



China's peakload power prices up 50% on spiralling fuel costs

Fuel cost inflation has made peak-hour electricity prices in China spiral up by more than 50% compared to baseload power prices as utilities pass on the high cost of imported fuels. China bought US\$366 billion worth of energy commodities from abroad in 2021, a 45% increase year-on-year.

Liberalising energy markets in China brought about a rise in retail gas prices as higher supply chain costs – especially for imported LNG – were handed through to industrial customers and electric utilities. Analysts anticipate the energy-intensive industry will continue to feel the heat of fuel cost inflation throughout 2022.

Non-residential gas prices at retail levels have been raised considerably in the current winter season as supply chain costs rose. As a consequence, China's consumer price index has started to increase year-on-year since last October, and Wood Mackenzie expects it to remain high.

Domestic coal output on the up

At home, China's curtailed coal mining capacity in recent years and sharp demand increase in 2021 led to a coal price rally which peaked in October last year. Looking ahead, Wood Mac research di-



rector Miaoru Huang said the latest price shock means Beijing "needs to redefine coal as an important energy supply in the short term" – both for the local coal industry, and for power generators.

Accelerated coal production in China in the fourth quarter of 2021 led to a sharp fall in prices, and analysts expect the average spot coal price to decrease to RMB730 per tonne (t) in 2022 from around RMB1,000/t in 2021.

Import dependency for gas remains

Though upstream Capex keeps increasing, China is unlikely to significantly reduce its import dependency on oil and gas. Elevated

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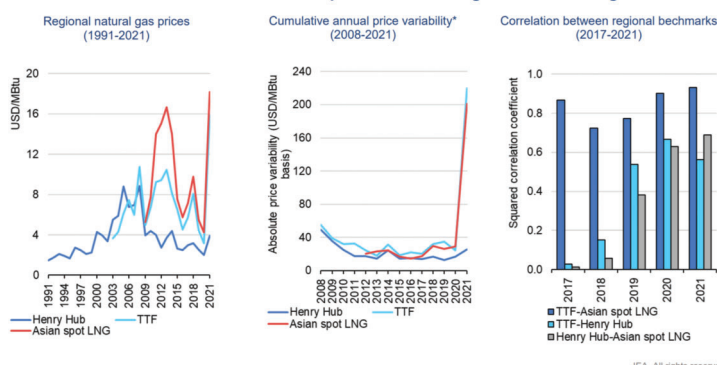
Weather and geopolitics to drive gas markets in 2022, IEA says

Risk of unseasonably cold weather and geopolitical tensions will keep gas and electricity prices very volatile in the coming weeks, the International Energy Agency (IEA) reckons. Global gas consumption rebounded 4.6% in 2021, more than double the scale of the pandemic-induced decline, and supply could not keep pace which resulted in steep price spikes.

Gas year 2021/22 opened on October 1st with record-high spot gas prices and lower-than-average storage inventory levels for the heating season. Tight supply and a strong post-pandemic demand recovery pushed made TTF prices jumped almost fivefold from their 2020 lows to average at \$15.8 per MMBtu – the highest on record.

In the US, Henry Hub prices almost doubled from their 2020 levels to average \$3.9/MMBtu while Asian LNG spot prices rose more than fourfold to \$18/MMBtu – again, the highest on IEA records.

correlation between Asian and European benchmarks grew to all-time highs



Fuel switch away from gas

High gas prices had ripple effects on electricity markets, pushing prices up and driving fuel

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and volatile global oil and LNG prices will put more pressure on domestic gas pricing.

Hard-nosed Chinese importers already shun spot LNG as import cost are higher than domestic sales prices. Today's sky-high LNG prices make it financially unattractive for China's numerous smaller third-party im-

porters to pay for regas terminal slots from the state infrastructure company PipeChina.

Seeking to decarbonise, the Chinese government targets to limit energy intensity and energy consumption – largely by raising prices. Higher electricity prices also impacted renewable investment. Although

price pressure from raw materials persist, China's wind turbine pricing is expected to further decrease by 20% this year and solar module prices have been on a slide since the beginning of 2022, which will help reduce renewable costs by 8-10% this year. ■

LNG would suffice to balance remaining Russian flows through Ukraine

Russian pipeline gas deliveries to Europe has already fallen – and replaced by LNG – to such a degree that halting the remaining flows through Ukraine would have “a limited additional impact.” According to IHS Markit figures, LNG shipments to Europe surged in January, covering 34% of total supply while Russian gas fell to just 17%.

