COP-26
A new found realism?

An interview with
Gazprom Deputy Chair
Elena Burmistrova

Energy crisis strengthens case for gas

UK makes strides in decarbonisation push
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Dear reader,


I’m sure there will be many of us that are all too happy to say goodbye to 2021. Volatility is something of a theme for the year, both for the gas value chain, and for global society in general. We are not yet free from COVID, and its effects may be with us all for some time yet.

However, the gas industry has played its part. The energy that we create, transport and supply – securely and reliably all across the world – has been a major building block in the global fight against COVID. There are the obvious light and heat that keep the modern economy going in general, especially in healthcare centres – but there are other less obvious and just as vital areas where gas makes lives better and safer. Gas is vital in the pharmaceutical industry, including in the creation of the tiny glass bottles used to store and transport the vaccines that protect us all.

Of course, as the year draws to an end, there are a number of stakeholders who have benefited from high energy prices – including gas players – some are better off, some are not (e.g. fixed price contract holders). I would like to stress; however the key impacts that policy decisions have on price volatility.

One part of the energy trilemma – environmental – appears to have been prioritised by the global policy, regulatory and financial elite over the other two: social and economic. The momentum provided by COVID economy lockdowns created the environment for a more aggressive energy transition and related policies.

However, as the world emerges from COVID, economies are restarting and needing energy again, and with that the significant ongoing demand for gas is very clear. Gas is the catalyst for and foundation of a more sustainable global energy system. Gas has empowered renewables and replaced coal. The markets therefore work as they should – significant demand surges are not yet balanced by new supply, and the prices rise. This is what advocates of gas on gas competition wanted when they looked to break the oil link.

The solution? I hope that the unique value of gas and gases, both in of themselves and as the underwriter for enhanced renewable energy, will be recognised by our core stakeholders. This recognition means that it is more likely that necessary strategic investments will be made – new financial liquidity will increase molecular liquidity, and markets will calm down.

This edition of *Global Voice of Gas* features several articles considering volatility across markets, and one of my takeaways from those discussions is the critical importance of planning and clear policy signals, for the industry to make necessary investment decisions and ensure the market is well supplied. While natural gas has shown absolutely remarkable responsiveness to demand and delivered all the gas to its buyers who needed it, it is an industry with big capital projects, where capacity investments must happen a few years ahead for that capacity to become available when demand peaks.

The economic slowdown of COVID, together with
some negative policy and financial community signals about acceptability of new gas supply, contributed to a reduction in new project investments, and by extent, to the tightness we are seeing in today’s supply. Going forward, it is absolutely pivotal that policy decisions by both elected officials and financial institutions take these implications into account: namely the implications on the 2 of 3 A’s of energy security – Affordability and Availability.

Finally, this edition wraps up the year by considering some of the major issues that we must all constantly engage with.

COP26 may seem like ancient history, given the pace at which the information world has been moving, but we look back to those two short weeks and consider the headlines out of COP that are relevant to readers of Global Voice of Gas.

A successful future for the gas value chain will be underwritten by our engagement with technology. We consider how new technology and engineering processes can both ensure the gas value chain is as sustainable as possible – and that we can demonstrate our successes to our stakeholders.

We are honoured to have a view on the world from Gazprom’s Elena Burmistrova, given the company’s major role as a supplier to two of the biggest continental gas markets, as well as being a player in the global LNG markets. So, when Gazprom speaks, we should all listen – whether we agree with every word, or not.

As we come to the end of 2021, I want to wish you all strong health and big happiness, wherever you are in the world. We have lived through a global pandemic for almost two years now, and I believe that whilst we are coming out the other side, we should learn our lessons as well as celebrate the positive role that the gas value chain has played over the past two years.

I also want to take the opportunity to wish you a happy holiday season and share my great anticipation of the week in May 2022, when we will finally all meet again in person at the World Gas Conference, to be held in Daegu, Korea. It will be good for the soul for us all to be able to engage again in conversations about what matters – being physically together. I look forward to being able to finally look my friends in the face and to raise a toast, “to you, to us, to gas.”

—Professor Joe M Kang
President, International Gas Union
Welcome to the sixth issue of Global Voice of Gas (GVG), an International Gas Union publication, produced in collaboration with Natural Gas World, that sets a new standard in communication for the natural gas community worldwide.

With COP26 now in the rear view mirror, attention is on how governments will follow through on climate pledges they have revised in recent months, and on how headline agreements from the summit such as the Global Methane Pledge and the Glasgow Climate Pact will be implemented. It is clear that the natural gas industry has a major role to play in reducing anthropogenic methane emissions, as do other sectors such as agriculture and waste, building on the substantial progress that gas companies have already made in recent years.

While in the end, the Glasgow Climate Pact only committed signatories to “phasing down” rather than “phasing out” coal, natural gas will nevertheless be vital for delivering meaningful reductions in coal use, particularly in the fast-growing energy markets in Asia. In these markets, gas will serve as a critical companion for renewables.

But while the commitment to tackling climate change must endure, the unprecedented volatility that has rocked energy markets over recent months has also highlighted the need for reliable and affordable energy. A sharp rebound in gas demand most notably in Asia has caused spot gas and power prices to soar, and the market has grown particularly tight in Europe.

While the crisis has been used in some quarters as justification for shifting away from natural gas, it is GVG’s view that recent events only strengthen both the economic and environmental case for gas. Though the market is tight, gas suppliers have delivered on their contractual obligations and the regions worst hit by the crisis, such as Europe, have been spared from rolling blackouts and heating outages as some had feared.

Whereas wind turbines performed poorly in some parts of the world, exacerbating the energy crunch, natural gas delivered, highlighting the importance of reliable baseload capacity that offers a cleaner alternative to coal. The crisis also shows that, in order to keep energy affordable, further investment in natural gas supply and the infrastructure to carry it is vital.

This issue also takes a look at some important other developments in the natural gas space. We look at the outlook for investment in new LNG supply that can help ease the market’s current tightness, as well as the shift from longer-term and oil-indexed contracts to shorter-term deals and gas-on-gas competition. Another focus is the ongoing innovations taking place to further reduce the emissions associated with gas production, through cutting-edge satellite and drone monitoring technologies.

We also explore the recent milestones that the UK has made in its energy transition strategy, including the unveiling of a national hydrogen strategy and the selection of major carbon capture and storage (CCS) projects for state funding and other support. We also investigate Saudi Arabia’s plans for large-scale CCS deployment, drawing from its capabilities and expertise as a major oil and gas producer.

— Paddy Blewer  
Director of Public Affairs, IGU

— Joseph Murphy  
Editor of Global Voice of Gas, Natural Gas World
Why guess about the future of gas?
Plan with clarity.

From the wellhead to pipelines, from businesses to homes, gas is crucial for fuel, heating, power, chemicals, fibers, consumer goods and more. Shipped, distributed, marketed and stored internationally and domestically, gas fuels the world economy.

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Plan to Achieve your Efficiency dividend in 2022

As you make your business plans for 2022 consider the efficiency dividend you and your company will achieve by attending the world’s premier gas industry event.

One of the lessons learned from the Global Financial Crisis, when travel budgets and plans were significantly affected, was that if you are going to attend fewer events in a year, then ensure that you maximise your efficiency dividend by attending the one that attracts the highest quality and quantity of qualified attendees.

Plus, the efficiency dividend lasts long beyond the knowledge you acquire and relationships you develop while face-to-face. From improved decision making, through enhanced external communications to the value you bring back to share with your colleagues.

In 2022 your efficiency dividend is best delivered at the largest global gathering of strategic, commercial and technical industry professionals: the World Gas Conference, WGC2022, May 23-27, in South Korea. Put these dates in your diary now and make it your priority event in 2021.
WGC2022

WGC2022 is fast approaching! With less than six months, the conference and exhibition will be in Daegu, South Korea, where it will explore the prevailing shifts and trends facing the industry and look ahead towards A Sustainable Future – Powered by Gas.

The extensive programme continues to add prominent figures from within the industry with Yalan Li of Beijing Gas Group and Dr. Ben K. D. Asante of Ghana National Gas Company recently confirming as plenary speakers. They will speak alongside other key industry leaders such as Alexey Miller of Gazprom, Manoj Jain of GAIL India, Tengku Muhammad Taufik of Petronas and many more.

If you are keen to speak and amplify your knowledge and expertise in front of the global gas and energy industry, submissions for the Call for Papers are still open until January 28, 2022. Submit your abstract in either an Industry Insight or a Technology & Innovation Session and join the extensive list of key industry speakers.

In other exciting news, WGC2022 has recently confirmed ExxonMobil as a Principal Sponsor and Beijing Gas Group as a Diamond Sponsor in the last month. Reservations in the exhibition have also already reached 90% of the space occupied at the last event. If you want to join the world’s leading energy producers, gas technology and service providers contact exhibition@wgc2022.org to see the remaining opportunities.

WGC2022 would also like to invite you to our next in-person WGC2022 exhibitor and sponsor briefing at the EXCO in Daegu, South Korea, on January 26, 2022, where you can join the tour of the exhibition space, meet the suppliers, visit the hotels and function spaces, see the on-site branding and sponsorship opportunities and much more.

Don’t miss the chance to connect and network face-to-face with the entire gas value chain across the world under one roof in Daegu, South Korea on 23-27 May 2022.

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LNG2023

Googling “forecast demand for LNG” gives all those involved in the sector plenty of cause for optimism looking ahead to how the industry will continue to grow and develop ahead of LNG2023. The National Organising Committee has been putting in place fantastic plans to build on the LNG series success story. To get a flavour of the state-of-the-art facilities at Expo Forum in the beautiful host city of St Petersburg, go to lng2023.com/venue-video-tour/. A complete range of sponsorship and exhibition packages are now available, please contact Fred Malgoire at fm@lng2023.com

The Programme Committee (lng2023.com/programme-committee/) would like to hear from you and would be delighted if you could join Club LNG (free at lng2023.com) and take the quick survey, which has been set up to enable the Programme Committee to interact with the audience and ensure that the LNG2023 has the most relevant and insightful programme across the LNG spectrum. As we prepare for the LNG2023 Call for Abstracts to be launched in February 2022, all comments and feedback are welcome by contacting Simon Marshall at sm@lng2023.com

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IGRC2024

Since the launch of IGRC2024 in September, the event host, the Canadian Gas Association (CGA), continues developing and implementing its plans for a series of activities to profile innovation and technology leadership across the entire natural gas value chain.
On November 15, CGA Enterprises Inc., a venture of CGA, partnered with Minoils Media/Natural Gas World to launch Gas Pathways, an online communications and engagement platform focusing on the global gas industry’s work in innovation.

