NATURAL GAS

Skyrocketing Prices

A White Paper Report on the Natural Gas Shortage

Natural Gas: Skyrocketing Prices

A White Paper Report on the Natural Gas Shortage

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Skyrocketing Energy Gas Prices

Energy supply disruptions and price spikes around the world are fuelling worries about post-pandemic **runaway inflation** and providing a glimpse into what could happen if **traditional energy supplies dwindle before greener sources are ready** to take their place.

Soaring natural-gas prices in Europe and North America, transportation fuel shortages in Britain and **rolling blackouts** in China are combining to keep consumers and governments on edge as the winter heating season approaches and **affordability** comes into question.

Meanwhile, government budgets are stretched because of massive aid programs set up to deal with COVID-19, so their ability to provide relief is not endless.

All of this is playing out as a push for massive reductions in carbon emissions and broad adoption of cleaner energy sources gathers steam globally.

The latest report by the UN Intergovernmental Panel on Climate Change, warning of dire consequences should the world fail to meet its emission-reduction targets, has only added immediacy to the need to act.

The current situation shows how difficult the task ahead is for countries rich and poor to end their reliance on fuel sources that have long been taken for granted.

Overall, the global oil and gas industry is **struggling to replenish supplies** after demand tumbled and prices cratered during the dark early months of the pandemic in 2020.

Bank of America predicts crude, now nearly US$80 a barrel, could climb above US$100 this winter for the first time since 2014. In oil-equivalent terms, natural gas in Europe and Asia is already selling for nearly twice that, according to Bloomberg.

Renewable limitations

Despite its widespread appeal as a **cleaner**, **flexible** fuel that can be switched on quickly when it's needed, gas was dropped from energy systems in many places.

Companies coped with the sudden loss of cash flow by **slashing spending** for maintaining and increasing production. Now, they are struggling to meet **resurgent demand**, and prices have jumped. High prices will serve mainly to **ration limited supply**.

The pandemic put a handcuff on the supply side of conventional energy. Now, the demand rebound taking place **exposes the limitation of renewable energy's ability to step in** and become the foundational baseload.

Continuing to plow ahead with the transition and investment in these things requires being realistic about where we are today and where we will be for the next couple of years.

Agency reports say that if we want to get to net zero by 2050, we have to reduce emissions every year. Where the **disconnect** is, is that as consumption comes back over the next couple of years, you do have to think about resetting the base for emissions and supply.

The share of **renewables** in global electricity generation, including hydro, wind, solar and biomass, hit nearly **28 per cent** in the first quarter of 2020, according to the International Energy Agency, mainly nudging out **coal** and **natural gas**. However, those two sources still account for close to **60 per cent** of the global power supply.

Many causes

World leaders meeting in Glasgow, Scotland, for UN talks will hammer out the next steps in the fight against climate change and the immediate energy needs that are clashing with the imperative to slash emissions. The disruptions have many causes, none specifically tied to an over-reliance on renewables.

Gasoline stations have run dry in Britain, not because of a lack of fuel but a shortage of drivers for trucks to refill tanks at retail locations. It has fuelled panic buying as major oil companies BP PLC and Exxon Mobil Cor. have been forced to close some stations.

One reason cited is the exodus of European drivers that followed Brexit. At the same time, the pandemic hit staffing levels and made training for new drivers difficult. Lineups at the stations look similar to those during the **energy crises** of the **1970s**.

In China, the crunch has not been in transport fuel, but electricity, much of which is still generated using **coal**, despite the country's push for more renewable energy. Now, though, China is short of coal supplies and prices have surged after it cut off purchases from Australia last year.

Also, **demand for power has increased**, with factories ramping back up as the global economy recovers and exports surge. Shortages have led to **rolling blackouts** in some provinces and the closing of some power-intensive plants that make products such as steel and cement.

The government has tried to keep residents calm by saying it is confident they will be able to heat their homes as winter approaches, in spite of directing state-owned companies to **secure supplies** at all costs, sending global crude prices higher.

The government knows that lots of people are being left out in the cold due to coal or gas shortages. In the face of an energy crisis, the focus will be on keeping the lights on – even if that involves digging up and burning **more coal in the short term**.

"Without reliable alternatives, price increases boost inflation, lower living standards and make environmentalism unpopular."

"The natural gas price short-term forecast is absolutely dependent on the corona-virus."

Natural Gas Supply Chain

Natural Gas Disruption & Intermittency

"The biggest factor affecting natural gas is corona-virus."

Corona-virus has changed the economy

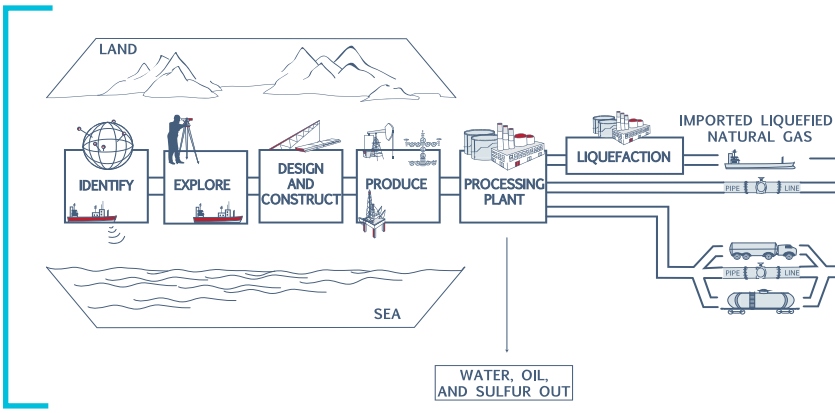
The biggest factor affecting natural gas is **corona-virus**, influencing the price war and the energy consumption strongly.

