



China's clamp-down on Covid impacts energy demand and prices

China's 'dynamic clearing' policy against Covid-19 requires local government to impose strict measures as soon as cases rise into double figures. Lockdowns like in Shanghai made transportation fuel demand plunge, while electricity demand fell in line with the slowing economy, Wood Mackenzie noted. Record coal and gas prices, pushed thermal generation output down by almost 6% in March and early April.

At the same time, the central government in Beijing seeks to boost domestic coal supply to ensure energy security, easing pressure on domestic coal prices.

Chinese gas demand – and LNG in particular – has had a "torrid start to 2022," commented Wood Mackenzie's Asia Pacific vice chair, Gavin Thompson. Already squeezed by slower economic growth and record LNG spot prices, gas demand barely grew in the first quarter.

Hard-nosed Chinese LNG buyers, clearly taken aback by high prices, are now seen reeling from lockdowns. From Wood Mackenzie's expectation of China's LNG demand rising by 10 million of LNG this year, imports will fall by 4% over 2021. In Thompson's view the situation is "bad, but could still get worse – LNG imports have fallen a whopping 16% so far this year."



Impact on global commodity prices

In conjunction with supply disruptions in the wake of the Russia/Ukraine conflict and inflation fears, the latest lockdowns in China are exacerbating the commodity prices risk. Oil market volatility could potentially become more widespread and prolonged lockdowns into May and beyond would trigger a downside risk for China's oil demand – and potentially global prices.

As for LNG, weak Chinese demand has led to a long Asian balance, forcing price parity to Atlantic LNG, Thompson said,

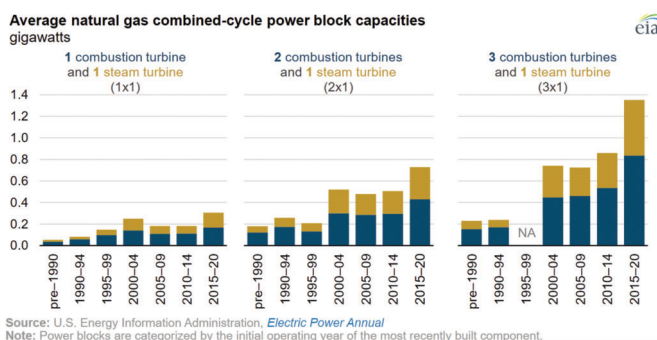
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Over 32 GW of new US gas power plants due operational by 2025

Abundant domestic gas resources accelerate the build-out of combined-cycle power gen capacity in the United States. According to ResearchAndMarkets, around 32.3 GW of new gas-fired plants are scheduled to start operations in 2025 and are in advanced stages of development. Some 14.2 GW are under construction while 14.7 GW have a status of advanced permitting.

Natural gas remains the most prevalent fuel source for power generation in the US, and out of the 491 GW of gas-fired generating capacity installed more than half (280 GW) are combined-cycle units. The configuration of most combined-cycle system is 2x1, meaning two gas combustion turbines and one steam turbine.

Combined-cycle systems are more efficient in converting gas into electricity: They have an average operating heat rate of 7,146 Btu/kWh compared with simple-cycle systems,



which consume about 10,000 Btu to generate 1 kWh, based on 2020 averages, according to the US Energy Information Administration (EIA).

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cautioning that prices are trending downwards as abundant piped gas and LNG imports are pushed into storage in Europe.

Softer thermal power generation and increasing domestic coal production is gradually feeding through into prices. China's

benchmark Qinhuangdao price, currently around RMB1100/t, is expected to ease off to RMB1000/t in May and fall further to around RMB700/t by late summer.

In Shanghai, the government plans allow industrial production and manufacturing to

resume after three weeks of lockdown which helps rekindle energy demand, and the overall Chinese economy to recover. Facing rising public opposition, the government may relax its strict Covid protocols over the summer. ■

European gas prices soar on EU's oil sanction plan

Frontmonth contracts on the TTF, Europe's main gas trading hub, have soared from Wednesday midday in reaction to the EU's proposed ban on Russian oil imports this year which could increase demand for coal and natural gas. The TTF frontmonth June was last seen trading at €104.99/MWh, up more than 5% on the previous day.