The Gas Pathways website will focus on the gas industry’s innovation across the value chain, profiling the industry’s innovators, and providing a critical assessment of what is happening to make innovation deliver more for people and meet public policy goals on affordability, reliability, and environmental performance. From an IGRC2024 perspective, Gas Pathways will serve as a communications platform to promote the kind of innovation that IGRC2024 will showcase.

The importance of IGRC2024 to our industry, especially during these rapidly changing times, is seen in the commercial support being received, with already 17 sponsorship commitments obtained from companies within the gas production and delivery value chain.

In the next edition of the *Global Voice of Gas*, look out for details on the launch of the IGRC2024 website and the ongoing roll out of our innovation and technology leadership activities.
Regional Update

The Middle East & Africa

KHALED ABUBAKR
Chairman, Egyptian Gas Association.
Executive Chairman, TAQA Arabia and
IGU Regional Coordinator

COP26 resolutions and Africa

» With the ending of COP26, world leaders are coming to the resolution of supporting a clean energy transition from fossil fuels. Key officials are willing to address the challenges, share best practices and learn from each other.

» As negotiators at the Glasgow climate talks tried to agree on greenhouse gas cuts, African leaders expressed a totally different point of view. During South Africa’s Energy Week as well as during the East Mediterranean Gas Forum, African leaders and key stakeholders from the region agreed that poorer countries cannot be expected to remake their energy systems as quickly as wealthy ones. Officials vocally oppose a speedier pivot to renewables for their countries. Instead, they are pressing for a slower transition – one that would embrace a continued reliance on fossil fuels, particularly natural gas, which burns more cleanly than coal or oil.

» Natural gas is considered a key element for Africa’s energy security. It can be an immediate part of a clean solution to rebuild economies and a long-term anchor for development of a more sustainable energy system. Gas has been and will remain the catalyst for and foundation of a more sustainable global energy system.

» Nearly half of Africans (46%) still have no access to electricity in their homes. Efforts to achieve universal access to affordable, reliable, and sustainable electricity by 2030 must therefore be at the forefront of energy transition strategies to effectively fight poverty, enable new economic opportunities and promote equality. When forced to choose between dirty electricity and no electricity, people will choose dirty electricity every time.

» With the major natural gas discoveries across the continent and the lack of electricity for the underdeveloped Sub-Saharan area, Africa needs to utilise its resources to better enhance the quality of life of its inhabitants. Natural gas is the means to drive industrialisation, economic development and enhanced socio-economic value. We must balance social and economic considerations with climate change targets.

» The good news is that Egypt, a key energy player in the region, will host COP 27 in Sharm el Sheikh. It is an excellent opportunity for the IGU with the Egyptian government to showcase natural gas as the energy of the future.

Conclusion

Surely, for Sub Saharan African countries to recover from energy poverty and support global supply chain challenges post-pandemic, the short term goal should be to monetise natural gas resources through their export in LNG form to developed countries. However, the long-term goal should be to localise the use of the domestic gas across the continent through effective regulation and policies, and this can only be implemented if planning mandates and the implementation of robust financial systems take place.

Overall, Sub-Saharan Africa accounts for 75% of the world’s population without access to electricity. The region’s access deficit has increased from 556mn people in 2010 to 570mn people in 2019.

Source: World Bank 2021
Strong demand for Russian gas

» Strong demand for Russian gas dominates the headlines as more US and Middle Eastern LNG is drawn to Asia, European production continues to fall, inventories need additional replenishment following a late winter and recovering economic and industrial activity boosts consumption. High gas prices and unprecedented volatility impact buyers, distributors and consumers.

» In the first nine months of 2021, total European imports rose by 20% or 31 bcm. Gazprom supplied about half this volume, and thereby accounted for more than 50% of Europe’s total pipeline imports.

» While compliance with all foreign contractual delivery obligations is a key objective which continues to be fully met, Gazprom has another main task, which is to secure adequate supply to the domestic Russian market. In 2020, sales to this market were 225 bcm, about half of the total volume supplied by Gazprom. Replenishing Russian gas inventories in preparation of Winter withdrawals is an annual obligation which was frequently mentioned in recent months as levels were “lower than normal” going into the fourth quarter. By the end of November, the relative inventory shortfall appeared to be more or less eliminated and additional volumes were injected in European storages.

» All efforts are now directed towards preparations for winter gas demand in both the foreign and domestic markets. Factors of uncertainty include the demand impact of the recent and potential further rise in COVID infections and related governmental measures, and of a possible prolonged lack of wind turbine and solar power generation in several countries.

Infrastructure development

» The Nord Stream 2 pipeline was declared as technically complete on September 10 and it has since been prepared for actual operation. The German regulator stated on September 13 that the application by Nord Stream2 AG to be approved as an “independent transmission system operator” was completed. In November the regulator announced that the certification process had been suspended, apparently due to the regulator’s latest interpretation of requirements regarding the legal and organisational structure of the company operating the German section of the pipeline system.

» Meanwhile, the significant expansion of production and transport storage infrastructure for foreign and domestic markets continues according to schedule, as do negotiations about contracts for sales into Europe and Asia, where natural gas is expected to be increasingly needed in a less-carbon intensive energy mix.

Hydrogen plans

» Looking beyond the near term, Gazprom has drafted a roadmap for using natural gas to develop hydrogen for the industrial and transport sectors. A special-purpose unit has been created to undertake hydrogen activities and develop hydrogen pilot projects in Russia. The draft roadmap is awaiting approval from the energy ministry.
Demand and supply: a roller coaster year

After an extraordinary 2020, 2021 has been – for different reasons – another year of unprecedented events.

Recalling that I wrote in *Global Voice of Gas*, March 2021 about “… a context of increasing price volatility, which will be the dominant element in markets also in 2021”, reality exceeded all forecasts.

Europe gas demand – as in other global economies – has been a fundamental pillar to the sustained economic recovery after 2020, with a sustained growth in almost every sector and playing a crucial role to integrate power generation variability from renewables.

The clear evidence of the development of a global gas market was witnessed by the LNG market dynamics deriving from the substantial needs from both the Asia and Latin American markets.

LNG flows towards other markets had clear effects on gas availability to replenish storages, and filling was also limited by reduced injections from Russian gas.

These and other phenomena determined price spikes which spurred a demand response, reducing the growth witnessed in the first part of the year.

All of the above is to be read in conjunction with the evolving patterns of electricity generation where potential “risks of system inadequacy rise substantially in 2025” as per ENTSO-E (the European Electricity Transmission Operators’) first European resource adequacy assessment published in November.

In a nutshell, the gas industry has a great opportunity to continue playing a fundamental role in sustaining demand needs and reducing emissions – on which more below – but will need to address an apparently more structural volatility in the market.

Reducing emissions: the methane pledge

Europe was also crucial this year in bringing methane emission to the centre stage of discussions regarding climate change.

» Together with the US, the EU and other partners launched the Global Methane Pledge to reduce methane emissions to contribute to the target of the Paris Agreements.

» The European gas industry has already demonstrated a solid contribution in promoting technical standards and best practices to further advance in this field (as a reference, see here).

The Gas Package and Taxonomy

On the policy side, more is to come in the coming days as the Gas Package and additional legislation on the “Taxonomy” is expected to be finalised in Brussels.

The gas industry is working intensively to promote technological advancements and solutions that will make natural, low-carbon and green gases not just part of the transition but one of the pillars of any energy future.

GasNaturally, the European platform IGU actively contributes to, has made clear the fundamental role of gas molecules in this path: “The review of the EU gas market framework in December 2021 presents a clear opportunity to confirm the role of molecules in the EU energy transition by developing a framework to accelerate the development of renewable and low carbon gases, both in gaseous and liquid form.”
Ahead of COP26, more countries in the region have committed to net zero

» Brunei, Lao, Myanmar and Vietnam all pledged net zero emissions targets by 2050.

» Malaysia commits to achieve carbon neutrality as early as 2050.

» Indonesia aims to reach net zero emissions by 2060 or sooner.

» Singapore targets net zero in the second half of the century.

» India commits to net zero emissions in 2070.

During COP26, Brunei, Indonesia, the Philippines, Singapore and Vietnam were among the ASEAN countries that supported the “Global Coal to Clean Power Transition Statement”. The same countries also supported the Global Methane Pledge.

Policymakers & industry players discussed role of gas in the pathway towards carbon neutral for Malaysia at MyGAS 2021

» In alignment with Malaysia’s commitment to achieve carbon neutrality as early as 2050, Malaysian Gas Association (MGA) organised the Malaysian Gas Symposium (MyGAS 2021) from November 22-25 2021 with the theme “Role of Gas in the Pathway Towards Carbon Neutral Malaysia by 2050.”

» Natural gas is expected to play the long-term role of providing energy access and security, and at the same time help Malaysia meet its target of reducing greenhouse gas emissions intensity of GDP by 45% by 2030.

» With the recent commitment by the Malaysian government to stop building new coal-fired power plants as part of its carbon neutral pledge, Malaysia will need natural gas even more as fuel for power generation and as a partner to renewable energy.

» Malaysia is developing the National Energy Policy (NEP) with a horizon up to 2040 that is expected to chart a low carbon pathway, putting Malaysia on track towards eventually achieving carbon neutrality as early as 2050.

» In officiating MyGAS2021, Mustapa Mohamed, Minister in the Prime Minister’s Dept (Economy) of Malaysia, said: “natural gas, combined with other low carbon and renewable gases such as hydrogen and biogas, is expected to play an important role both in the NEP and in our strategy to achieve carbon neutrality”.