For example, Saudi Arabia announced plans to flood the market with oil. This decision came after Russia refused to go along with a plan to cut production in light of decreased demand, particularly from Asia – where the corona-virus tempered with energy consumption.

Fallen demand in Europe and the U.S. because travel was restricted and daily life ground to a halt, had pushed oil prices lower, but **resurgent demand, rationed supply** and **geopolitical** price wars exploded natural gas prices.

The natural gas price short-term forecast is absolutely dependent on the corona-virus, how widely it continues and the longevity of its effects. The longer it takes, the worse it gets. If you look at it globally and economically, it will be really bad for most people.

Supply Chain for Natural Gas



Corona-virus supply chain disruptions

Unpredictability, due to the pandemic has caused unheard of disruptions in the grid for supply and demand. **Each industry affects another**.

Since most industries rely on natural gas, power consumption demands have fluctuated with **rolling blackouts** and **brownouts**.

- Production stoppage, supplies, inventory & parts backlog
- Loss of refrigeration and spoilage of products
- Lost business & closures

Sorting this out requires **accurately diagnosing** what has gone wrong. In spite of government interventions with the pandemic, they have not made enough allowance for the **intermittency** of renewable energy and availability of alternatives. The world has too little nuclear power—a low-carbon energy source that is always on.

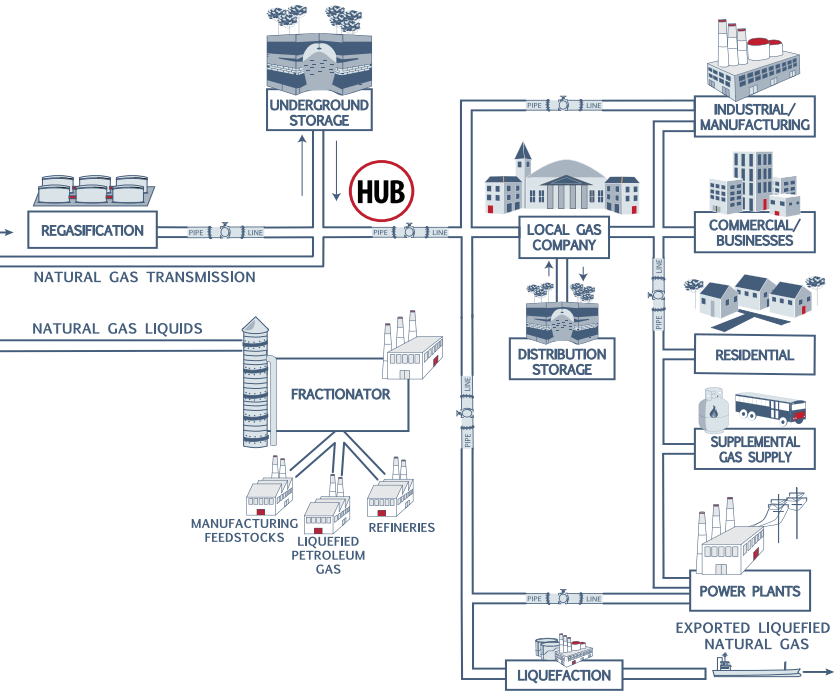
The long-term challenge is to **smooth out volatility** as the switch to renewables continues.

Inaccurate interventions

Interventions and subsidies for gas will only **make things worse**. Expensive energy angers voters and hurts the poor. But subsidising energy in a squeeze, as Italy is doing, or capping prices, as Britain does, will exacerbate **shortages** and make politicians' commitment to greenery look empty. Governments need to help energy markets work efficiently.

Eventually cheap battery storage and **more gas storage** might solve the intermittency problem. Firms selling at fixed rates to hedge against wholesale price increases should encourage more physical storage of gas. Investing more in connecting grids and in LNG infrastructure helps arbitrage trades **even out disparities** in the global supply of energy.

Dirty sources of energy should be expensive. But without **reliable** alternatives, price increases **boost inflation**, **lower living standards** and make **environmentalism unpopular**. If governments do not manage the energy transition more carefully, then today's crisis will be the first of many that threaten the vital move to a stable climate.



"It's imperative to keep the flow moving."

"We do not know yet how the corona-virus and the price war will affect natural gas prices."

Natural Gas Prices are Spiking around the World

"Markets are frantic. One trader says it is like the global financial crisis for commodities."

Unusual weather and supply outages are to blame

Across the world, a natural-gas shortage is starting to bite. Prices of power in Germany and France have soared by around 40% in the past two weeks. In many countries, including Britain and Spain, governments are rushing through **emergency measures** to protect consumers. Factories are being temporarily **switched off**, from aluminum smelters in Mexico to fertilizer plants in Britain.

Markets are frantic. One trader says it is like the **global financial crisis** for **commodities**. Even in America, the world's biggest natural-gas producer, lobby groups are calling on the government to **limit exports** of liquefied natural gas, the price of which has climbed to $25 per million British thermal units (mBTU), up by two-thirds in the past month.

