to hold sizeable premiums to the two intra-basin rates, increased to \$101,000/d from \$81,500/d.

All three prompt rates slid in the first half of September as the redirection of Atlantic-loading cargoes from Asia to Europe freed up shipping capacity for subletting. Sublet offers were highest west of Suez, but with limited open periods allowing only for intra-Atlantic journeys. This weighed heavily on the ARV2 rate.

Rates rebounded in the second half of September, more than offsetting first-half losses, as firms began fixing vessels for the winter. With the number of vessels being offered for sublets falling as charterers either let their spare vessels or pulled them back into their respective fleets, availability tightened. But shipping demand was not as strong as previously expected as a significant proportion of Atlantic-loaded LNG is being delivered within the basin, freeing up vessels more quickly. This held prompt spot rates well below where the corresponding forward rates for the same period had been earlier in the summer.

Netbacks for 138,000m³ tanker Sep

	Sailing days, one-way	Bunker fuel \$	Manning \$	Insurance \$	Repairs & maintenance \$	Stores and lubes \$	Capital costs \$	Total shipping and storage \$	Gas delivered, minus boil-off '000m ³	Delivered value of cargo \$	Transport and regas costs \$/mn Btu	Delivered price \$/mn Btu	Reporting month	Netback \$/mn Btu
Qatar-Japan	14	2,074,764	129,115	72,261	10,602	24,955	803,786	3,115,482	125,320	27,265,229	1.16	9.98	Aug 21	8.82
Qatar-S Korea	15	2,178,207	134,946	75,524	11,081	26,082	840,086	3,265,926	125,174	29,389,109	1.22	10.77	Aug 21	9.55
Qatar-Spain	11	1,660,991	105,791	59,207	8,687	20,447	658,586	2,513,709	125,906	17,182,195	0.93	6.26	Jul 21	5.33
Abu Dhabi-Japan	14	2,074,764	129,115	72,261	10,602	24,955	803,786	3,115,482	125,320	28,658,543	1.16	10.49	Aug 21	9.33
Qatar-Belgium	3	571,571	40,817	22,844	3,352	7,889	254,100	900,572	127,539	23,716,304	0.33	8.53	Jul 21	8.20
Algeria-S Korea	20	3,334,778	179,095	100,233	14,706	34,615	1,114,929	4,778,355	124,065	22,772,875	1.80	8.42	May 17	6.62
Algeria-Spain	1	138,780	19,159	10,723	1,573	3,703	119,271	293,209	128,083	17,758,396	0.11	6.36	Jul 21	6.25
Algeria-US	11	1,820,008	103,292	57,809	8,482	19,964	643,029	2,652,583	125,969	11,341,509	0.98	4.13	Mar 20	3.15
Australia-Japan	8	1,186,508	78,302	43,823	6,430	15,134	487,457	1,817,654	126,597	27,653,326	0.67	10.02	Aug 21	9.35
Australia-S Korea	8	1,276,215	83,300	46,620	6,840	16,100	518,571	1,947,646	126,471	28,480,595	0.72	10.33	Aug 21	9.61
Brunei-Japan	5	737,977	53,312	29,837	4,378	10,304	331,886	1,167,693	127,225	27,818,184	0.43	10.03	Aug 21	9.60
Brunei-S Korea	6	857,585	59,976	33,566	4,925	11,592	373,371	1,341,016	127,057	21,410,930	0.49	7.73	May 21	7.24
Indonesia-Japan	7	1,081,851	72,471	40,559	5,951	14,007	451,157	1,665,996	126,743	29,122,085	0.61	10.54	Aug 21	9.93
Indonesia-S Korea	7	1,036,998	69,972	39,161	5,746	13,524	435,600	1,601,000	126,806	25,598,109	0.59	9.26	Aug 21	8.67
Malaysia-S Korea	5	708,075	51,646	28,904	4,241	9,982	321,514	1,124,363	127,267	24,220,601	0.41	8.73	Aug 21	8.32
Nigeria-Spain	8	1,403,862	82,467	46,154	6,772	15,939	513,386	2,068,579	126,492	18,061,836	0.76	6.55	Jul 21	5.79
Oman-Japan	13	1,926,988	120,785	67,599	9,918	23,345	751,929	2,900,563	125,530	25,504,632	1.08	9.32	Aug 21	8.24
Oman-S Korea	12	1,853,100	116,620	65,268	9,576	22,540	726,000	2,793,104	125,634	29,798,464	1.04	10.88	Aug 21	9.84
Oman-Spain	12	1,823,544	114,954	64,336	9,439	22,218	715,629	2,750,120	125,676	19,342,576	1.02	7.06	Jul 21	6.04
Oman-US	9	1,380,216	89,964	50,350	7,387	17,388	560,057	2,105,362	126,304	11,371,652	0.78	4.13	Mar 20	3.35
Trinidad-US	5	799,978	52,479	29,371	4,309	10,143	326,700	1,222,980	127,246	11,456,430	0.45	4.13	Mar 20	3.68
USGC-Japan	20	3,315,469	179,095	100,233	14,706	34,615	1,114,929	4,759,047	124,065	28,750,079	1.79	10.63	Aug 21	8.84
Algeria-UK	4	671,446	45,815	25,641	3,762	8,855	285,214	1,040,733	127,413	23,859,613	0.38	8.59	Jun 21	8.21
Nigeria-India	15	2,502,487	137,445	76,923	11,286	26,565	855,643	3,610,348	125,111	37,556,646	1.35	13.77	Jul 21	12.42
Qatar-India	3	449,228	37,485	20,979	3,078	7,245	233,357	751,372	127,622	27,348,682	0.28	9.83	Jul 21	9.55