» To enhance this role, Malaysia is also developing the Natural Gas Roadmap as a key component of the overall National Energy Policy to ensure a vibrant and sustainable natural gas industry and the Hydrogen Economy and Technology Roadmap to chart a long-term pathway to drive the hydrogen economy.
At the start of the pandemic, gas demand in the North East Asia & Australasia region fell in line with global decreases. A decline in overall power demand led to decreased demand for gas and lowered prices.

The region’s economies saw faster, albeit varied, recoveries compared to Europe and North America.

Gas demand continued to rebound in Q3 2021, as the region recovered from the impact of COVID-19, but it has been a turbulent ride.

The pandemic exerted strong downward pressure on global natural gas and LNG demand and prices. Asian spot LNG prices plunged to record lows of $2/mmBtu around the middle of 2020 which stimulated demand and prices rose. Supply chain disruptions emerged due to constraints on LNG tankers and restrictions on LNG tanker traffic just as economies were starting to recover. A record cold winter across Japan and China in early 2021 saw prices skyrocket with spot LNG prices up to more than $30/mmBtu, then as winter ended the prices retreated.

More recently however, continuing supply chain issues and fears of another cold winter in the north have seen global record high natural gas prices this quarter. Oil prices rose to multi-year highs while LNG spot prices spiked to records this month amid the global energy crunch. While LNG prices are off their highs, they remain more than 400% higher than this time last year.

The pandemic also saw the rise of ESG as investors, society and customers shifted their expectations towards a greener future. The notion of “building back better” has seen government policies and investment shift towards cleaner energy futures right across the region.

Non-OECD Asia to become largest importer of natural gas by 2050

Looking further afield, the US Energy Information Administration last month projected that non-OECD Asia would become the largest importer of natural gas by 2050. Nations such as China and India will more than double their net imports of natural gas to meet the needs of their growing economies.

Meanwhile demand in Japan and South Korea is expected to decline in accord with their ambitious net-zero commitments. Japan recently announced power targets that include a near halving of power generation from LNG by 2030.

Japan: Japan is stockpiling and switching

Japan’s electricity prices surged to their highest in nearly 10 months on November 1, 2021 amid elevated global prices for LNG and the need to prepare for the winter peak. Japanese buyers of LNG are stocking up on supplies to see them through the oncoming winter.

Meanwhile, the government has warned that electricity
supplies this winter may be at their tightest since the 2011 Fukushima disaster if a cold winter occurs. It has asked oil refiners for extra supplies to generate power as they try to switch from LNG amid the high prices.

**China: China consumption up post-Covid**

- Reflecting its success at controlling COVID-19, Chinese gas consumption reached 325 bcm in 2020, a 6% increase on 2019, making China the world’s third largest gas consumer, but natural gas still only constituted 8.8% of China’s primary energy consumption.

**China buys up big**

- China and other Asian emerging markets have overall been benefiting from attractive gas prices as their economies recover. China recently overtook Japan as the world’s top LNG buyer, with its intake rising nearly 4% in October compared to September.

- Total gas imports increased by 3.7% year on year in May, with LNG imports up 21%. China is anticipated to overtake Japan to be the largest LNG importer on an annual basis by 2022.

**Korea: Korean demand bigger than expected going forward**

- Recent reports coming out of the South Korea’s energy ministry have LNG imports rising more than previously reported. Its long-term Natural Gas Supply Plan expects LNG consumption to grow at an annual average of 1.01% for the next 13 years, up from 0.81% previously reported. Demand will be driven by higher demand for LNG bunkering and hydrogen fuel cell cars, while the country shifts away from coal and nuclear.

**Korea’s hydrogen and ammonia plans unveiled**

- The Korean government has unveiled plans to reduce its emissions by burning vast amounts of hydrogen and ammonia for power production in the 2030s. They want to use a fuel mix of 30% hydrogen in all gas-fired power plants by 2035 and 20% ammonia (NH3) at more than half of its coal power stations as early as 2030, as part of the country’s plan to reach net zero by 2050.

- Korea’s push to boost its hydrogen sector saw it cut the domestic price of natural gas by 25% to help lower the production costs of hydrogen used for vehicles. The price cut extends to October 2024 is aimed at leading to an earlier opening of a “hydrogen society” based on green hydrogen production and consumption.

**Australia: Australia delivers record exports again**

- In October Australian LNG projects shipped a record 7.23 MT (105 cargoes), which is higher than the 6.96 MT (101 cargoes) in September. Compared with September, Australian projects delivered five fewer cargoes to Japan, Korea, Malaysia and Singapore in October, but six additional cargoes to China and Thailand.

**Two major gas projects coming on in Australia**

- In October Australian LNG projects shipped a record 7.23 MT (105 cargoes), which is higher than the 6.96 MT (101 cargoes) in September. Compared with September, Australian projects delivered five fewer cargoes to Japan, Korea, Malaysia and Singapore in October, but six additional cargoes to China and Thailand.

**Woodside LNG project to boost supply**

- Woodside Energy and partner BHP Petroleum have approved the development of the A$16bn Scarborough LNG project in Western Australia. It will be Australia’s largest oil and gas development in 10 years and can supply gas to North Asia for up to 30 years.

**Australian CEO Perspectives report: Post COVID-19**

- A recent report published by the Australian Gas Industry...
Trust into the industry perspectives of 25 CEOs post COVID-19 found that the current industry sentiment was very positive: that the gas industry emerged from the pandemic “fairly unscathed” and they see a very strong future for the industry.

Business continuity was the priority over the pandemic period, with some organisations pivoting by adding new products and services. Some even changed their company names to better reflect their new direction, while those who were already operating flexibly and focused on innovation said it was “business as usual.”

The pace of change across the industry was seen to be accelerating significantly in response to the green agenda, which took a real foothold during COVID-19, increasing customer demands for greener gas. COVID-19 brought forward the innovations and technologies that were sitting in the pipeline, increased government investment and boosted ESG and climate change strategies across the industry.

New Zealand: A critique on NZ’s August blackouts

Rolling blackouts and soaring energy prices this year have seen mounting calls to reform New Zealand’s entire energy market and improve planning to make more strategic decisions as New Zealand moves away from fossil fuels by 2030 and concerns about supply and a chaotic exit mount.

The fallout from New Zealand’s power blackouts in August saw a record 1 MT of low-grade coal imported from Indonesia as the Huntly power station was pulled out of retirement. An independent report found that a lack of hydropower and wind to generate power on one of New Zealand’s coldest nights caused widespread blackouts and operational procedures. Poor communication and an error in demand allocation exacerbated the issue.

The wriggle room in New Zealand’s COP26 pledges

Despite New Zealand being one of the first to sign up to a COP26 pledge to end international support for fossil fuels next year, it has come to light that they may have difficulties delivering on their commitments.

Wriggle room within the various COP26 pledges has given the green light to New Zealand’s financial institutions to keep investing in fossil fuel producers. The ministry of foreign affairs will also continue to provide international aid funding to support diesel electricity generation in the Pacific.

New Zealand also joined over 100 other nations in committing to reducing methane emissions by 30% this decade. This may prove challenging as 85% of methane emissions in New Zealand are produced by livestock from an agricultural industry that is already the most efficient producer of dairy and meat in the world on a carbon footprint basis.
Regional Update

North America

Price increases are the dominant energy story in North America

While the public’s focus is on the cost of gasoline, there is growing concern about natural gas prices as we head into winter and peak heating load for millions of homes. The largest factor affecting gas prices at this time of year in North America has traditionally been weather – colder temperatures or significant events (like hurricanes) affecting supply. As the supply picture has changed dramatically over the last decade because of shale, and as infrastructure has continued to be built out, that annual volatility was reduced.

The last year has seen that volatility appear again though, in part because of COVID, in part because growing LNG exports are making North America more integrated in a global gas market and that market (China, other Asian countries, Europe) wants a lot more gas than in the past, partly because some other energy delivery supply options – like hydro in the US – haven’t delivered as much this year, and increasingly because of regulatory and policy pressures on gas.

A tendency towards more aggressive policy and regulation

The last point is worthy of emphasis: a growing tendency to seek more aggressive policy and regulatory action around the current and future use of gas, the management of emissions from gas, and the merits of gas infrastructure, has started to have an impact on prices.

Gas remains the cheapest energy option in an overwhelming number of jurisdictions and for the overwhelming number of applications across the continent, but that advantage is being called into question by government action – taxes and regulatory constraints. This is happening even as more and more customers – residential, commercial and industrial - seek ways to access gas and gas infrastructure.

Growing focus on innovation

The other thing to note in the North American conversation is how much more attention is being paid to the innovation agenda. Be it new fuels (biomethane and hydrogen), efficiency opportunities, or new technologies from wellhead to burner tip, there is a growing focus on and profile being given to the innovation agenda.

This makes the upcoming IGRC2024 event scheduled for Banff in May 2024 all the more timely, and work is underway to ensure that the innovation agenda is well-profiled there, but also over the next several years leading up to the event.

There is a growing appreciation of the reliability advantage of gas and gas infrastructure.

Last spring’s weather events in Texas have revealed how essential gas and gas infrastructure is to ongoing energy security for society.

The point was underscored in Louisiana in hurricane season this year, and most recently in British Columbia with floods: gas infrastructure remains extraordinarily resilient through challenging natural events, and the discourse of getting rid of the infrastructure ignores that value proposition.

The snow is starting to fall here in Toronto and we are regularly below C° now that December is upon us – this is always the best reminder here in Canada of the value proposition of natural gas and its infrastructure!
Chart is at the forefront of the transition to a low carbon future through technology, equipment and services delivering hydrogen, LNG and biogas for energy and transportation. Our carbon capture technology also removes harmful pollutants including SOx, NOx and mercury.
A new found realism?

The role of gas today and gases tomorrow is to be the catalyst for and foundation of a more sustainable energy system.

COP26 in Glasgow was the COVID COP and has to be seen within that context. COVID has fundamentally changed the way the world works and interacts, perhaps forever.

COVID meant that the event itself was curiously stilted – limited room for group participation, due to a need to maintain COVID controls; an event that felt it was part digital, part in-person, but with no integrated whole. Poorly managed logistics and a lack of digital integration meant that unlike other COP events, it was hard to get a feel for a common “theme”.

So what were the headlines out of COP that are relevant to readers of Global Voice of Gas?