Very thin safety buffers

In one sense the crisis has fiendishly complex causes, with a mosaic of factors from **geopolitics** to **precautionary hoarding** in Asia sending prices higher. Viewed from a different perspective, however, its causes are simple: an energy market with **only thin safety buffers** has become acutely sensitive to disruptions. And subdued investment in fossil fuels may mean **higher volatility is here to stay**.

The shortfall has taken almost everyone by surprise

In 2019 there was plenty of gas on the international market, thanks to new LNG plants coming online in America. When the pandemic struck and lockdown constrained demand, much of the excess gas went into storage in Europe.

That came in handy last winter, which was particularly **cold** in northern Asia and Europe. The freeze pushed up demand for heating.

In Asia gas prices quadrupled in three months. Buyers, such as national gas companies, looked to the LNG market to fill out supply. Many Europe-destined cargoes were diverted to Asia. Europe, by contrast, drew down on its reserves. Prices there only inched up.

This year odd weather has featured again

A **hot summer** has added to booming gas demand in Asia. The region accounts for almost three-quarters of global LNG imports, according to Alliance Bernstein, a financial firm. China led the way, thanks to its swift economic recovery. In the first half of 2021 its power generation jumped by 16% compared with the previous year.

Three-fifths of China's power is generated by **coal**; a fifth comes from **hydropower**. But hydropower generation has been low because of a **drought**. And coal demand fell partly because of environmentally friendly policies, such as replacing coal-burning boilers with gas ones.

Investment in mining coal has also been **low**. That meant **more reliance** on **natural gas**. In the first half of the year, gas generation grew quicker than coal or hydropower. Chinese LNG imports grew by 26% from the previous year.

Other countries have seen higher demand too, partly because of the warm summer in Asia. In addition, Japan, South Korea and Taiwan have been **topping up** their **storage** facilities.

Meanwhile, a **drought** in Latin America, which gets half its power from **hydro**, has increased the need for gas there. The region's LNG demand has almost **doubled** in the past year.

Booming demand has been met with lower supply of LNG

A long list of **disruptions** has nibbled away at global output. Some of the outages were caused by maintenance work delayed during the pandemic. Others, such as a fire at a Norwegian LNG plant, were unplanned.

The combined effect of all these disruptions was to cut global LNG supply by roughly 5%, estimates Mike Fulwood of the Oxford Institute for Energy Studies (Mr Fulwood's daughter works at The Economist).

With LNG being sucked into Asia, **less has been left** for European buyers. LNG imports into Europe are about 20% lower than they were last year. Gas inventories are about 25% below their long-term average. Gas production has also dropped in Britain and the Netherlands.

"The combined effect of all these disruptions was to cut global LNG supply by roughly 5%."

... Natural Gas Prices are Spiking around the World

"The price of coal is also at near-record highs on the back of demand for electricity and production bottlenecks."

Analysts had expected Russia's Gazprom, which supplies a third of Europe's gas, to make up the difference. But even though it met all of its long-term gas contracts to Europe this year, it has not sold additional gas in the spot market. Some suspect Gazprom wants to speed up the launch of Nord Stream 2, a big gas **pipeline**.

Europe has been hit by peculiar **weather** in other ways. Across the northwest of the continent, the air has been still, reducing wind generation.

In Germany, for example, during the first two weeks of September wind-power generation was 50% below its five-year average. Moreover, usually European utilities respond to high gas prices by using more coal.

But the price of coal is also at near-record highs on the back of **demand** for electricity and production **bottlenecks**. The **cost** of European carbon **permits** is at record highs too. These give the holder the right to emit an amount of greenhouse gases. Because burning coal emits more than burning natural gas, expensive carbon permits add even more to the price.

America's gas market has responded to international demand

In the first half of the year America exported about a tenth of its natural-gas production, a 42% increase on the year before, according to the Energy Information Administration, a government statistical agency.

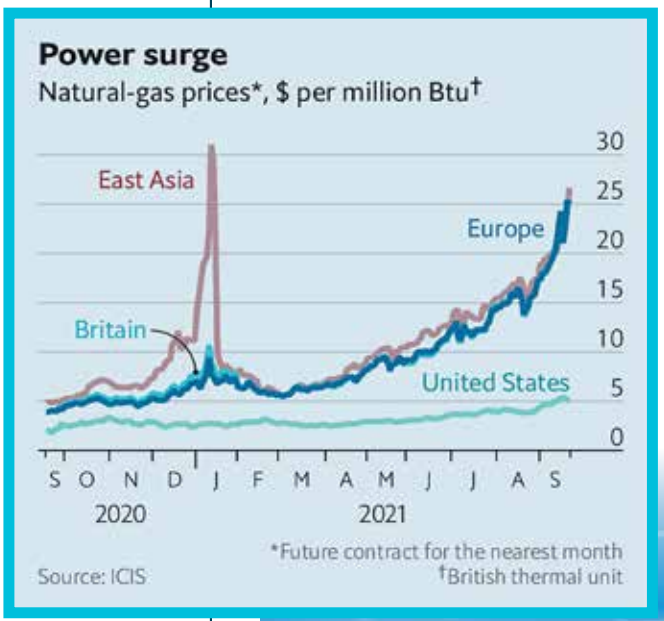
But even if America produced more domestically, it would not help to balance the international LNG market. LNG facilities in America are **running nearly at full capacity**. So are liquefaction facilities in other big gas-producing countries, such as Australia and Qatar. Expanding LNG plants is possible (Qatar plans to increase its capacity by 50%) but takes years to do.