Transits of Russian gas through Ukraine fell to historical lows in January – 50 million cubic meters per day (Mmcm/d), less than half of levels from a year ago. While flows swung back up with the beginning of February, they are still at half the levels of the 2015-2020 period.

“Europe is already experiencing a ‘quasi-curtailement’ of Russia gas flows,” said Michael Stoppard, chief strategist, global gas, IHS Markit. “The result is a European gas import picture that is starkly different from a year ago. One where LNG imports have ramped up to fill the gap.”

Additional US LNG imports backfilled much of the missing supply, rising to a new record of 245 Mmcm/d. Average total LNG imports in January were 490 Mmcm/d, with the upward trend in LNG imports continuing into early February to reach an impressive 710 Mmcm/d.

Though the surge in LNG imports reduced Europe's spare regasification capacity from 82% in January to 25% at the onset of

“Under an extreme scenario, extra coal and nuclear generation capacity – either in the form of mothballed capacity being brought back online – would be required.”

February, IHS analysts reckon this is still “enough to cover the loss of remaining pipeline flows from Ukraine relatively comfortably.” A modest increase in storage withdrawal could also feasibly compensate for any lost supply.

Extra coal power as ‘last resort’

Should Russia escalate the situation and cut all gas deliveries to Europe, this would evoke an immediate supply deficit. “Under an extreme, if highly unlikely, scenario where all Russian pipe flows were cut off, the tightness of global LNG supply and limited spare European LNG regas capacity means that other supply levers would be needed to close the gap,” Stoppard commented.

“Extra coal and nuclear power

generation capacity—either in the form of mothballed capacity being brought back online, resorting to strategic reserves or delayed plant closures – along with additional drawdowns of gas from storage would all be required.” Storage inventories are already well low, and running them down further would require a huge restock before winter 2022/23. ■



LNG carrier arriving at Rotterdam

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substitution in favour of more polluting fuels like coal and oil.

“Exceptionally high gas – and by exten-

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sion electricity – prices have hurt consumers, utilities and wholesalers, and are likely to have a lasting negative impact beyond the current seasonal tension,” IEA analysts commented. The current market tightness is hence a start reminder for gas-consuming countries to optimise the use of infrastructure, especially storage. Future gas systems need to be “more complex and decentralised, and entail bi-directional networks.”

Mild temperatures, together with higher LNG inflow, moderated European prices at the start of 2022, but analysts warn that every new sign of colder weather or tighter supply will quickly prompt price increases.

LNG contracting slows

Though flexible LNG trade helped importers to adjust to the sharp post-pandemic demand recovery, today's contracting activity a

higher share of fixed-destination, long-term deals than in previous years. Analysts attribute this to a lower activity from portfolio players, as well as to a motivation to limit risk in an exceptionally volatile price environment.

LNG contracting activity shrank by almost 30% year-on-year (y-o-y) in 2020 (or 45% compared to its 2018 peak), while activity during 2021 to date shows some potential for recovery.

Final investment decisions (FIDs) were also down from their 2019 record high, with one North American project sanctioned in 2020, plus Qatar's major expansion plan confirmed in early 2021. These new investments, added to the wave of FIDs taken before 2020, should therefore prove sufficient to satisfy additional LNG demand in the coming years, analysts concluded. ■

Gazprom steps up sales to CNPC by 10 Bcm through Far Eastern route

Russia's state-dominated Gazprom is pivoting East and agreed to boost long-term supplies to China National Petroleum Corporation (CNPC) via the so-called Far Eastern route. Once the pipeline reaches full capacity, Russian supplies will grow by 10 billion cubic meters to a total 48 Bcm, including deliveries via the Power of Siberia gas trunkline.

Power of Siberia's eastern route, supplies gas from the vast Chayandinskoye via the Amur processing plant to northeast China. Deliveries on this trunkline repeatedly exceeded contractual obligations, and are bound to grow further.

Russian gas has been flowing to China since December 2, 2019, based on a 30-year

sales and purchase agreement for 38 Bcm per year signed back in 2014 between Gazprom and CNPC. Negotiations were hard fought at the time, and supplies are understood to be delivered in a price range of \$350-\$390 per thousand cubic meters.