The proposed sanction package would include all Russian oil, with crude oil meant to be phased out within six months and refined products by the end of the year, EU President Ursula von der Leyen said. Hungary and Slovakia which oppose the oil ban are understood to have granted a longer transition period until the end of 2023 to enforce the sanctions. The EU's sixth package also envisages cutting off more Russian banks from the international SWIFT payment system.

Complete halt in Russian gas flows "unlikely"

Brussels' latest move exacerbates concerns that the Kremlin might retaliate given that Gazprom just suspended deliveries to Bulgaria and Poland amid a dispute over payment terms. Most analysts, however, do not expect a complete halt in all Russian pipeline gas supplies to Europe, not least because Gazprom could not sell these

volumes elsewhere due to infrastructure constraints.

Exports to China via the Power of Siberia pipeline have already been ramped up to maximum levels, but these volumes come from different regions within Russia than the gas that is flowing to Europe, e.g. through the Nord Stream pipeline. Germany had for long rejected a ban on Russian oil and gas imports, citing a lack of fast alternatives.

The European Commission, in contrast, is determined that Europe needs to wean off its dependence on Russian fossil fuels well before 2030. The proposed plan 'REPowerEU' seeks to gradually remove at least 155 bcm of natural gas – equivalent to the volume imported from Russia in 2021. Nearly two-thirds of that reduction is meant to be achieved before year-end.

"We must become independent from Russian oil, coal

and gas," Commission President Ursula von der Leyen said. Europe, in her view, needs to act fast to mitigate the impact of rising energy prices by buying natural gas and LNG from elsewhere for next winter and accelerate the green energy transition.

"The quicker we switch to renewables and hydrogen, the quicker we will be truly independent and master our energy system," she said. For the remaining weeks of this winter, Europe has sufficient amounts of gas, but reserves need to be replenished urgently for the upcoming winter 2022/23. ■



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Because of efficiency gains, combined-cycle systems generally operate at higher capacity factors than simple-cycle systems. CCGTs hence generally serve base and intermedi-

ate loads to the grid, while simple-cycle systems generally serve peak load.

Most combined-cycle power blocks have combustion and steam turbine components each connected with a generator. However, 13 GW of combined-cycle capacity are single-shaft systems in which both the combustion and steam turbines drive a common generator on one shaft, the EIA's Electric Power Annual survey finds.

Comparing generating capacity, the largest CCGT in the US is Florida Power & Light's West County Energy Center which consists of three 3x1 power blocks, or a total of 12 combustion and steam turbines. Each of the three power blocks is rated at 1,259 MW, mounting to an overall 3,777 MW capacity. The West County Energy Center generated 20.3 terawatt-hours (TWh) of electricity in 2021 – only five nuclear power

plants and one coal-fired plant generated more electricity last year.

Trend to larger and more efficient CCGTs

The adoption of a new class of combustion turbines heralded a trend to larger CCGT blocks with higher efficiency gains (lower heat rates). For example, the capacity-weighted average heat rate of power blocks less than 500 MW is 6% higher (or less efficient) than that of power blocks larger than 1,000 MW.

In consequence, the average capacity of a 2x1 power block increased from 500 MW for those built before 2015 to over 700 MW for those built after 2015, according to EIA findings. Larger power blocks also generally have lower per-unit capital costs, making them more attractive investments. ■

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Uniper posts €3.1bn net loss on Nord Stream 2, Unipro impairment

German utility Uniper has reported a €3.1 billion net loss for the first quarter, blaming impairment charges related to its Russian unit Unipro and the suspended Nord Stream 2 gas pipeline. Having to shield against potential disruptions in Russian supplies, Uniper's operating performance was also hit by lower gas storage withdrawals which reduced sales and profits.

“The main reason for Uniper's negative earnings in the first quarter is that earnings in our gas mid-stream business will be shifted to subsequent quarters of 2022,” chief financial officer Tiina Tuomela explained.