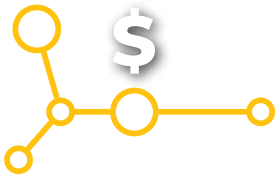
What could bring the heat out of the market in the short term? One possibility is **substitution**. That has begun to happen in some places. Europe is burning more **coal** than this time last year.

Some power plants in Pakistan and Bangladesh switched to oil from LNG. Another possibility is an increase in supply from Russia.

But it is unclear how much more Russia can produce. A final possibility is warmer weather. But meteorologists are already forecasting a cold winter. Gas prices are unlikely to come down to earth soon.

Source: The Economist





Gas Crisis Leaves Europe Searching for Solutions

A surge in gas prices has hit consumers and energy firms in the UK, with knock-on effects for the food industry and supplies of carbon dioxide

Elsewhere in Europe, consumers are also facing a steep rise in energy bills and governments are scrambling to help. The crisis has highlighted the difficulty for Europeans in funding the move to renewable energy.

Supplies of Russian gas have fallen recently and Europeans are looking to cut their reliance on it.

Here, five correspondents explain how different countries are responding.

#1 Spain acts to curb record energy bills

Consumers' bills have spiralled here in recent months, with the cost of electricity increasing 35% over the last year and nearly 8% in August alone.

Energy prices in Spain are closely tied to the wholesale gas market, so the price per megawatt hour for consumers has repeatedly hit new highs recently.

"I was paying about EUR40 (£34) per month and now I'm paying around EUR60," said Amparo Vega, who has a newspaper kiosk in central Madrid.

"The crisis has highlighted the difficulty for Europeans in funding the move to renewable energy."

... Gas Crisis Leaves Europe Searching for Solutions

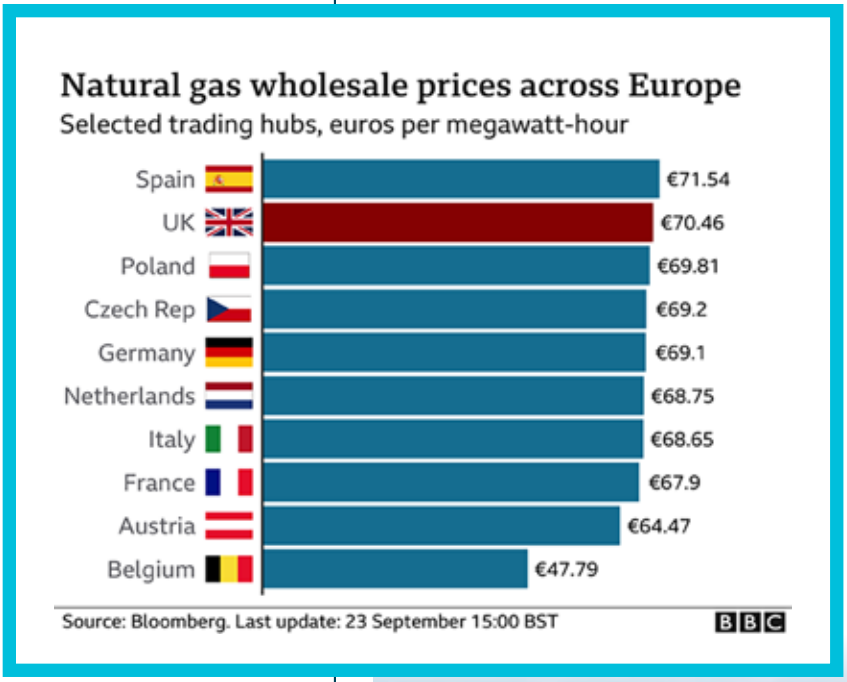
"We now try and use appliances at times of the day when it's cheaper. We turn lights off and try to make the most of the daylight."

Earlier this month, the coalition government of Socialist Prime Minister Pedro Sánchez unveiled a series of measures aimed at bringing bills back down.

They include tax cuts and a temporary reduction in extraordinary profits made by energy companies.

The latter move has drawn criticism from the industry, although the government has clarified that renewable energy providers will be exempt.

The government says its aim is to reduce electricity bills by over 20% by the end of the year. As winter approaches, consumers such as Ms Vega hope that happens.



#2 Italy's EUR3bn protection package

"The outlook isn't very rosy," says Michele Fiorita, taking some air outside his shop in central Rome.

"My energy bills have gone up by about 15% but I've heard they'll rise by around 40% in the next few months."

Italy is particularly exposed to gas price hikes: 40% of its energy comes from natural gas and around half of that is imported from Russia.

So lower Russian gas exports to Europe and an increase in the price of raw materials have hit hard.

The Italian government has already spent some EUR1.2bn to cut the increase in energy prices for households and this week pledged another EUR3bn to help further in the coming months.

Prime Minister Mario Draghi says for the next three months "system costs" will be eliminated from gas and electricity bills. They're the tariffs added to bills to help fund the transition to renewable energy.

It's a short-term sticking plaster to help reduce the jump in energy prices for struggling households but removes an important financial incentive to help the switch to renewables.