'Power of Siberia 2' in the making

Pivoting east, Gazprom CEO Alexey Miller

underlined the "exceptionally strong mutual trust and partnership between our countries and companies," referring to CNPC. Gazprom hence proceeded to the pre-investment phase for the 'Power of Siberia 2' pipeline which will deliver Russian gas much closer to industrial regions in eastern China.

In January, a feasibility study was completed for the Soyuz Vostok gas trunkline which will extend the Russia's Power of Siberia 2 gas interconnector in Mongolian territory. This second gas link would make it possible to supply up to 50 Bcm of gas per year to China with first gas anticipated to arrive in early 2031.

IHS Markit estimates a potentially acceptable border price for Gazprom is between \$2.7/MMBtu and \$4.7/MMBtu, excluding export duty. The low end of the range reflects just the cost of gas production in West Siberia and cash Opex to operate the export pipeline, while the higher range reflects the export netback from the European market in West Siberia and the required investment tariff to cover the construction costs for the Power of Siberia-2 pipeline. ■



Smaller Chinese importers shun costly spot LNG

Price-savvy Chinese energy importers are buying less LNG, particularly spot cargoes, as import cost are higher than domestic sales prices. These sky-high prices make it financially unattractive for China's numerous smaller third-party importers to pay for regas terminal slots from the state infrastructure company PipeChina.

Early market charter rates indicate that several slots for landing and regasifying cargoes at PipeChina's Tianjin LNG terminal have not found buyers for 2022. This comes as many Chinese companies intend to minimize spot trading activities in the face of high prices, while rushing to secure long-term contracts with the large LNG suppliers instead.

Many buyers are seeking to sign mid- to long-term Sales and Purchase Agreements (SPAs) or tenders, indexed to oil or Henry Hub, given that spot JKM prices are forecast to stay well above oil-indexed levels throughout 2022.

"Many buyers are seeking out term contracts to tide themselves over until the mid-2020s in an effort to hedge themselves against seasonal price volatility," one trader commented.

Though China's LNG growth rate is bound to fall from previously staggering

heights in 2022, there will still be demand for imported natural gas as the power sector continues to switch from coal to cleaner fuels. The US LNG giant Cheniere said it is receiving a growing number of LNG cargo inquiries from Chinese electric utilities and chemical companies.

Pipeline gas outrivals LNG

Looking to play the arbitrage between oil-indexed long-term supply and spot LNG, Chinese buyers clearly prefer oil-linked pipeline gas. The price of pipeline gas imported by China averaged at \$6.15 per MMBtu in December – nearly three times less than the average LNG price at \$18.93 per MMBtu.

Striving to boost supplies from Siberia, Gazprom said it significantly increased the daily amount sold to CNPC to way over 2021-volumes. Still, Australia remains China's largest natural gas supplier shipping 31,343 mtpa of LNG in 2021, compared with 9.21 mtpa from the United States and 7.54 mtpa of Russian pipeline gas, according to Chinese customs data. ■



Low traffic at Tianjin LNG these days

France and Germany to forge closer ties on energy policy

Energy ministers of France and Germany have intensified their cooperation as Europe's two leading economies want to reconcile after a dispute over the future role of nuclear and gas. The French energy minister Bruno Le Maire said the current price surge highlights the need for "more independence" in energy supply, e.g. through green hydrogen.

Le Maire, whose country currently holds the rotating EU presidency, said both countries should focus on the promising green hydrogen industry and other future technologies in order to increase Europe's independence in energy supply and reduce the risk of future price spikes.

Both governments will set up joint working groups next week to find solutions to the most urgent disagreements. France and Germany had been at loggerheads over the role of nuclear and gas in the EU taxonomy of sustainable investment. But Robert Habeck, the German economy and climate minister, was keen to brush over the differences and look ahead. He acknowledged the countries have "different traditions" and, at times, "diverging interests" that warrant closer cooperation for the sake of European "core issues".

France is a staunch supporter of nuclear

power, while Germany is phasing out the technology at the end of 2022 due to safety concerns. The French government underlines that nuclear power is a low-carbon alternative to coal, which Germany wants to temporarily replace with natural gas before the energy system has been transformed to 100% renewables.

Taxonomy labels nuclear and gas as "green"

The European Commission published final taxonomy rules last week and it emerged that criteria have been changed to make it easier for gas to earn a green investment label. The draft required new plants to co-fire low carbon gases by 2026 and switch to 100% green fuels in 2035, but the 2026 rule will now be lifted.