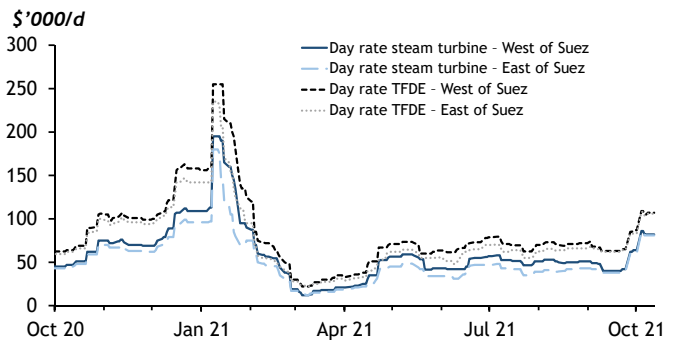
SHIPPING

Age of fleet					
OWNER	NO	AVE	MIN	MAX	TOTAL CAPACITY
Teekay	29	8	1	27	4,602,900
Maran Gas Maritime	26	4	1	7	4,370,925
Nakilat	25	11	10	12	6,055,700
GasLog	24	7	1	14	3,870,600
MISC	22	19	11	39	3,098,900
Mol	17	5	1	16	2,901,447
BW	16	11	1	17	2,467,100
BGT Ltd	13	11	4	18	2,029,000
Dynagas	12	7	1	13	1,771,970
Knutsen OAS	12	9	1	16	1,957,600
NYK	12	10	1	14	1,894,600
BP	10	6	1	13	1,662,800
Golar LNG	10	7	5	17	1,594,000
J4 Consortium	10	22	16	24	1,374,100
SK Shipping	10	14	1	26	1,525,900
Golar LNG Partners	9	20	6	43	1,281,003
Hoegh	9	5	1	14	1,508,332
Hyundai LNG Shipping	9	17	3	26	1,288,200
Excelerate Energy	8	12	6	15	1,191,000
National Gas Shipping Co	8	25	23	26	1,082,300
NYK, K Line, Mol, Iino, Mitsui, Nakilat	8	12	12	12	1,704,200
Sovcomflot	7	4	2	6	1,198,000
Chevron	6	5	3	6	960,000
Flex LNG	6	2	1	2	1,041,600
Korea Line	6	12	3	20	921,400
Maran Gas Maritime, Nakilat	6	12	2	15	902,000
Shell	6	15	10	18	886,200
Brunei Gas Carriers	5	9	5	18	740,600
China LNG Ship Mgmt	5	11	11	12	736,800
China Shipping Group	5	3	2	3	870,500
K Line	5	8	2	13	804,300
Nakilat, Teekay	5	12	12	14	1,020,600
Petronas	5	3	2	4	751,000
Teekay, Marubeni	5	11	10	12	830,900
TMS Cardiff Gas	5	8	6	16	788,100
Commerz Real, Nakilat, Pronav	4	13	12	13	840,800
Hanjin Shipping Co	4	22	20	25	544,400
Mitsui, NYK, Teekay	4	9	8	9	641,200
Mol, China LNG	4	5	4	5	684,223
Mol, NYK, K Line, SCI, Nakilat, Petronet	4	12	4	16	604,200
Nakilat, OSC	4	13	12	13	864,800
North West Shelf Venture	4	29	26	31	507,400
OSC, Mol	4	16	14	19	579,500
Sinokor Merchant Marine	4	21	16	31	543,900
Teekay, China LNG Shipping	4	1	1	1	688,000
Tepeco, NYK, Mitsubishi	4	13	11	17	568,800
BW, Pavilion LNG	3	4	1	5	497,400