“We have deliberately made this shift – it strengthens security of supply in Germany, as we have withdrawn less gas from our storage facilities,” she told investors. Germany uses to source 55% of its gas from Russia in recent years, but this share has been reduced to 40% by now. Utilities were struggling to replenish gas storages quickly to alleviate the risk of potential supply cuts by Gazprom in retaliation to sanctions.

But the Uniper CFO was quick to point out the deferred withdrawal from gas storage was “a shift in earnings and not a loss,” hence she affirmed the company's earnings forecast for the current financial year. For 2022 as a whole, Uniper still anticipates to reap an operating profit of €1.0 billion to €1.3 billion and adjusted net profit of €0.8 billion to €1.1 billion.



Net debt increased significantly from €324 million to €1,984 million due to a negative operating cash flow in conjunction with measures to improve liquidity in the gas and emissions-rights businesses in late 2021, lower withdrawal and sales from gas storage and changes in working capital amid higher priced commodity markets.

Earnings at Uniper's Russian Power Gen-

eration segment were significantly above the prior-year level, thanks to the recommissioning of unit 3 at Beryozovskaya power station in May 2021 and the associated income from the capacity mechanism along with higher prices in Siberia. However, the expiration of long-term capacity payments for two units at Surgutskaya power station was an offsetting factor. ■

RWE shareholders reject lignite spin-off, call for faster RES buildout

A majority of RWE shareholders have rejected a request to spin off the company's brown-coal business. Activist investor Enkraft Impactive had proposed the spin off and called the lignite business “economically negligible,” but RWE CEO Markus Krebber said the move would not accelerate his strategy of building out renewable energy sources.

Enkraft, which holds 0.03% of RWE shares, wanted to force the company's board to set out a draft spinoff plan within a year, arguing the business poses a financial risk and is environmentally questionable.

However, both the RWE board and advisors at the shareholder Deka Investment

spoke out against the motion. “We do not want to limit management's options for action by formal resolution and weaken RWE's negotiating position by setting hard time targets and disclosing information,” said Ingo Speich, head of Deka's corporate governance. But he agreed that RWE green energy transformation was still too slow.



Nightshift at Garzweiler open cast lignite mine

“Today, the company's electricity production is not sustainable. The goal of achieving climate neutrality by 2040 is a long way off,” he said.

Swap deal in the making

Eager to appease critics, RWE said it was open to the German coalition government's proposal to set up a foundation that organises the decommissioning of coal-fired power generation and

renaturation in the Rhenish area. A swap deal is under discussion, in which operators of lignite mines and power plants would lose control over these assets, but can also dispose of the associated financial risk. RWE CEO Müller said he was actively involved in discussion about the swap deal, but did not give any details.

By 2030, RWE committed to invest some €50 billion in renewables but its power generation mix currently still largely hinges on fossil fuels. Last year, the utility generated just 20% of its electricity from wind and solar power, compared with almost 30% with lignite, 4% with hard coal and almost 33% with natural gas. Considering the risk of a halt in Russian gas supplies, analysts deem it unlikely that RWE can simultaneously phase out lignite-fired plants and reduce the run-time and fuel consumption of gas-fired units. ■



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JERA and EGCO Group to set up LNG and H2 value-chain in Thailand

Japan's JERA, one of the world's biggest LNG importer and portfolio player, has agreed to help Thailand's state power producer EGCO Group with setting up an LNG supply chain. Both partners will also carry out a feasibility study to use hydrogen as an alternative carbon-free fuel for co-firing gas power plants.

The agreement stipulates that JERA and EGCO will discuss ways of developing LNG value-chain projects, like integrated regas terminals and power plants, but establish a future large-scale supply chain for hydrogen and ammonia as more and more power generators retrofit their plants to partially run on these zero emission fuels.

EGCO recently obtained an LNG Shipper License and hopes to secure attractively-priced cargoes from JERA's global LNG portfolio. The Thai company is indirectly owned by JERA as the latter owns approximately 12% shareholding through TEPDIA Generating B.V. The Thai regulator in December granted EGCO a licence import LNG to fuel gas-fired power plants. EGCO said at the time the 256 MW Banpong plant and the 121 MW Klongluang plant "could use additional supplies," though they are already source gas from state-run PTT. A 120 MW co-generation plant in Rayong province is also understood to benefit from the addi-



LNG tanker discharging at a regas terminal

tional gas supplies.