New nuclear plants permitted until 2045, as well as gas power with emissions below 270 grams of CO₂e per kWh can be classi-

fied as green. Unless vetoed down by at least 20 EU countries, the new regulation will be effective in January 2023.

Germany to abolish EEG levy in early 2023

The German treasury has agreed to end transfer payments to renewable energy operators via consumers' electricity bills. The EEG levy is meant to be abolished as of January 2023; finance minister Christian Lindner (FDP) called it "a billion-dollar relief for families, pensioners and businesses."

Support to renewable energy operators will then be subsidised through the federal budget. Doing away with the surcharge, which currently stands at 3.27 cents per kilowatt hour (kWh), would save the average household about €300 per year. This could alleviate parts of the burden of an accelerating inflation which is forecast to reach 4% on average in 2022. ■



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EDF to buy GE's turbine unit in Belfort as France invests in new nuclear

State-controlled Electricite de France (EDF) will buy GE's steam turbine business for nuclear plants, as the American OEM seeks to cut debt while the French government wants to build new reactors. Finance minister Bruno Le Maire indicated "tens of billions of euros" would have to be spent to generate CO2-free energy, mostly from new nuclear reactors.

The French President Emmanuel Macron will reveal all the figures this week, "he will announce the number of reactors and how we will pay for that," Le Maire said. He disclosed a double-digit figure investment in new nuclear is on the cards.

France has been pushing to get nuclear classified as a 'green energy source' in the EU taxonomy for sustainable investment and President Macron already indicated in November that France is ready to build its first new nuclear reactors in decades, though he gave no details on the timeline.

Getting the Arabelle turbine back

For that move, EDF requires the know-how and manufacturing based of GE's steam turbine business in eastern French city of Belfort. GE had bought the business in 2014

from the French manufacturer Alstom which developed the widely-used Arabelle turbines for nuclear plants, including next-generation EPR reactors. That

very Arabelle turbine will be vital for EDF's move to invest in new nuclear and most turbines are bound to be built in Belfort.

The Belfort turbine factory was part of GE's takeover of Alstom's power and grid business in a \$13.5 billion deal – "hugely overvalued," analysts said, as GE ended up writing up a nearly \$22 billion loss. Restructuring and downsizing had been in focus as GE sought to turn around its indebted business. Belfort used to handle GE's gas, steam, nuclear and hydro technology, but the manufacturer in 2019 decided to



downsize operations for large turbines in response to a shrinking market for power plants worldwide.

The sale of GE Steam Power's nuclear turbines business – estimated at a value of around \$1.2 billion – now gives GE the chance to further streamline operations and reduce debt. ■

Siemens Energy lowers outlook amid problems at wind unit

Siemens Energy has cut its outlook after wind division Gamesa warned of continuing supply chain issues, piling more pressure on the German company to fully take over the unit and tackle the issues. CEO Christian Bruch called the setback "disappointing" but pointed at the strong order intake of the company's Gas and Power segment.

Siemens Energy currently owns 67% in the Spanish unit Siemens Gamesa which just issued the third profit warning in less than nine months. Ramp-up issues around a new class of wind turbine have burdened the company for some time, and latest figures spur fresh demand on Christian Bruch, CEO of the German parent, to buy the remaining stake in Siemens Gamesa, worth an estimate €4.3 million.

While the Gas and Power segment substantially improve its adjusted EBITA, the Renewable Energy unit reported a negative result of €318 million in the first quarter, impacted by additional supply chain related costs and ramp-up challenges with the 5.X platform of the onshore business. Losses at Siemens Gamesa translate into a loss of €63 million for Siemens Energy in the same period – compared to €366 million profit earned last year.

'Solid' earning in Gas & Power

In contrast to the ailing wind power business, Siemens Energy's Gas and Power unit showed a solid performance as the company's transformation progresses.



"Our measures have started to have an impact, and the results are heading in the right direction. However, the latest profit warning at Siemens Gamesa Renewable Energy is a setback and disappointing for all shareholders. As majority shareholder, we will continue to support SGRE in achieving the turnaround in the onshore business even in a difficult market environment," CEO Bruch commented.

Both the Renewable Energy and the Gas and Power segments contributed to a strong quarter for order intake at €8.3 billion, up 10.1% on a comparable basis. Strong Book-to-bill ratio of 1.40 resulted in a new record order backlog of €87.1 billion.