Age of fleet					
OWNER	NO	AVE	MIN	MAX	TOTAL CAPACITY
Golar Power	3	5	2	7	490,000
Hyproc	3	8	3	16	490,900
K Line, PT Meratus	3	12	11	12	464,800
Mitsui, Sonangol, Sojlitz	3	9	9	9	480,000
Mol, Kepco	3	7	4	12	467,900
Mol, NYK	3	11	10	12	440,600
Mol, NYK, K Line	3	27	15	36	399,200
Shell, Gaslog	3	13	13	14	435,000
Stena Bulk	3	11	9	14	491,700
Thenamaris	3	6	5	7	480,000
Others	81	11	1	43	11,909,500
Total	534	3	1	43	85,798,800

Key ship deliveries 2021-25		
Owner	No of vessels	Del period
Sovcomflot	19	2021-2025
N.Y.K. Line	9	2021-2022
Maran Gas Maritime	8	2021-2022
Knutsen OAS Shipping	7	2022-2024
Capital Gas	6	2021-2023
Minerva Marine	5	2021-2022
BW LNG	4	2021-2022
TMS Cardiff Gas	4	2021
Panama LNG	4	2022-2023
Dynagas	4	2021-2022
CSSC Shpg Leasing	4	2021-2022
Korea Lines	4	2022-2023
MOL	3	2021
K Line	3	2021-2022
Alpha Gas	3	2021
Cosco Shipping Energy Transportation	3	2022-2023
Mitsui OSK Lines	3	2023
Flex LNG	3	2021
Gaslog LNG Services	3	2021
Celsius Shipping	3	2021
Oceanix	2	2023
Jovo Group	2	2021-2022
JP Morgan	2	2022
Others	44	2021-24

LNG vessel day rates



SPARK SPREADS

International spark spreads			Spark spreads at varying conversion rates					\$/MWh
Sep	Fuel	Electricity	30pc	34pc	38pc	49.13pc	55pc	
Japan								
LNG	34.68	79.00	-36.49	-23.00	-12.27	8.41	15.94	
Coal, cif Japan	28.48	79.00	-15.82	-4.75	4.06	21.04	27.22	
HSFO 180, cif Japan	39.75	79.00	-53.38	-37.92	-25.62	-1.92	6.72	
South Korea								
LNG	36.21	68.09	-52.49	-38.41	-27.20	-5.62	2.25	
Coal, cif Korea	23.12	68.09	-8.91	0.08	7.24	21.02	26.04	
HSFO 180, fob Korea	39.87	68.09	-64.69	-49.18	-36.84	-13.07	-4.41	
Belgium								
LNG	28.39	115.54	21.00	32.05	40.83	57.76	63.92	
Zeebrugge pipeline natural gas	51.65	115.54	-56.44	-36.35	-20.37	10.42	21.64	
Coal	25.99	115.54	29.00	39.11	47.15	62.65	68.29	
Fuel oil 1pc fob NWE	39.69	115.54	-16.62	-1.18	11.10	34.76	43.38	
France								
LNG	32.27	112.89	5.45	18.00	27.98	47.22	54.23	
Pipeline natural gas, Russia	150.52	112.89	-388.33	-329.78	-283.21	-193.47	-160.78	
Coal	25.99	112.89	26.35	36.46	44.50	60.00	65.64	
Fuel oil 1pc fob w Med	40.23	112.89	-21.08	-5.43	7.02	31.01	39.74	
Italy								
LNG	32.27	135.52	28.08	40.63	50.61	69.85	76.86	
Pipeline natural gas, Russia	143.24	135.52	-341.47	-285.75	-241.43	-156.03	-124.92	
Coal	25.99	135.52	48.99	59.09	67.13	82.63	88.27	
Fuel oil 1pc fob w Med	40.23	135.52	1.55	17.20	29.65	53.64	62.37	
Spain								
LNG	24.09	130.08	49.87	59.24	66.69	81.05	86.29	
Pipeline natural gas, Algeria	154.26	130.08	-383.60	-323.59	-275.86	-183.89	-150.39	
Coal	25.99	130.08	43.55	53.65	61.70	77.19	82.83	
Fuel oil 1pc fob w Med	40.23	130.08	-3.89	11.76	24.21	48.20	56.93	
US Gulf coast								
LNG	14.09	33.19	-13.73	-8.25	-3.89	4.51	7.57	
Natural gas, Henry Hub Nymex	17.41	33.19	-24.78	-18.01	-12.62	-2.24	1.54	
Coal Central Appalachia	10.21	33.19	-0.81	3.16	6.32	12.41	14.62	
HSFO 3pc fob USGC	35.13	33.19	-83.78	-70.12	-59.25	-38.31	-30.68	
US Northeast								
LNG	14.09	41.01	-5.91	-0.43	3.93	12.33	15.39	
Natural gas, Transco Z6 NY	14.99	41.01	-8.92	-3.09	1.55	10.49	13.75	
Coal Central Appalachia	10.21	41.01	7.01	10.98	14.14	20.23	22.44	
HSFO 3pc fob NYH	36.68	41.01	-81.13	-66.86	-55.51	-33.64	-25.68	