- The headline communiqué to conclude COP demonstrates the continued vital role of hydrocarbons to the global energy, industrial and economic system. For all the hope in advance of the conference, COP only called for countries to pursue measures including “accelerating efforts” to phase down, not out, their unabated coal use. Broader “fossil fuels” were attacked in a call to remove “inefficient subsidies” but at the same time there was no detail as to what this means in practice.

- Global Methane Pledge. The US and the EU have announced a global partnership to cut emissions of...
The post COVID industrial and economic recovery has demonstrated that the global energy system cannot – for the foreseeable period – run on renewable energy alone.

The Global Methane Pledge aims to limit methane emissions by 30% compared with 2020 levels. But there is no punitive action if goals are not delivered on, and major industrial nations such as Russia, India and China have not signed up to the pledge.

- **Coal reduction.** More than 40 countries pledged to quit coal in a new pact that could be one of the key legacies of the Glasgow gathering. The agreement includes 18 countries that for the first time are promising to phase out or stop investing in new coal-fired power plants domestically and internationally, including Poland, Vietnam and Chile. Approximately $20bn in funding has been set aside to help countries quit coal including a proposal to fund South Africa’s shift to clean energy. Again however, major industrial nations did not sign up to the agreement, including the US.

- **Deforestation.** This was trumpeted as a major success of COP. If it works – and the major forest nations are signatories, it will be a major benefit to the world. However, it has been tried before and will need significant political will to succeed this time.

  What drove this dynamic? Perhaps the answer can be found in the pages of the Financial Times; “governments are finding it fiendishly hard to envisage a world beyond fossil fuels…… a difficult task for a world in which energy needs are rising, not falling.”

  To this perception, one can add the observations of many African energy stakeholders who recently gathered in London for the African Energy Forum. To broadly paraphrase, “Recent global energy volatility has shown the value of gas. The global and regional demand is, and it’s growing with millions of people without reliable access to energy that cannot be helped by intermittent renewables on their own. We need gas to facilitate a greener future, and they [COP] are beginning to see that in a way that maybe they didn’t before. Maybe the global energy and in particular gas volatility over the past few months made people at COP look at gas in a way that they hadn’t before.”

  This is not just an issue in developing markets. If we consider Europe, there has recently been a
significant negative change of heart towards natural gas, to the point it has been rechristened “fossil gas.” However, in a region where 8% of the population suffer from energy poverty, natural gas today and a portfolio of decarbonised and renewable gases in the future have been acknowledged as a way to decarbonise the current energy system. “We will have to also invest in natural gas infrastructure,” (European Commission Vice President) Timmermans said at the COP. “As long as we do it with an eye of only doing this for a period, then I think this is a justified investment.”. Multiple sources suggest that gas will be included in the upcoming EU “taxonomy” that defines where investment should be encouraged, albeit the details of what thresholds would be set for emissions and under what timeline may be quite critical to define whether it will be permitted in practical terms, not just on paper.

The post COVID industrial and economic recovery has demonstrated that the global energy system cannot – for the foreseeable period – run on renewable energy alone. No matter how much the supply side of energy is attacked, it is becoming clear to a broad range of stakeholders that the supply side reacts to a series of short and long term demands. COVID recovery is a clear driver of global demand. More systemically, growing population and industrialisation across much of the world continually increases energy demand.

The IGU argues that there has been and remains a significant gap between a certain school of energy and environmental policy aspiration and engineering and financial reality. The world cannot be reliably, securely and affordably energised by purely renewable sources. If decarbonisation and lower emissions are the core objective, gas and gases including the development of a meaningful global hydrogen-based economy, can be a major part of the solution to the challenge that COP seeks to manage.

The role of gas today and gases tomorrow is to be the catalyst for and foundation of a more sustainable energy system, or as IHS Markit phrases it, “the second major pillar of decarbonisation”.

As we say at the IGU, “gas works”. Maybe at and post COP26, that view is beginning to get a little more traction?
Delivering for a low carbon future
An interview with Gazprom Deputy Chair Elena Burmistrova

The deputy chairwoman of Gazprom’s management committee and the director general of Gazprom Export, Elena Burmistrova, discusses with Global Voice of Gas the role that gas will play in the energy transition, and the contributions that the biggest gas company is making to a lower-carbon world.

What role will gas serve in the energy transition? Does Gazprom view it as a bridge fuel or as a final destination in global energy systems?

We are convinced that gas can and should play a key role in this process. We now hear active calls to abandon all fossil fuels as soon as possible. Companies and countries call to give up new gas projects or to limit their support. Still, many market players and industry experts are sure that natural gas, being the cleanest of the fossil fuels, should act as the base for the energy transition and should play an important role in the creation of a zero-emission energy industry. We at Gazprom share this view.
The energy transition cannot be performed without a fuel that should be environmentally acceptable, commercially viable and technologically flexible at the same time, being also backed by vast reserves, a well-developed market, and secure infrastructure. We see natural gas fits these requirements better than any other alternative. We are certain of its enormous potential by way of CO₂ emissions reduction, including in power generation, heating, and transport. Natural gas can become one of the key tools for achieving climate goals in almost every economic segment.

In the long-term, we see a range of options for production of clean hydrogen with natural gas. Currently, pilot projects for production of blue hydrogen (with CCS) and ‘turquoise’ hydrogen, with methane split into hydrogen and carbon black, are already being implemented. The gas industry is already developing technologies that would allow the global economy to decarbonise in the safest and most efficient way. Therefore, gas can and should be not only the transition, but also a destination fuel.

**Europe has recently seen a period of very high gas prices. Do such periods of volatility undermine the case for gas as a low-cost and reliable source of energy?**

Both the buyers and the sellers are without doubt interested in predictability in the gas market, including predictable prices. But let us look more closely at what is going on now in this market. What we see in European hubs today is the result of a combination of multiple factors. The most important of those factors are: the post-pandemic recovery of the global economy that boosted energy consumption around the world; the last cold winter that depleted the reserves in the UGS at the many major markets; and the growing demand for LNG and its outflow to Asia. In fact, the current rapid demand growth shows that natural gas is very much wanted in all sectors of the economy. The European market realities have now clearly rejected the claims of many activists that gas was not needed anymore.

Looking at current spot prices, one might have an illusion that all the gas in Europe is now being traded at high prices. This however, is not entirely true. For instance, key buyers of pipeline gas from Russia receive it under long-term contracts, where price is much more reasonable and predictable, due to built-in pricing, peak-shaving mechanisms.

Being the largest gas supplier to Europe, Gazprom is interested in stable prices like no one else. We are not interested in pursuing speculative profits, and we are not heating up the ‘paper’ market. Our goal is to supply this crucial energy source at a price that is predictable and fair, and acceptable both for the seller and for the buyer. Gazprom is focused on long term value creation for all our stakeholders - not least our investors. This is what is needed for the stable development of the industry and of the European economy.

**As Europe strives towards net-zero emissions by 2050, how will Russian natural gas supplies to the continent be affected over the coming decades?**

There is no doubt that the position of natural gas in the European energy balance over the next decade is secure, even among the fuel’s opponents. It is becoming more and more obvious that without natural gas, the EU will find it very challenging to meet its medium or long-term emission reduction targets. According to experts, in 2030 prospective gas consumption in Europe will remain at a level of over 500bn m³/year. At the same time, a decrease in domestic EU production will push the demand for imports up. The consensus forecast by industry experts shows that by 2030, European companies will need to purchase nearly 35bn m³/yr of extra gas, compared to the average level of imports in 2018-2020. Given the competitiveness of Russian gas on the European market, Gazprom has every chance to become one of the main beneficiaries of this additional demand for natural gas, and at the same time to make a significant contribution to cutting greenhouse gas emissions in Europe.

**Where can we see the biggest potential for coal-to-gas switching in Gazprom’s key markets?**

Notably, the global potential for coal-to-gas switching is enormous. Coal still accounts for about a third of the world’s energy consumption. Even in Europe, despite its huge efforts and investments in the energy transition, coal continues to be an important part of the energy mix. One of the most striking examples is Germany where, according to the results of the first half of 2021, the share of coal in power
Gazprom is working to make its activities even more environmentally friendly, further increasing energy efficiency and reducing the carbon footprint of its products, including gas supplies to the EU. In recent years, we have also made significant progress in reducing methane emissions at all stages of the production chain. In 2020, thanks to the implementation of several new projects, our methane emissions decreased by 22% compared to 2019, and the total greenhouse gas emissions decreased by 14%.

Thanks to these efforts, Gazprom currently has the lowest carbon footprint among the largest oil and gas companies in the world. This is noted, for example, by the international “Carbon Disclosure Project” climate rating. In addition to that, a recently published independent study by Sphera Consulting showed that Russian pipeline gas supplies account for average emissions that are significantly lower than the emissions related to LNG. And our newest gas pipelines, such as the TurkStream pipeline, allow a reduction in emissions by almost three times compared to LNG.

Also, on March 8, 2021, Gazprom Group delivered the first carbon-neutral cargo of LNG in the Atlantic Basin to Shell. The cargo is emission-neutral throughout its entire life cycle, from extraction and production to transportation and final consumption. And in October 2021, the first carbon-neutral LNG cargo from the Sakhalin-2 project was delivered to the customers in Japan.

Thus, natural gas is both an effective tool for stabilising the European market, and a fuel that meets demanding modern environmental standards.

also systematically improving the safety of Gazprom’s entire complex supply chain. As for now, our gas supplies have a minimal carbon footprint throughout the entire production chain, complying to the best international practices. Gazprom was the first Russian oil and gas company to adopt its own Environmental Policy back in 1995. However, of course, we recognise that, as well as other oil and gas companies, we still have a lot of work to do to reduce the impact of the industry on the environment. We are convinced that gas has every reason to be considered as green fuel, wherever it is used. That is why we are starting to trade ‘green products’ – such as gas cargoes with emissions offset by international certificates. The purchase of such gas would compensate for emissions in generation, as well as in other segments of final consumption.

Methane emissions have been high on the agenda in climate discussions over the past year. They have been featured prominently in the IPCC report. Could you walk us through the progress Gazprom made in addressing its methane emissions and plans for further improvements in the future? What does Gazprom hope to see from the upcoming European Commission proposal on methane emissions legislation?