Fundamentally, Italy will need to diversify its energy sources, moving away from its dependence on gas and more towards green energy. "That's surely the future," says Michele, "it's the only way to reduce costs in the long-term."

#3 Soaring prices pose problems for EU climate campaign

As soaring energy costs present huge personal difficulties for families, they also pose some tricky politics for Brussels.

EU leaders have been busy pushing their sweeping climate plan to cut carbon emissions by 55% by 2030 - a drive known as "Fit for 55".

It's wide-ranging but includes proposals that, critics say, could lead to huge **further price hikes**.

Even backers of the measures quietly admit the transition to a greener economy **inevitably**, one way or another, **hits people in the pocket**.

On the current crisis, the European Commission says that price rises are a combination of several factors, particularly the **global surge in demand**.

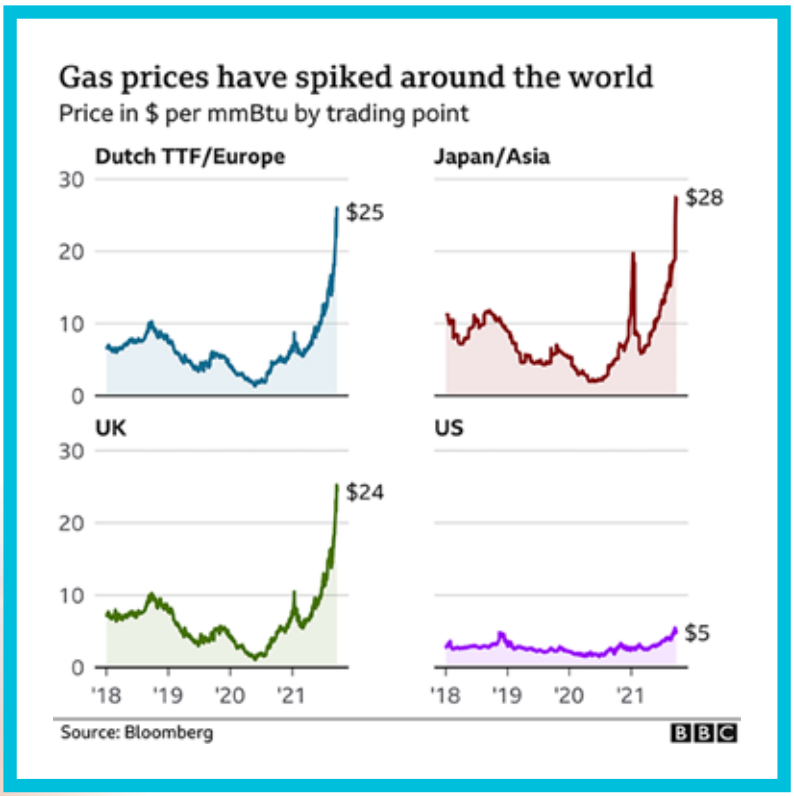
Increases in the price of CO2 permits under the EU's carbon pricing scheme are blamed for some of the rises, but the Commission says it's only a "small percentage". It wants to expand that scheme under "Fit for 55".

But with calls from the Spanish government for the energy crisis to be on the table at the next EU leaders' summit, Brussels is facing questions over what it can or will do to help.

Guidance is being worked on in terms of the mitigation measures member states can individually take within EU rules. But there's no sign of any significant, centralized intervention.

The more the crisis heats up, the greater the **backlash** may be over the EU's **climate plans**. However, those in favour would argue that the **faster** the **move** to a green economy, the faster member states can **escape** this kind of volatility.

"The transition to a greener economy inevitably, one way or another, hits people in the pocket."



#4 Coal is king in Poland but gas is important

Surging European gas prices have been felt by Polish consumers because the country's energy regulator has approved three price hikes this year, raising bills by more than 20%.

But household gas bills are still regulated here, so consumers are insulated from any sharp changes in market prices. Also, about half of Poland's gas demand is met by domestic production, which is typically cheaper than imported gas.

That cheaper, domestic gas is used to cover the needs of households first, while industry is mostly supplied with more expensive imports. But here again, energy-intensive Polish companies are shielded from sky-rocketing market prices because they have long-term supply contracts with a fixed price.