Revenue was €6.0 billion, some 11.4% lower on a comparable basis – which is "in line with our expectations," Bruch said, pointing at timing effects associated with the execution of large projects. ■

BP posts highest profit in 8 years and accelerates green makeover

British oil major BP today reported a profit of \$12.8 billion for 2021, the highest in eight years, as oil and gas prices soared due to the global economy rebound from the pandemic. Shifting away from hydrocarbons, BP aims to earn \$9-10 billion from "resilient hydrocarbons" by 2030, mostly from bioenergy, convenience, electric vehicle charging, renewables and hydrogen.

BP's strong earnings and profit surge mark an impressive turnaround from a net loss of \$5.7 billion in the previous year. "We are performing while transforming," CEO Bernhard Looney said, referring to the company's strategic shift to green energy. Accelerating its green makeover, BP will direct more than 40% of its capital expenditure in 2025 in its transition growth business, rising to around 50% by 2030.

With its renewables pipeline and 4.4GW developed to FID at end-2021, BP is on track for its target of having developed 20GW renewable power capacity by 2025 and aim for 50GW by 2030. Looking at profitability, BP is confident of achieving 8-10% levered returns for these investments.

In hydrogen, bp claims to have developed "options in advantaged markets worldwide" where it could potentially produce 0.7-1.3 million tonnes a year. Additional value could be created by integrating hydrogen with renewables and CCS. ■



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DEWA converts 2.4 GW Hassyan plant from 'clean coal' to natural gas

Dubai Electricity and Water Authority (DEWA) has contracted ACWA Power to convert the 2,400 MW Hassyan power station from 'clean coal' to natural gas. By 2030, the emirate of Dubai aims generate 61% of its electricity needs from less polluting gas, most of which is imported from neighbouring Qatar.

Switching the Hassyan plant to gas will result in an entirely coal-free ACWA Power portfolio which is in line with the company's 2050 net-zero emission targets.

ACWA Power owns a net stake of 26.95% of Hassyan power plant. The complex also includes a water desalination unit with a production capacity of 120 million gallons of water per day, using reverse osmosis.

Once converted, the Hassyan natural gas power complex will complement the Jebel Ali power and water desalination complex, both providing Dubai with cleaner electricity and water services, DEWA chairman and CEO Saeed Mohammed Al Tayer explained.

Hailing DEWA's decision, Sheikh Ahmed bin Saeed Al Maktoum, chairman of the Dubai Supreme Council of Energy, said the move helps diversify the emirate's energy mix and achieve its goal to produce all electricity from clean energy sources by 2050.

"The initiative is consistent with the pivotal role that gas is expected to play in enabling economic growth in the UAE over the next fifty years



Hassyan IPP will soon run on gas

and in line with global efforts to reduce reliance on high carbon emissions energy sources," he said. ■

WEC to blend 25% hydrogen in gas feedstock at Michigan power plant

WEC Energy Group is preparing to demonstrate up to 25% blending of hydrogen with natural gas to fuel one of its power plants in Michigan. The pilot project will be carried out either at the 128 MW F.D. Kuester plant or the 54.9 MW A.J. Mihm plant, both running on reciprocating internal combustion engines.

The two plants are operated by Upper Michigan Energy Resources, a WEC Energy Group subsidiary. "As we bring more renewable energy online, we must ensure that we can keep the lights on when the sun is not shining and the wind is not blowing. The potential of adding hydro-

gen as a clean generating fuel to our fleet of dispatchable plants is an important step as we bridge to a bright, sustainable future," said Gale Klappa, executive chairman at Upper Michigan Energy Resources.

The hydrogen co-firing pilot project will be implemented together with the Electric Power Research Institute (EPRI). Results will be shared with the wider energy industry to accelerate the use of low-carbon fuels to reduce emissions.

WEC Energy Group has set itself a target to reach net-zero carbon emissions from electric generation by 2050 and net-zero methane emissions from natural gas distribution by the end of 2030. ■



View into the F.D. Kuester plant

NEWS NUDGES

GenCellFOX targets Telcos

GenCellFOX, generating power on-demand from ammonia, has been launched as a replacement for gas and diesel generators in mobile network. The solution can be placed at a telecom base station in any location where grid services are poor to keep the tower running without refuelling for half a year.

Neoen builds 8MW battery in France

Independent power producer Neoen has selected Saft as the EPC provider for an 8MW/8MWh battery energy storage system to be built in southern France. The system, based on four Intensium Max 20 containers, will be used to store electricity from a solar power farm when the generated output is too high to be feed into the transmission operator RTE's grid. ■

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