We are consistently improving the energy efficiency of our activities. In 2020, we took several steps aimed, among other things, at reducing the gas venting into the atmosphere. As a result, more than 1.7bn m³ of methane emissions were prevented, and the entire methane emissions of PJSC Gazprom decreased by 22% compared to 2019. We intend to continue to strengthen these efforts. Moreover, we see similar efforts by many of our peer companies and important industry players. Together, we have outlined our approaches to methane emissions management within The Methane Guiding Principles initiative. We hope to see prudent policy support from the respective governments, and, what is even more important – an unbiased, transparent and fair approach that would smartly combine climate goals with economic realities.

If a global hydrogen energy market does emerge, can Russia realistically establish itself as a key exporter of the fuel, given how many other countries are pursuing similar strategies? What advantages does Russia have in hydrogen production? →

4. The Methane Guiding Principles focus on reducing methane emissions across the natural gas supply chain were signed in November 2017 by the eight largest energy companies: BP, Statoil, Eni, Shell, ExxonMobil, Total, Repsol and Wintershall. PJSC Gazprom joined the Principles in 2018.
Nevertheless, Gazprom also studies different ways of long-distance transportation of hydrogen, including seaborne delivery. Provided that there is demand, we see the need for solutions for hydrogen supplies from Russia to foreign markets, and we are open to discuss the most economically and technologically efficient options.

What research work has Gazprom undertaken in the field of hydrogen production from natural gas, and why does the company believe there is a strong case for methane pyrolysis as a technique?

Gazprom is active in the research of this sphere, also in collaboration with foreign partners. Even though it is too early to share concrete results, there is definite progress. In blue hydrogen, current research focuses mostly on enhancing the effectiveness of carbon capture and storage technologies since the basic process – methane steam reforming – is a well-known and widely used technology. The development of these techniques and the realisation of concrete CCS projects, including storage of CO₂ relating to hydrogen production, is vital for delivering on the EU’s climate goals.

I believe that Russia has all the chances to take the lead in the future low-carbon energy market. Our country possesses significant scientific and technological capacity in this sphere as well as the world’s largest resource base, primarily of natural gas.
Rapid progress can be achieved in a range of ways, including an accelerated shift away from coal, cuts to Scope 1 and 2 oil and gas emissions, greater energy efficiency, AI, and the expansion in CCUS use.
and sustained reductions in global greenhouse gas (GHG) emissions, including methane emissions. It also invited parties to consider further actions to reduce emissions drastically in the short-term, by as much as 45% by 2030 relative to 2010, in order to keep alive the target to limit global warming to 1.5°C.

Given that renewables have not scaled up sufficiently to even respond to global energy demand growth, natural gas will have a serious role to play, provided it too decarbonises. Even the European Commission (EC) has recognised that. Despite its determination to drive unabated gas out of Europe’s energy mix by 2050, it is now relaxing its Taxonomy to allow use of natural gas during transition. Some consider this controversial, but it is probably a pragmatic recognition of reality, exemplified by the current energy crisis.

As the IEA pointed out, with a rapid increase in energy demand as the world emerges from COVID-19, a cold winter and the shortfall in wind energy during the summer, Europe turned to natural gas. Unfortunately, a tighter-than-expected supply led to a steep rise in gas prices. Clearly, availability and security of gas supplies remain an important part of global energy security during transition, at least until renewables and green hydrogen are ready to step up to the required level.

Some of the criticism following COP26 was that while most parties stepped up their long-term emission reduction goals, there was insufficient emphasis on near-term actions. Pressure, including public mistrust, is increasing, with demands for the oil and gas industry to show how it will achieve real reductions in emissions now. Further investments in the oil and gas sector, without visible and effective plans to reduce emissions are bound to be subject to strong criticism. This is the time – and the opportunity - for the industry to develop a convincing narrative around its value in a decarbonising energy system. Something that will be subject to even more scrutiny at COP27.

This article will contemplate what can be done to achieve near-term reductions in global GHG emissions by 2030.

Pivoting away from oil
The quickest way to reduce emissions, at least in the short-term, is to downsize oil assets. BP has a target to phase out 40% of its oil and gas production by 2030 and increase spending on low-carbon energy to $5bn annually. Shell has said that its oil production peaked in 2019 and is now expected to recede by 1% to 2% annually. ExxonMobil expects its oil and gas production to stay in line with 2020 levels of 3.7mn barrels of oil equivalent/day up to 2025, abandoning a previous plan to reach 5mn boe/d. Eni has a plan to plateau oil and gas production by 2025 and subsequently decline oil production to ensure that natural gas makes up to 85% of its overall output by 2050.

As Eni plans to do, another way for majors to reduce their emissions footprint is to shift future production from oil to gas, which emits 30% less CO₂ than oil. The IEA agrees. It stated that as renewable producers try to catch up, natural gas “remains an important component of electricity security” during transition.

Elimination of flaring
The elimination of flaring, and methane venting and fugitive emissions, is a low-hanging fruit. These processes sometimes happen because the required infrastructure to process the gas does not exist, or it is cheaper to burn it than build the infrastructure to sell it. Not only does this release CO₂ in the atmosphere, but incomplete burning, venting and fugitive emissions also release methane. This makes flaring environmentally harmful, in addition to being wasteful.

Making commitments and putting plans in place to eliminate flaring should be priority, especially if natural gas is to retain a serious role during energy transition. Joining the World Bank ‘Zero Routine Flaring by 2030 Initiative’, or other credible initiatives, could be a good start.

Methane emission reductions
Another first at COP26 that will significantly impact the oil and gas sector was the agreement by more than 100 countries to cut methane emissions by 30% by 2030, and eventually eliminate them altogether. Methane has a much more potent effect on short-term warming than CO₂.

Methane emissions are the second-largest contributor to global warming after CO₂. As a result, cutting methane emissions can be a very effective
short-term tool to combat climate change.

The IEA claims that the oil and gas industry can deliver a 75% reduction in methane emissions with technology available today.

The process must start with the development of a baseline, which requires high-quality and credible quantification of current emissions. The range of advanced technologies to detect and quantify methane leaks is rapidly developing. The baseline can then be used to help optimise emission reduction and quantify the effectiveness of abatement methods.

Identification, minimisation and elimination of methane emissions along the gas production and supply-chain – including fugitive emissions, venting and flaring – is needed to ensure that natural gas, as the cleanest of fossil fuels, can play a significant role in the global energy system well into the future.

**Powering oil and gas facilities with renewables**

Electrification of oil, gas and downstream facilities, including offshore platforms, by replacing turbines with renewable energy can lead to significant reductions in emissions. Switching fossil fuel power generation to renewable power can achieve immediate results.

As an example, as the Oseberg field off Norway shifts from oil to natural gas production, Equinor is investing in electrification of its offshore facilities in a plan to produce gas with the lowest possible emissions level. Geir Sortveit, Equinor’s senior vice president for exploration and production west, said “if the world is to reach its net-zero emission goal, we must remove emission sources...electrification is an effective climate action as it involves large and swift emission cuts,” thus producing natural gas with the lowest possible carbon footprint.

**Artificial intelligence**

Artificial intelligence (AI) technology and advanced analytics have the ability to handle and analyse large volumes of data from many different sources, to help come up with the fastest and most effective solutions to problems. This is something that has the potential to reduce energy consumption, optimise energy efficiency.
and lower carbon and methane emissions.

AI could be effective in reducing emissions from existing, legacy, assets that will probably continue to play a significant role in the global energy mix in the short- to medium-term future.

**Energy efficiency**
The most cost-effective method of reducing emissions is to save energy. Persistent application of operational efficiencies, and development and deployment of lower-emission technologies, both upstream and downstream, can help reduce Scope 1 and Scope 2 emissions.

Companies should set clear targets for improvements in energy efficiency across all their operations. Reducing energy use has a direct effect in reducing the emissions of a facility. Replacing or upgrading lower-efficiency equipment and switching to lower-carbon power and heat equipment are other ways of reducing energy consumption and improving efficiency at oil, gas and downstream facilities.

The IEA states that “an annual rate of energy intensity improvements averaging 4% to 2030 – about three times the average rate achieved over the last two decades” is needed if net-zero is to be achieved by 2050.

**Phasing-down coal**

Last-minute objections from India and China watered-down a commitment at COP26 to end use of unabated-coal. Their intervention led to changing the phrase “phase-out” to “phase-down”. Nevertheless, the summit marked the first time that coal was directly referenced in a COP agreement.

This will hasten the shift from coal-fired power generation to renewables and natural gas. Already, the new German coalition announced plans to exit coal earlier than planned, by 2030, and increase the renewables share of electricity to 80%. This and the phase-out of nuclear plants will be supported by a 50% increase in gas power generation.

China and India also plan to cut coal power generation and replace it with natural gas over the next 10 to 15 years as they strive to meet their climate change targets.

The pressure to phase out coal will increase toward COP27. This provides an excellent opportunity for gas to step in, provided its decarbonisation accelerates.

**CCUS**

According to the IEA, CCUS is coming of age, with a spectacular increase in commitments for new facilities in 2021, enough to quadruple carbon capture capacity. This is driven by a growing recognition that “CCUS is necessary to meet national, regional and even corporate net-zero goals.”

The IEA states that CCUS provides a key option to address emissions from existing and new energy assets – including natural gas power generation plants – to support a cost-competitive scaling up of low-carbon hydrogen production, and to remove carbon from the atmosphere.

Combined with the phasing-out of coal, CCUS could be key to the expansion of gas power generation during energy transition, in support of intermittent renewable generation.

**Carbon pricing**

Wider application of carbon pricing, both globally and to all energy sectors, could contribute to the reduction of emissions as clearly demonstrated by the success of Europe’s Emissions Trading System.

Given that renewables have not scaled up sufficiently to even respond to global energy demand growth, natural gas will have a serious role to play.
The pressure to phase out coal will increase as COP27 approaches. This provides an excellent opportunity for gas to step in, provided its own decarbonisation accelerates.