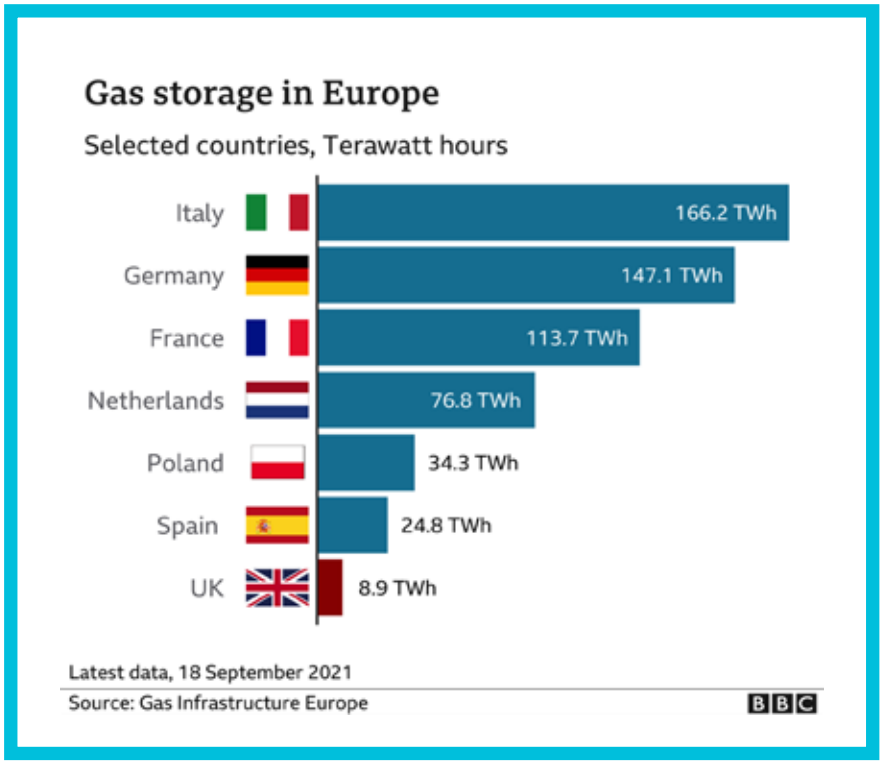
Poland is trying to move away from coal and has been ordered to pay a big fine for not closing their huge open mines.

In Poland, **coal is still the main fuel** driving the economy, with gas a long way behind. That is starting to change.

The solar power market is one of the fastest growing in Europe and state-controlled power companies are planning huge investments in offshore wind.

Gas will become more important then, because the government sees natural gas as a **bridging fuel** to replace aging coal plants and ensure the lights remain on when the wind drops under cloudy skies.

In Poland, the origin of the gas is a political issue. The government plans to cease its decades-old dependence on Russian gas next year and replace it with US and Norwegian gas, arguing it will no longer suffer Gazprom overcharging it for gas, because it can abuse its position as a **monopoly supplier**.



#5 Norwegians don't use gas but are increasing exports

Non-EU Norway is one of the biggest producers of oil and natural gas in Europe, though very little of it is used for its own needs.

Only 1.4% of electricity is produced by burning fossil fuels and waste, 5.8% by wind power and the remaining 92.9% is produced by hydroelectric power.

Norway's Equinor is Europe's second-largest gas supplier after Russia's Gazprom.

Equinor energy company has agreed to allow a 2bn-cubic-metre increase in gas exports for the next year to support increased European and UK demand. Formerly known as Statoil, Equinor is two-thirds owned by the state.

While bills are not as high as elsewhere in Europe, Norwegians are not immune from increasing energy prices.

From 1 October, Norway will be able to export electricity to the UK via a "North Sea link" of underwater high-voltage electric cables connecting the two power grids.

The recent UK price surge could spread to Norwegian households and industries. But one proposal to impose a tax on outgoing energy has been rejected, as Norway also needs to import energy in certain periods of the year.

Overview

It is very much about how the world can meet **rising demand** with rising supply, and how the market can move and adjust. The **production** and **supply** of gas needs to match the demand and not over run it, for the price of gas to keep in line with demand.

The difficulty for Europeans in funding the move to renewable energy mean gas, as a resource, will have to stay - for now.

"Funding the move to renewable energy mean gas will have to stay - for now."

" The world's importers have come to a stark realization: there isn't enough supply to go around.

"But unforeseen supply disruptions and a rebounding global economy are making it impossible to keep up."

Natural gas prices rally as global shortages abound

Not enough supply to go around

Natural gas markets around the globe are rallying as the world's importers have come to a stark realization: **there isn't enough supply to go around**.

Recent LNG infrastructure expansions in key exporting countries aren't enough to **keep up with demand**.

A long, frigid **winter** drained gas **stockpiles** from Louisiana to Germany, and utilities are struggling to build them back up. But unforeseen supply disruptions and a rebounding global economy are making it impossible to keep up.

That set up a desperate scenario as hot summer temperatures reached record levels, and it's bound to get even worse when demand peaks this winter.

Higher gas prices will make it more costly to keep the lights on in Madrid or cool apartments in Tokyo, after scorching heat waves in some regions are already making it more expensive to run air conditioners.

The cleaner-burning fuel is the latest commodity to add to the **global inflation** scare as the price of everything from crude oil to corn and copper surge.

If a gas deficit does develop during the winter months, it could spur European utilities to **burn more coal**, which has already started happening, and cause China's power producers to **curtail supplies** to industries and cause **blackouts** like it did last winter.

Households are set to pay sky-high utility bills and the worst-case scenario - albeit unlikely - is they won't have heating or electricity when freezing temperatures hit.

"Supplies are already very **tight**, and that could get much worse if there is a cold winter," said James Whistler, the global head of energy derivatives at Simpson Spence Young, an international commodity and ship broker. "We are seeing strong competition between Europe and Asia, and that is manifesting in the continuous rally."

Lowest inventories, highest demand in over a decade

European gas **inventories** are the **lowest** in more than a decade for this time of year, with the region's benchmark surging to the highest in almost 13 years, while rates in the U.S. and Asia have jumped to the highest seasonal level in years.

The gas sector had long been segmented between geographical regions, but the ramp-up in new supply of liquefied natural gas and growing liquidity in spot trading over the past several years has helped transform it into a genuine **global market**.