Thepparat Theppitak, EGCO Group's President pointed out the collaboration with JERA will not only help the company develop its LNG business through international supply chains. It will also allow EGCO Group to use hydrogen and ammonia for electricity generation as well. In response to Thailand's National Energy Plan, EGCO has set out a strategy aimed to reduce carbon emission intensity by 10% within 2030 and achieve carbon neutrality within 2050. To date, the utility owns and operates 1,364 MW of renewable energy capacity, equalling 23% out of its 5,959 MW total capacity. ■

PG&E studies feasibility of blending H2 in gas pipelines for co-firing

Pacific Gas and Electric Company (PG&E) has launched a study, known as 'Hydrogen to Infinity (H2∞)', to examine the potential of blending hydrogen into a gas transmission pipeline. Researchers will investigate the injection, storage of different hydrogen blends in the pipeline and its combustion in NCPA's Lodi Energy Center, powered by a Siemens 5000F4 gas turbine.

Northern California Power Agency (NCPA), a member-owned utility, owns and operates several thermal and hydroelectric power stations with a combined capacity of 796 MW. The H2∞ study will blend hydrogen into a multi-feed gas pipeline adjacent to NCPA's 225 MW Lodi Energy Center – the first power station in the US to use 'fast-start' gas turbine technology.

Partners of PG&E in the H2∞ study also

include Siemens Energy, the City of Lodi, GDH Inc., and University of California at Riverside. Researchers together with technical experts at Siemens Energy will study the injection, storage and combustion of hydrogen blends in a range of end uses, notably power generation.

In focus will be areas like technical, operational, and safety needs of blending hydrogen with natural gas, energy resiliency and flexibility considering future market development, commercial and government partnerships as well as training environments for this new technology.

Janisse Quiñones, Gas Engineering Senior Vice-President at PG&E expects the feasibility study will help PG&E evolve as a natural gas utility. "This new facility will pro-

German government to fund up to 4 GW electrolyser capacity

The German government is preparing to support and partially fund up to 4 GW electrolyser capacity to help ensure the country gets back on track for its 'climate neutrality by 2025' target. Hydrogen-producing electrolyzers between 20 MW and 100 MW capacity can receive Capex support.

The funding is aimed at achieving a faster cost degradation and amortisation of these hydrogen plants to make Germany a leading market for hydrogen technology. The government wants to see 10 GW of electrolyser capacity installed by 2030.

Supportive policies for green hydrogen are part of an ongoing law reform that also includes an overhaul of the renewable energies act (EEG), stipulates a faster expansion of wind and solar power capacity as well as reform of building efficiency norms.

But Germany will unlikely succeed in producing all the hydrogen it consumes at home. Imports partnerships are in the making: On Tuesday, the Governments of India and German have entered a partnership to develop green hydrogen production in India and help the country's reforestation efforts. Germany promised some 10 billion euros in additional funding for climate action and sustainability.

India has favourable conditions for the generation of renewable electricity and wants to become a major producer of green hydrogen. Electrolysers developed by German companies could facilitate the establishment of a green hydrogen economy in the country, economy minister Robert Habeck said in a statement. "Importing green hydrogen from India," in his view, "will be important to reduce Germany's reliance on fossil fuels." ■

vide critical research, close information gaps," he said, "and unlock opportunities not only for PG&E, but for the entire global network of natural gas pipeline operators."

If proven successful, PG&E could inject growing volumes of hydrogen in the Californian gas pipeline system. Findings from the feasibility study can be useful for the entire gas and power industry as technology advances increase the availability of cheap hydrogen to help decarbonise power generation as well as hard-to-abate industries. ■





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Greece, Bulgaria say new FSRU will curb reliance on Russia gas

Greece has formally kicked off works for a Floating Storage and Regas Unit (FSRU) in Alexandroupolis, developed by Gastrade and the shipping company GasLog. The FSRU will become an "energy gateway" for southeast Europe, with regasified LNG to be supplied to neighbouring Bulgaria and further to Poland to reduce the region's reliance on Russia.