The new ‘Article-6’ agreement at COP26 includes for the first-time guidelines for a global carbon market, that will allow countries to trade carbon offset credits. This could unlock billions of dollars of finance to fund transition and protect vulnerable countries. Ultimately, carbon pricing encourages GHG emission abatement.

Other technologies, such as green hydrogen, etc, may take longer before they can be used at scale to have any significant impact in cutting emissions in the near-term.

Other factors
In addition to ESG, the formation of a new Sustainability Standards Board at COP26 will drive climate-aligned investing, putting even more pressure on business to reduce its carbon footprint. These will be used by investors that expect oil companies to demonstrate how they are abating emissions not just in the longer term, but also in the short to medium-term – especially as cost-effective, market-based, solutions are readily available.

More oil and gas companies beyond the many that have already done so should commit to major reductions in emissions and announce such plans before COP27 – where oil and gas is expected to be the focus of attention – with clearly set, quantified and verifiable, targets for 2030 and interim targets for 2025.

The global finance world and investors are increasingly driving change, pushing oil and gas companies to decarbonise, or they will find it more difficult to raise capital for new projects.

In the short to medium-term, the substitution of coal in power generation and manufacturing by natural gas, in support of and while renewables catch up, provides an effective way forward to cut emissions substantially.
KOGAS Paving a Green Road for a Net-Zero Emission Future

KOGAS is fully prepared to become a competitive H₂ provider, ushering in a hydrogen economy.
Energy crisis strengthens case for gas

Europe is in the grip of an energy crisis, but natural gas has helped avoid supply disruptions, and an overreliance on imports highlights the need for indigenous production

JOSEPH MURPHY

The energy market crisis has been nowhere more acute than in Europe, where wholesale gas and power prices have surged to heights not previously thought possible. Indeed, the front-month contract at the Dutch TTF hub briefly touched almost $2,000/’000 m³ in early October and prices have remained stubbornly above $1,000 since then.

There are a number of factors that have culminated to produce the unique situation on the European energy market right now. A sharp rebound in Asian gas demand particularly in China this year has driven LNG trade away from Europe to where it can fetch a higher premium. Various supply constraints, including outages at liquefaction plants and a fire at a major Siberian processing facility, have also contributed, as well as pandemic cuts to upstream investments. Gas storage levels are also lower than normal, owing to unusually high summer prices that meant companies
had less incentive to store gas for winter. Households and many businesses have been largely shielded from high wholesale prices so far, but the crisis has pushed a number of energy suppliers into bankruptcy, and led some heavily gas-reliant industries such as fertiliser producers to shut down their plants. However, despite being under considerable pressure, the European energy system has far held firm. The continent has so far been spared from rolling blackouts and heating outages that some observers had feared.

**Lessons to learn**
The crisis has inevitably led to a reevaluation of energy policies, as governments consider steps to avoid similar circumstances arising again. Different countries are pursuing different strategies. France, for instance, has announced it will resume the construction of nuclear power plants to provide the baseload capacity it needs to underpin the further deployment of renewables. Others like Poland have placed natural gas at the centre of their transition plans.

On the EU level, though, the European Commission has insisted that the bloc’s own policies, including those on climate, are unrelated to current events. Speaking in October, commission president Ursula von der Leyen argued that the problem was an overreliance on natural gas, or what is increasingly being referred to as “fossil gas.”

Similarly, energy commissioner Kadri Simson said that the energy price spike “has little to do with our climate policies and much to do with our dependence on imported fossil fuels and their volatile prices.”

That Europe is over-reliant on imported oil and gas is an opinion that many in the hydrocarbon industry share. Gas production in Europe has been falling for decades, outpacing the decline in its consumption that has been brought about by greater efficiency. Excluding contributions from Russia and other CIS states, Europe’s gas output amounted to only 218.6bn m³ in 2020, according to BP's latest statistical review, down nearly 30% from the level in 2010. In the EU’s case, this has resulted in 90% dependency on imported gas.

While natural decline is a key factor – many of Europe’s largest fields are mature – underinvestment in new production has also played a role. Low prices in recent years have placed a cap on spending, but regulatory pressure and antipathy towards gas in parts of society have also contributed.

In Romania, for instance, OMV Petrom and ExxonMobil have refrained from taking a final investment decision on the offshore Neptun Deep gas discovery because of controversial changes to the country’s offshore law, while in the Netherlands, the government has brought forward the deadline for closing Europe’s largest gas field Groningen by eight years to 2022, and a Dutch court ruling on nitrogen deposition has led to serious difficulties with project permitting. Denmark and Ireland have ended oil and gas licensing, while the UK has imposed a moratorium on onshore shale development.

While some of these policies are more understandable than others, they have undeniably contributed to the current supply crunch. As Sciences Po professor Thierry Bros and Jacques Delors Institute advisor Jean-Arnold Vinois noted in a November policy paper, “in practice, as supply and demand must balance, neglecting the fundamentals of gas supply without taking care of the demand side has led to the present high prices and scarcity.” Essentially gas remains in high demand, in defiance of the expectations of some policymakers.

Offshoring needed gas supply also results in the offshoring of emissions. And imported gas can result in greater emissions as a result of the transport distance.

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**It is too early to say whether the energy crisis will result in significant and lasting policy shifts in Europe or elsewhere**
Complementing renewables

Rather than a rationale for shifting away from gas, industry body Naturgy argues that the current crisis “is demonstrating its essential role in the energy mix as a flexible, non-intermittent, and secure source of energy supplying reliably tens of millions of households, industry, and the power generation sector.”

Moreover, it said in October, “natural gas plays an increasingly important role in balancing the energy system and allows for a smooth and flexible integration of low carbon and renewable sources, while the most carbon intensive options are being phased out.”

The rapid deployment of wind and solar energy in recent years has only made gas more essential as a supplier of baseload energy. And further increases in intermittent renewables will further increase price volatility unless there is sufficient non-intermittent energy supply to accompany it, as well as enough energy storage - whether in the form of gas, or, in the future, large-scale batteries and hydrogen.

Indeed, the intermittent nature of wind power was demonstrated this year, with much of the continent recording low wind speeds particularly in the summer. In the UK, for example, the share of wind power in the generation mix at times fell to as much as 2.5-3.0% on some days during the autumn, versus an average of 18% last year. During these periods, gas was there to provide around half of the nation’s electricity, although shortages still meant some coal-fired power needed to be brought online.

Weak wind output placed extra pressure on gas and other energy sources to deliver, contributing to the market’s tightness. Nevertheless, energy supplies have remained stable.

“This is thanks to a multiple of producers operating across the globe, reliable global supply chains, and a well-functioning European gas market which enables suppliers and transmission companies to source and dispatch gas across the network to meet market demand based on a variety of commercial arrangements including long-term contracts,” Naturgy noted.

It is too early to say whether the energy crisis will result in significant and lasting policy shifts in Europe or elsewhere. But there appears to be early signs of a more pragmatic approach to the energy transition emerging. One such sign is a recently-leaked report that suggests that the European Commission is looking to classify as “sustainable” in the EU taxonomy.
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Appetite returns for longer-term, oil-indexed supply contracts

Global gas trade has been steadily shifting to more short-term contracts and increased gas-on-gas competition pricing. But surging demand and record high spot prices have led some buyers to reconsider this strategy.

JOSEPH MURPHY

For some years, global gas trade has been shifting towards greater flexibility and has seen the share of shorter-term contracts, spot trades, and gas-on-gas competitive pricing grow. But surging demand and soaring prices over the latter half of this year have brought energy security and costs to the top of the agenda of gas buyers. This has provided some renaissance in the appetite for longer-term contracts and the oil price indexation mechanism.

Spot trades and gas-on-gas pricing have grown ever popular with buyers over the last decade, largely because the market was really well supplied from the growing global production and new projects coming online, and hub prices were low during that period. Keen to underpin their upstream investments, suppliers have generally favoured long-term contracts.
and oil price indexation, but have given ground to their customers to keep their business.

The International Gas Union (IGU) estimates in its Global Wholesale Gas Price Survey 2021 that gas-on-gas pricing grew to account for 49.3% of global gas consumption in 2020, up one percentage point year on year and compared with 31.3% in 2005. And this growth has come at the expense of oil indexation, whose share has shrunk from 24.4% to 18.6% over the past 15 years.

The split between oil indexation and gas-on-gas pricing in LNG imports reached 56-44 last year, according to the IGU, and gas-on-gas pricing is even more dominant in pipeline imports, accounting for 65% of the total. Prices have also generally become more market-based over the last 15 years, with the share of market-priced gas climbing from 62% in 2005 to 71.5% in 2020, while the share of regulated pricing has shrunk from 38% in 2005 to 28.5% in 2020.

The International Group of LNG Importers (GIIGNL) has meanwhile recorded a steady increase in spot market purchases in the LNG segment in recent years, with volumes expanding to account for 35% of overall trade last year, versus 27% in 2019. Moreover, long-term contracts have become shorter in duration and more flexible, with a greater variety of pricing mechanisms available, and this has largely been to the detriment of oil indexation.

In Europe, the EU has made a concerted push to liberalise its gas market over the past decade, and this has included the promotion of spot sales and gas-on-gas pricing. Gas-on-gas pricing covers 81% of supplies here, according to the IGU, which is a larger share than anywhere else in the world.

This strategy has largely paid off by securing lower gas prices for the EU. According to the International Energy Agency (IEA), the bloc saved some $70bn in import bills between 2010 and 2020 by shifting to gas-on-gas pricing. However, the situation has reversed this year, as gas demand has rebounded sharply since the peak of the coronavirus pandemic, while supply has grown more slowly, pushing hub prices to record heights.

The buyers most exposed to current high prices are those that sought more spot sales and gas-on-gas pricing, while those that kept with long-term, oil-
indexed arrangements have been relatively sheltered from the crisis. Offsetting previous gains, the IEA estimated in late October that EU countries will pay around $30bn more for gas in 2021 than if they had stuck with oil indexation, and depending on how long high hub prices stay, the cost could become much greater.

Suppliers including Gazprom and the Gas Exporting Countries’ Forum (GECF) say this has vindicated the use of oil indexation and longer-term contracts. Ironically, those suppliers that resisted calls from their buyers to offer more hub-based pricing and spot volumes have seen more limited gains from the demand recovery, while those that reformed their business models are now enjoying ample profits.