That evolution comes at a price, as Europe and North Asia now **compete for a finite supply** of LNG, which results in **bidding wars** that catapult spot rates.

At the center of the action is China, which in a surprise move is set to overtake Japan as the **world's top LNG importer** for the first time this year. China is **stockpiling** supplies of the super-chilled fuel in order to power its booming economy and help it shift away from dirtier fossil fuels.

"China's LNG demand in the past years keeps outperforming even the most bullish analysts," said Henning Gloystein, Global Director of energy and natural resources at consultants Eurasia Group.

The mad dash is putting **Europe** at a **major disadvantage**, as Asian end-users **increase prices** to attract supplies away from the Atlantic.

Europe, where spot prices have rallied by more than 65% this year, is facing thin gas inventories amid lower flows from pipeline suppliers and near record carbon prices.

Europe's end-users have been forced to depend more on **Russian pipeline supplies**. Yet Gazprom PJSC's **unwillingness to ship extra gas** via Ukraine has been one of the key factors that has catapulted prices at the Dutch Title Transfer Facility, the spot benchmark for Europe, to the highest level since 2008.

"European gas inventories are the lowest in more than a decade for this time of year, with the region's benchmark surging to the highest in almost 13 years, while rates in the U.S. and Asia have jumped to the highest seasonal level in years."

... Natural gas prices rally as global shortages abound

"There isn't enough fresh LNG supply to meet this growing demand. The market had become accustomed to a steady stream of new mega-export projects."

"We see TTF prices rising for the remainder of 2021 as Asian LNG demand is robust," said Santosh Gupta, assistant manager at Drewry Maritime Financial Research. "I don't see a catalyst in the short term that would bring down prices."

Indeed, the situation is made worse by the **energy demands caused by extreme weather** - from last winter's bitter cold in Asia to the heat waves in the Western U.S. and severe droughts across the globe that have curbed hydro output.

With fresh memories of record-high Asian spot LNG prices last winter, the world's top importers in China, Japan, South Korea and Taiwan have been busy **buying shipments** for delivery between November and February, well **ahead of normal**, according to traders surveyed by Bloomberg. China's importers were scolded by the government for not being well prepared last winter and they don't want to make the same mistake twice, traders said.

The Japanese government last month asked utilities to ensure stable fuel supplies this summer and winter amid forecasts for abnormally thin power reserves. Traders at Japan's biggest importers said that they have been under more pressure to **stock up on fuel** and even **restart retired gas-fired** power plants.

There **isn't enough fresh LNG supply to meet this growing demand**. The market had become accustomed to a steady stream of new mega-export projects, but the industry is currently in the midst of a lull period, where the next raft of new supply isn't expected **until the middle of the decade**.

In the U.S., the so-called Henry Hub futures prices have more than **doubled** over the past year to the highest seasonal level since 2014. Inventories are 5.8% below normal for the time of year, the widest deficit since 2019 on a seasonal basis, signaling tighter supplies for next winter.

"They have been under more pressure to stock up on fuel and even restart retired gas-fired power plants."

Winter Outlook

Shipping restraints could also add to winter woes. The odds of congestions at the Panama Canal are "very high," which will force U.S. LNG cargoes en route to Asia to take longer passages around the Cape of Good Hope or the Suez Canal, **limiting availability**, according to Oystein Kalleklev, Chief Executive Officer of shipowner Flex LNG in Oslo.

To be sure, there are a few factors that could help the global gas market avoid a crunch this winter.

An early start of the Nord Stream 2 pipeline, which connects Russia to Germany, and has faced delays because of U.S. sanctions, could add much-needed supply to Europe and help the region avoid a crunch. Still, while pre-commissioning work is currently under way, the timing of first flow remains uncertain.

Likewise, a milder winter could reduce gas consumption and help utilities coast along with their lower inventory levels.

"**Weather** will have the final word on both price levels and volatility patterns," said Gergely Molnar, an Energy Analyst at the International Energy Agency.

Meanwhile, traders may be forced to adapt to this **volatile** market as the supply **deficit isn't expected to disappear** anytime soon.

Supply will likely remain **tight for the next two or three years** as the industry makes up for the lack of new supply investments in 2020 and catches up with robust demand growth.

"An early start of the Nord Stream 2 pipeline, which connects Russia to Germany and has faced delays because of U.S. sanctions, could add much-needed supply to Europe and help the region avoid a crunch. Still, while pre-commissioning work is currently under way, the timing of first flow remains uncertain."

Costly Electricity & Power Generation Brownouts and Blackouts

Outages cost an average of about $18 billion to $33 billion per year in the United States.

Power outage estimates also may not include brownout numbers.

- **BROWNOUT:** A reduction or restriction in available power to an area, also known as a voltage slump.
- **BLACKOUT:** A complete loss of power to an area, from minutes to hours or even days, depending on the cause and utility.

In some areas, intentional brownouts help utilities avoid rolling blackouts — mandated reductions in energy consumption to help meet the needs of the entire energy grid for that area.

Outages to a business do more than just halt production temporarily. Power outages can also result in lost:

- Wages to employees
- Spoiled inventory
- Delayed, inconvenienced or missed business opportunity

In an increasingly global market, reduced power impacts production across the globe, not just in a local utility area.

" Outages cost an average of about $18 billion to $33 billion per year in the United States."