"Recent blackmails by Moscow over natural gas make this cooperation not only necessary but urgent," the Greek Prime Minister Kyriakos Mitsotakis commented. Greece has already stepped in and supplied Bulgaria with natural gas since Gazprom cut off contractual supplies over a dispute on payment terms.

The new FSRU, set to be moored about 18 kilometres off Alexandroupolis port, will regasify LNG and carry the natural gas on-shore via a 28 km pipeline. Operations are scheduled to start as early as in winter 2023 and Greece's Gastrade is already looking for potential suppliers.

"In a period of high volatility in the geopolitical and energy landscape, with this project, Greece shows Europe that it can respond with firm strategic steps to the uncertainty of the times and, through growth, and offer so-

lutions from which everyone can benefit," said Gastrade's CEO Elmina Copelouzou.

Request for second FSRU permit

Gastrade has also submitted to the Regulatory Authority for Energy (RAE) an application for a new Independent Natural Gas System (INGS) License, for another project "Thrace LNG", which will also consist of an FSRU will be developed near the first FSRU at the Sea of Thrace, also offshore Alexandroupolis.

The shipping company GasLog committed to design, build and deliver the physical FSRU at Alexandroupolis anchorage by the end of 2023. ■



Kick-off event for Alexandroupolis FSRU



Render of the Red Sea Project

Saudi Arabian tourist project relies on MAN biofuel engines

The Red Sea Project, a regenerative tourist project in Saudi Arabia, will run on solar power combined with battery storage backed up by MAN GenSets. ACWA Power is developing the clean energy supply infrastructure for the ambitious tourism project and contracted MAN Energy Solutions to supply 25 biofuel-optimised engines with 112 MW combined capacity.

The scope of orders for MAN Energy Solutions covers four MAN 18V51/60, nineteen MAN 9L21/31S and two MAN 6L21/31S GenSets with each engine optimized for use with climate-neutral B100 biofuel.

Supported by the Saudi government as a lighthouse project, the Red Sea project is planned north of the city of Umluj where it will stretch 200 km of coastline. Some 16 hotels and an international airport are scheduled to open by the end of 2023, and by 2030, the destination will include 50 hotel resorts with more than 8,000 hotel rooms and 1,000 residential properties.

Crown Prince Mohammed bin Salman hailed the project as the awakening and expansion of the Saudi Arabia's tourism sector. But an environmentally-friendly energy supply for tourist also needs to be safe and reliable. "Even if solar energy is not available, the power supply can still be completely climate-neutral thanks to our engines which ensure a safe back-up," said Ghassan Saab, MAN's head of power plants in the MEA region. "The six power plants will provide highly flexible load-support without additionally impacting the climate." ■

Eni deploys Mitsubishi CCUS technology at Ravenna power station

Italy's Eni is implementing Carbon Capture, Utilization and Storage (CCUS) technology from Mitsubishi at two power generation units of its Ravenna petrochemical site. The first project phase will capture about 25,000 tons of CO₂ per year from the gas power station's turbo compressor exhaust, using Mitsubishi Heavy Industries Engineering's (MHIENG) proprietary KS-1™ solvent.

At Ravenna, Eni invested €1.1 million over the last three years in decommissioning parts of its upstream gas assets. Eni's depleted or depleting fields in the Adriatic offshore can quickly be converted into carbon storage sites. In addition, leveraging CCUS for enhanced oil recovery would help boost output and future earnings.



Eni's gas power plant at its Ravenna refinery

An experimental program will commence at the Ravenna Hub by 2023, followed by an industrial phase by 2027 with an initial storage capacity of 4 million tonnes/year of captured CO₂, of which 1 million will stem from Eni's activities and the remaining from third parties. The objective is to help decarbonise Italy's hard-to-abate industrial sectors and ultimately Eni expects its Adriatic offshore fields could hold up to 500 million tonnes of CO₂.

MHIENG's role in the project will be to provide licensing for its carbon capture technology, the KM CDR Process, jointly developed with The Kansai Electric Power. The KM CDR technology captures the CO₂ contained in flue gas by a process of chemical absorption using MHIENG's proprietary KS-1™ solvent. ■

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