**Looking ahead**

Moving forward, some expect that oil indexation could rebound in popularity as a result of the present market conditions, and there are other forms of pricing that buyers could opt for instead of gas-on-gas.

“Following the shocking rise in European gas prices this year, I expect that buyers will seek to diversify away from hub-based prices as quickly as practical,” Ronald Smith, analyst at BCS Global Markets, told GVG. “There will likely be at least some return to oil-linked pricing, but other methodologies may rise in weighting, too, such as Henry Hub links, electricity price links, and even fixed prices. To the extent that hub links remain, I’d expect buyers and sellers to agree that less volatile, longer-dated futures should be more prominent relative to day or month-forward links than they are today.”

Even when hub pricing remains in place, he expects buyers and sellers “to agree that less volatile, longer-dated futures should be more prominent relative to day or month-forward links than they are today.”

However, Vincent Demoury, secretary general of the GIIGNL, told GVG that while there had been a “renewed interest” in long-term trade, the share of spot and short-term contracts has continued to grow this year. Spot and short-term trade accounted for 45% of the total so far this year, versus 40% last year.

Demoury doubts that the trend towards shorter-term trade will reverse as a result of market events this year. But he believes there is a “natural cap” to how much market share it will take away from long-term contracts.

“New supply needs to be underpinned by long-term contracts,” he said. “We are still not in a world where you can finance supply projects without long-term agreements.”

Long-term supply contracts covering more than 64 MTPA of LNG were signed this year up to the end of October, versus 25 MTPA during the whole of 2020 and 57 MTPA in 2019, Demoury estimated.

“But even these long-term contracts are becoming shorter in duration,” he said. “We’re seeing more and more shorter, 10-15 year contracts, as opposed to contracts exceeding 20 years we were seeing before.”

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**We are still not in a world where you can finance supply projects purely on the back of spot or short-term contracts.**

VINCENT DEMOURY, General secretary, GIIGNL
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Asia’s soaring gas demand outstrips supply

Asia’s post-pandemic economic recovery has sent regional power demand soaring, leaving utilities scrambling to secure feedstock supplies. With global gas supplies unable to keep up with demand, costs have soared. Beyond the economic rebound, gas consumption has also been spurred on by coal-to-gas switching, particularly in China.

Prices for spot LNG delivered to Asia topped $56/mmBtu in early October, before retreating to around $31/mmBtu. Still, that lower figure does represent a significant markup over the $10/mmBtu that spot cargoes were commanding at the end of last year.

While some of the region’s power generators have been able to weather the storm, players in more price-sensitive markets have opted to switch over to coal or fuel oil.

As the Northern Hemisphere winter begins, demand for gas will ramp up and, when it does, prices will spike as will demand for alternative feedstocks.

Regional trends
The LNG price rally has most noticeably hurt demand in South Asia, where utilities have been more inclined to turn to coal-fired power capacity.

Rystad Energy analyst Kaushal Ramesh told...
Global Voice of Gas that surging power demand and high gas prices had led to extensive fuel switching in order to minimise purchases from the LNG spot market.

He said: “This [switching] applies not only to price-sensitive South Asia but also to parts of South Korea. Japan has better nuclear power availability this winter, but it is considering the use of low sulphur fuel oil (LSFO) at oil-fired power plants.”

Japan has seen a downward trend in LNG imports over the last few months, with shipments in September and October dipping by 17% and 22% respectively. India, meanwhile, trimmed its LNG imports for the first seven months of financial year 2021-2022 by 0.9% to 19.08 bcm.

Chinese gas demand, on the other hand, has gone from strength to strength this year. The Asian economic powerhouse imported 99.07 MT of piped gas and LNG in the first 10 months of this year, a 22.3% increase year on year and up 27.4% from 2019’s 77.75 MT.

Wood Mackenzie vice president and head of Asia-Pacific gas and LNG research, Val Chow, told GVG that Chinese power generators’ demand for gas had remained fairly resilient through their ability to blend high spot prices with more moderately priced oil-linked gas and LNG contracts.

Meanwhile, the region’s biggest gas importers have begun preparing for the peak winter demand season with plans to receive the most LNG since February.

### Pricing pressure

China, Japan and South Korea are projected to receive 17.77 MT of LNG in November, the highest volume since February’s 19.01 MT, Reuters reported on November 23 citing data from commodity consultancy Kpler.

Higher prices are expected to continue hurting Indian demand, however, with the country only anticipated to receive 1.51 MT of LNG in November, the lowest volume since April 2020.

Northeast Asian buyers are likely to continue ramping up their imports through the next few months as temperatures bottom out. While this is to be expected, an unexpected cold snap could still cause further market volatility as demand outpaces supplier projections. This will drive demand for spot supplies and stoke prices even more. Further complicating the picture is the ongoing gas crunch in Europe.

Ramesh said: “There is the risk of gas prices remaining elevated, albeit at lower levels than now, well into 2022 as Europe may again emerge from the winter with severely depleted storage. This would spur restocking demand, and high carbon prices may again deprioritise coal in favour of gas in the power mix.”

Structural supply constraints could also provide support for gas prices beyond the next year, however. Chow said: “The real crisis is one of energy supply driven by structural underinvestment in hydrocarbons since the middle of the last decade in the face of weaker energy prices and mounting ESG concerns.”

KAUSHAL RAMESH, LNG and Power Market Analyst Rystad Energy
weaker energy prices and mounting [environmental, social and governance] ESG concerns.”

This underinvestment saw a dearth of final investment decisions (FIDs) for LNG projects between 2015 and 2017, while only one project received the green light last year.

Chow observed that a lack of project approvals, increasingly stringent financial and environmental hurdles for new projects, and continuous Asian demand for gas meant that prices could remain above long-term averages into the middle of this decade.

And while there are projects on the immediate horizon that should relieve some of the supply-side pressure, political challenges could delay one of the largest.

**Supply side**

Russia’s Nord Stream 2 project was supposed to begin pumping fresh gas volumes to Europe by mid-2022, thereby alleviating one aspect of the global gas supply crisis. However, the pipeline has run into increased political opposition, with Germany again suspending its approval process in mid-November.

Germany’s energy regulator, the Federal Network Agency (FNA), said on November 17 that it would not sign off on the project until the Swiss-registered Nord Stream 2 company transferred its main assets to its German unit.

“A certification for the operation of Nord Stream 2 will only be considered once the operator is organised in a legal shape compliant with German law,” the regulator said.

It remains to be seen how long Germany’s approval is delayed, but any delay in supplies will only provide further pressure on gas prices.

Other near-term projects include the start-up of the sixth train of Cheniere Energy’s Sabine Pass facility, as well as Venture Global LNG’s Calcasieu Pass. Both of these are expected to start commercial operations early next year.

The gas market was poorly prepared for the post-pandemic demand surge and the effects of the supply tightness can be seen in both the coal and oil markets, where demand has also soared. While elevated gas prices are unlikely to result in long-term demand destruction – coal, after all, has a shelf life now thanks to the COP26 climate deal – it could delay efforts to scale back consumption of the dirtier burning fuel.

Both China and India pushed for the COP26 deal to embrace softer language over the end of coal use in power generation, preferring to refer to it as a phase down. This position was driven partly by each country’s economic and energy security concerns, which were informed by the lack of cheaper gas supplies.

This said, China will continue tightening restrictions on domestic coal consumption, and president Xi Jinping said at COP26 that the country would aim to start reducing the use of the fuel in the mid-2020s. The government’s launch of a carbon market over the summer will also help encourage utilities to make the switch to gas. India too is looking to expand the use of gas to 15% by 2030 from 6% at present, mostly at the expense of coal.
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LNG producers seek to step up supply

LNG producers are seeking to build more liquefaction capacity as demand for the fuel surges, but this will take time and energy transition complicates the picture

ANNA KACHKOVA
It has been two particularly volatile years for the global LNG market, which has swung from oversupply in early 2020 to surging demand and high prices in the tight market we are seeing today. The COVID-19 pandemic initially destroyed demand, leading to cancellations of several scheduled cargoes in the first half of 2020. Now however, the pandemic is contributing to stronger demand as industrial activity picks up again following the initial waves of global lockdowns.

The process is not linear and new lockdowns are still being brought in, as some countries battle to contain new surges of COVID-19 infections. Nonetheless, demand for natural gas for power generation is up. On top of this there are seasonal trends, and major buyers of LNG are rushing to buy the fuel ahead of the Northern Hemisphere winter in a bid to avoid the sort of supply crunch that came a year ago.

**New capacity**

2020 was a quiet year for final investment decisions (FIDs) with only one announced, on Sempra Energy’s Energia Costa Azul (ECA) LNG terminal in Mexico, but activity picked up somewhat in 2021. Notably, this year saw Qatar Petroleum – since renamed to QatarEnergy – reach an FID on North Field East (NFE), which is the single largest LNG project in the world, set to raise Qatar’s liquefaction capacity from 77 MTPA year to 110 MTPA.

However, NFE and the other projects sanctioned this year will take time to build and to bring online. “The projects sanctioned so far this year – Qatar’s North Field expansion, Baltic LNG and Pluto Train 2 – are likely to be in commercial operation only around 2026,” a Rystad Energy LNG and power market analyst, Kaushal Ramesh, told Global Voice of Gas.

Some new liquefaction capacity is set to come online in the short-term – including Cheniere Energy’s Sabine Pass Train 6, which produced its first LNG in November, and Venture Global LNG’s Calcasieu Pass, which is close to start-up. However, given the project development lead times required to bring new LNG online, it is not possible to immediately crank up supply capacity volumes.

“We need to see material additional supplies hit the market, the possibilities of which are limited till around mid-2022, by when we should see volumes flowing to Europe through Nord Stream 2, and commercial operations at Sabine Pass Train 6 and Calcasieu Pass in the US,” Ramesh said.

He noted the risk of gas prices to remain elevated – albeit at lower levels than they are now – well into 2022 if Europe again emerges with severely depleted storage, as has been the case this year. This “would spur restocking demand, and high carbon prices may again de-prioritise coal in favour of gas in the power mix”, he said.