The causes of power outages

A report by the US Department of Energy site **weather-related** power outages as the leading cause of power outages in the United States.

The report research also acknowledge an **aging infrastructure** as part of the problem.

Some of the US power grid dates back to the earliest onset of electricity. Replacement could be better prepared to withstand severe weather but also better protected against potential cyber attack.

Yet **upgrading** the US power grid is estimated to cost in the **trillions** of dollars.

For smart businesses, onsite solutions to power outages make more sense than waiting for the federal government to overhaul the infrastructure in the power grid.

Solutions to power outages

There's **never been a better time to invest** in onsite power solutions – for the first time in US history, onsite power generation is cheaper than the utility.

Onsite battery storage can reduce the need for dependency on the grid, providing power in the event of a **brownout** or **blackout**, but also allowing a business to operate at capacity at any time–without increased utility demand charges and without the approval of the utility.

Avoiding consumption regulation

In many parts of the country, the utility must consider the **needs of the entire local** energy grid, which leads to **regulation** of industry consumption to businesses in their jurisdiction.

Now it is possible to operate independently of the utility, at less cost.

- **Solar energy** – Green, renewable energy, onsite, at whatever scale a business requires, is now possible with reliable, quality solar panels.
- **Battery storage** – Onsite battery storage can help regulate a business' demand on the utility or store the energy generated through onsite solutions such as natural gas generators or solar panels.
- **Solar + Battery** – With a combination of solar panels and onsite battery storage, a business can obtain energy independent of the grid, and then store it for use even during darkness or overcast conditions.

In summary, the **best time to invest** in power solutions is **now**.

"The best time to invest in power solutions is now."

NATURAL GAS AND POWER - ENERGY FACTORIES SHUT

China's power supply crunch, that has shut factories across the country, may pose a much bigger threat to the economy than the debt crisis at Evergrande Group, prompting investors to shun industries vulnerable to power shortages such as steelmaking and construction.

China is facing a power squeeze from a shortage of coal supplies, tougher emissions standards and strong demand from manufacturers and industry that have triggered widespread curbs on usage. Factories have stopped operations due to power shortages and government mandates to meet energy and carbon reduction goals.

"The biggest factor is corona-virus: influencing the price war and the energy consumption strongly.

"Key pricing factors include storage, LNG export facilities, shifting from coal to natural gas, and shale depletion."

Natural Gas Prices – Forecast

Forecasting natural gas pricing relies on four key points:

#1 Storage is not very full right now. There is little reserve to meet demand.

#2 U.S. LNG import facilities are being converted to LNG export facilities. That will allow producers to get world prices, which are 4-6 times higher than North American prices.

#3 A continued shift from coal to natural gas as a source of power, for economics and the environment.

#4 Shale gas deposits are starting to become depleted. Recent articles are surfacing that infer the glory days of shale will soon be over

Short-term outlook

The short-term outlook depends on corona-virus, weather, the US economy and gas storage levels:

- If this winter is warmer than normal and the US economy continues at it's current pace, the US Dept of Energy does some predictions. However, if this winter is colder than normal, the consumers can expect double digit percentage increases.
- Gas storage levels coming out of the fall are higher than average

Natural gas is one of the most commonly used non-renewable hydrocarbons. Its price influences almost every household, directly or indirectly.

Long-term outlook

The long-term outlook depends on economic activity, demand/supply balance and the price of oil:

- Natural gas demand in North America is increasing at about 3 % per year whereas supply is increasing at about 1%
- Increasing economic activity, growth, new businesses and new homes increase gas use
- Production from many older gas wells is declining quite rapidly
- More natural gas is being used for electricity generation. Any new electricity capacity brought on line right now is generated by natural gas, rather than oil, coal, water or nuclear.
- As the price of crude oil increases, some industries switch to natural gas. Many large users have developed this dual fuel capability.
- Prices are not expected to come down until new major gas pipelines are built connecting new gas fields in Alaska and the Canadian Northwest Territories. Recent reports however suggest that virtually all of this northern gas will be used in to extract oil from the tar sands in Northern Alberta.
- Liquefied Natural Gas (LNG) is becoming a factor in North America as terminals and custom tankers come on line.

The biggest long-term factor is the transition, cost and time to switch to renewable energy, such as solar or wind power.

Price of natural gas outlook

One of the **biggest influencing factors** of natural gas prices is **green energy** – or renewable energy (like solar power, wind power, etc.) What are the other important price-influencing factors?

In 2019, **natural gas production grew** by almost 10 billion cubic feet per day (Bcf/d), 10% increase compared to the previous year (2018).

It was the highest volume on record – according to the U.S. Energy Information Administration's (EIA) before Covid.

Further growth and demand is expected during the 2022-25 period, mainly driven by fast-growing **Asian markets**, India, the Middle East and **supply** concerns.

Natural gas is a fuel that is greener than its other fossil fuel compatriots and the production **infrastructure** is robust enough for it to become a key global fuel.

Many expect gas to become the **largest primary energy source** by 2034. It will also be the **last** of the fossil fuels to experience peak demand, which is being predicted for 2035. But, because it can **operate alongside** the growing uses of sustainable energy, the next five years is sure to see steady growth in its demand.

Continuing influences such as the pandemic, geo-political positioning and market volatility will require wise investment and strategic discernment into the gas and energy sector.

"Its price influences almost every household, directly or indirectly."

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