Please see the methodology for the Argus Coal Daily and Argus Coal Daily International reports; Argus European Products, Argus Asia-Pacific Products and Argus US Products reports; and the Argus European Natural Gas report and the Argus Natural Gas Americas report at www.argusmedia.com/en/methodology

Conversion factors (left-hand column units are multiplied by the factor shown to convert to units in the top row)								
Equals	Million British thermal units	Barrels of oil equivalent	Tonnes of oil equivalent	Cubic feet (ft ³) gas	Cubic metres (m ³) gas	m ³ LNG	Tonnes LNG (specific gravity 0.425)	Tonnes LNG (specific gravity 0.475)
1 million Btu (1mn Btu)	1	0.172	0.0235	1000	28.3	0.0459	0.0195	0.0218
1 barrel of oil equivalent (boe)	5.8	1	0.136	5800	164.2	0.266	0.113	0.126
1 tonne of oil equivalent (toe)	42.5	7.33	1	42.5	1200	1.95	0.828	0.925
1 ft ³ gas	0.001	0.000172	0.0000235	1	0.0283	0.0000458	0.0000195	0.0000218
1 m ³ gas	0.0353	0.0061	0.00083	35.3	1	0.00162	0.000688	0.000769
1 m ³ LNG	21.8	3.76	0.513	21,824	618	1	0.425	0.475
1 tonne LNG (specific gravity 0.425)	51.3	8.85	1.207	51,350	1,450	2.353	1	
1 tonne LNG (specific gravity 0.475)	45.9	7.91	1.081	45,950	1,300	2.105		1

Argus Hydrogen and Future Fuels Service

Transition to Net Zero requires you to remain fully informed about the policy, regulatory and technological developments taking place across the globe. Subscribe to our service today to better navigate your energy transition journey.



Sign up now to get complementary access to Argus Hydrogen and Future Fuels Service »



Argus Global LNG is published by Argus Media group

Registered office
Lacon House, 84 Theobald's Road,
London, WC1X 8NL
Tel: +44 20 7780 4200

ISSN: 1746-4013

Copyright notice
Copyright © 2021 Argus Media group
All rights reserved
All intellectual property rights in this publication and the information published herein are the exclusive property of Argus and/or its licensors (including exchanges) and may only be used under licence from Argus. Without limiting the foregoing, by accessing this publication you agree that you will not copy or reproduce or use any part of its contents (including, but not limited to, single prices or any other individual items of data) in any form or for any purpose whatsoever except under valid licence from Argus. Further, your access to and use of data from exchanges may be subject to additional fees and/or execution of a separate agreement, whether directly with the exchanges or through Argus.

Trademark notice
ARGUS, the ARGUS logo, ARGUS MEDIA, INTEGER, ARGUS GLOBAL LNG, other ARGUS publication titles and ARGUS index names are trademarks of Argus Media Limited.
Visit www.argusmedia.com/Ft/trademarks for more information.

Disclaimer
The data and other information published herein (the "Data") are provided on an "as is" basis. Argus and its licensors (including exchanges) make no warranties, express or implied, as to the accuracy, adequacy, timeliness, or completeness of the Data or fitness for any particular purpose. Argus and its licensors (including exchanges) shall not be liable for any loss, claims or damage arising from any party's reliance on the Data and disclaim any and all liability related to or arising out of use of the Data to the full extent permissible by law.

All personal contact information is held and used in accordance with Argus Media's Privacy Policy <https://www.argusmedia.com/en/privacy-policy>

Publisher
Adrian Binks

Chief operating officer
Matthew Burkley

Global compliance officer
Jeffrey Amos

Chief commercial officer
Jo Loudiadis

President, Expansion Sectors
Christopher Flook

Global SVP editorial
Neil Fleming

Editor in chief
Jim Washer

Managing editor
Andrew Bonnington

Editor
Matt Drinkwater
Tel: +44 20 7780 4224
lng@argusmedia.com

Customer support and sales:
support@argusmedia.com
sales@argusmedia.com

London, Tel: +44 20 7780 4200
Beijing, Tel: +86 10 6598 2000
Dubai, Tel: +971 4434 5112
Hamburg, Tel: +49 48 22 378 22-0
Houston, Tel: +1 713 968 0000
Kyiv, Tel: +38 (044) 298 18 08
Moscow, Tel: +7 495 933 7571
Mumbai, Tel: +91 22 4174 9900
New York, Tel: +1 646 376 6130
Paris, Tel: +33 1 53 05 57 58
San Francisco, Tel: +1 415 829 4591
Sao Paulo, Tel: +55 11 3235 2700
Shanghai, Tel: +86 21 6377 0159
Singapore, Tel: +65 6496 9966
Tokyo, Tel: +81 3 3561 1805
Washington, DC, Tel: +1 202 775 0240

illuminating the markets