**Liquefaction Projects Approved this Year**

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<td>13 MTPA</td>
<td>Baltic LNG, Russia</td>
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**Contracting activity**

Recent market trends appear to have helped spur a new wave of long-term offtake agreements, with buyers seeking to lessen their exposure to the spot market in the wake of recent price volatility.

Recently, several of these deals have involved US LNG producers and Chinese buyers. Over the course of October and November, Cheniere struck deals with ENN Natural Gas, Sinochem and Foran Energy Group – as well as commodity trader Glencore. And Venture Global announced two separate 20-year deals with Sinopec for a combined 4 MTPA. Additionally, Sinopec’s Unipec subsidiary agreed to buy 3.5 MTPA from Venture Global over a shorter period.

“The wave of LNG contracting activity is certainly positive for new liquefaction capacity, with a number of US projects – Tellurian’s Driftwood, Venture Global’s Plaquemines, and Cheniere’s Corpus Christi Stage 3 already having contracted enough to take FID,” said Ramesh.

Indeed, according to Venture Global’s website, the company is still targeting an FID on Plaquemines...
during the fourth quarter of this year. FIDs on Driftwood and Corpus Christi Stage 3 are anticipated in 2022.

The new capacity will be welcomed by buyers, but the timing of these FIDs, and the time it will take to bring these projects and others online, also suggests that there is a risk of several future supply shortages over the coming years.

“We see a material risk of a supply deficit sometime around 2024, which may persist through 2026, given the handful of FIDs taken since 2020,” said Ramesh. “If more projects are sanctioned in 2022 – such as the next American wave – we see risk of an oversupply again sometime in 2027 or so, by when these should be operational. However, based on the currently producing and sanctioned projects, we see a supply gap of as much as 90 MT by 2030.”

During the Energy transition complexities

LNG producers may be keen to sanction new capacity as soon as possible, in order to meet medium-term demand. However, whether they can succeed in this depends on more than just being able to contract new capacity and secure financing. Environmental issues are an increasingly important component to consider as producers seek commercial, political, regulatory and public support for new projects.

“Liquefaction projects face mounting challenges from environmental scrutiny and uncertainty over gas’ long-term role in the global energy mix,” said Ramesh. “Not taking decarbonisation initiatives could be detrimental to developers of not only operational projects but also of those yet-to-be sanctioned, which may face scrutiny from potential investors. And we are seeing the industry step up to this challenge through

Major buyers of LNG are rushing to buy the fuel ahead of the Northern Hemisphere winter in a bid to avoid the sort of supply crunch that came a year ago.
the use of carbon offset LNG, increased transparency on emissions and the use of electrified trains (Woodfibre, Freeport), and carbon capture (Venture Global, Cheniere, NextDecade)."

In November alone, two LNG developers in Texas took steps relating to adding carbon capture and storage (CCS) capacity to their projects. Freeport LNG announced that it was partnering with Talos Energy to build a CCS facility at its existing liquefaction plant, while NextDecade lodged a regulatory application to modify its proposed Rio Grande LNG terminal to include CCS capacity.

They are joining a small but growing list of LNG developers pursuing decarbonisation through CCS.

Others, meanwhile, have engaged in the shipping of greenhouse gas (GHG)-neutral cargoes, which have their emissions offset. GHG-neutral LNG is relatively new, having first been shipped by Shell in 2019, but its popularity has grown, especially in 2021, as LNG sellers and buyers alike have sought to showcase their green credentials.

However, some critics have questioned the value of GHG-neutral LNG to decarbonisation, given that the fuel still yields emissions, even if they are then offset.

"Over time, we expect the concept of GHG-neutral LNG to gravitate towards reducing and capturing emissions, compared to offsetting them now," said Ramesh. "This is driven by the criticism over the use of voluntary offsets, which have so far remained an unregulated and opaque market. Once rules around additionality and non-deterrence are put in place after the discussions at COP 26, we should see offsets being used only when other mitigations have already been implemented," he added.

"That said, we believe carbon-offset LNG will enjoy some structural demand in the near-to-medium term given its popularity in Japan and China," Ramesh said.

Efforts are also underway inside the gas industry to standardise the process for assessing LNG as GHG-neutral. For example in November, the International Group of Liquefied Natural Gas Importers (GIIGNL) launched a new framework aimed at providing a "verified and consistent" methodology for quantifying GHG emissions associated with the LNG value chain. The framework is also designed to be as transparent as possible, and requires industry participants to have plans in place to reduce their emissions.

Producing GHG-neutral LNG entails a higher cost, as does the addition of CCS infrastructure to liquefaction plants. But governments and the public are increasingly demanding the decarbonisation of energy infrastructure, including LNG facilities. As a result, the LNG industry increasingly has to take decarbonisation into consideration. How quickly new liquefaction capacity can be sanctioned over the coming years will likely depend in part on how successful producers will be at presenting their proposed new projects as comparatively environmentally friendly options.

We see a material risk of a supply deficit sometime around 2024, which may persist through 2026, given the handful of FIDs taken since 2020.

KAUSHAL RAMESH, LNG and Power Market Analyst, Rystad Energy
UK makes strides in decarbonisation push

In the space of a few months, the UK has unveiled a long-awaited national hydrogen strategy and has selected two major CCUS projects for state support.

JOSEPH MURPHY
The UK has taken two major steps forward in its decarbonisation efforts in the last few months. Ahead of hosting the COP26 climate talks in Glasgow, the government first unveiled a long-awaited national hydrogen strategy, and later selected two large-scale carbon capture utilisation and storage (CCUS) projects in north England for government funding. Hydrogen and CCUS are both cornerstones of the UK’s net-zero emissions strategy.

**Blue and Green**

The UK government published its hydrogen strategy in August, in which it stated a goal of producing 5 GW of low-carbon hydrogen by the end of the decade. While other countries are pursuing either blue or green hydrogen, the UK wants to embrace both, by exploiting its natural gas reserves, its significant CO2 storage capacity and its offshore wind potential.

Ahead of the strategy’s release, energy consultancy Xodus urged the UK government to “resist the temptation” to focus only on green hydrogen and scale up blue hydrogen as well, arguing that the UK had an edge in producing both.

“The UK is ideally placed geographically, technically, financially and politically to be a global low-carbon centre, spanning both green and blue hydrogen production,” the consultancy said. “We have an abundance of all the raw materials needed for low-carbon hydrogen.”

The UK is the windiest country in Europe and could one day have 150 GW of offshore turbines up and running, the consultancy said. But it also has some 6.6 trillion ft3 of proven natural gas reserves, according to BP, and 70 gigatons of CO2 storage capability in the North Sea, the British Geological Survey estimates, some of which could be used to store CO2 from blue hydrogen production. In addition, the UK benefits from an extensive gas pipeline system that could be used to distribute hydrogen and even export it.

Xodus claims that blue hydrogen could be produced at a cost of $1.50-2.40/kg, with as much as 90-95% of CO2 captured, while the cost of green hydrogen is substantively greater, with a wide range between $2.5-8.0/kg.

“Blue hydrogen is a low-carbon and commercially accessible technology, and we should not pander to the ‘green only’ ideal: we need realism, not idealism, to solve the energy transition conundrum,” Xodus said.

The UK envisages a “two-track” approach favouring both blue and green hydrogen, estimating that combined they could meet a third of UK energy needs by 2050. The aim is to wed early government action with private sector backing. Hoping to replicate the success of offshore wind development over the last decade, the government is looking to introduce a business model similar to the contract for difference scheme used for renewables.

Oil & Gas UK (OGUK) was among those that welcomed the strategy.

“This provides a clear long-term signal that government is committed to building a world-leading UK hydrogen economy and sets out how it will work with industry to achieve this,” OGUK’s sustainability director Mike Tholen said. “All options should be made viable if we are to transform the UK’s energy system to a sustainable one.”

There is still work left to be done, however. Besides finalising a business model, the government also needs to review what network and storage infrastructure should be developed for a hydrogen market to function; establish carbon intensity definitions and assess the safety, technical feasibility and cost effectiveness of mixing 20% hydrogen into the existing gas supply.

**Decarbonising industry**

The government meanwhile picked out two CCUS projects in October for state funding that will
Blue hydrogen is a low-carbon and commercially accessible technology, and we should not pander to the ‘green only’ ideal: we need realism, not idealism, to solve the energy transition conundrum.

XODUS

decarbonise heavy industry in north England. The plan is to have at least two CCUS projects online by the mid-2020s and at least four by the end of the decade, to capture and store as much as 30mn metric tons/year by 2030.

East Coast Cluster (ECC) and HyNet North West have been selected to receive some £1bn ($1.4bn) of financing from the government’s CCS Infrastructure Fund.

ECC will decarbonise industry in the Humber and Teesside regions, and comprises three sub-projects known as Zero Carbon Humber, Net Zero Teesside and Northern Endurance Partnership.

Alone it is expected to prevent 50% of CO₂ of UK industry emissions. The transport and storage segment of the project involves BP, Italy’s Eni, Norway’s Equinor, Shell and France’s TotalEnergies.

The developers behind ECC envisage taking a final investment decision in 2022 and launching the project in mid-2020. By the 2030s it will be storing 27mn metric tons/year of CO₂, and will also deliver 70% of the UK’s target for hydrogen.

HyNet is smaller and will handle up to 10 MTPA of emissions from industry in northwest England and north Wales, as well as supplying half of the hydrogen needed in the UK’s net-zero strategy. It is slated to
Blue hydrogen’s climate credentials
While there is a certain degree of skepticism about blue hydrogen’s climate credentials in government, recent research finds that it can be considered as clean as green hydrogen, if produced in the right conditions.

The paper, titled On the Climate Impacts of Blue Hydrogen Production, was a collaboration of scholars in the UK, the US, Canada, Switzerland, Germany, Italy and the Netherlands. It found that blue hydrogen can have a lifecycle greenhouse footprint comparable to green hydrogen, or no more than 2-4 kg of CO₂ equivalent/kg, when CO₂ capture rates of above 90% are achieved and the feedstock gas supply has a methane emissions rate of 1%.

“Our main conclusion is that, if the above requirements are met, blue hydrogen can be close to green hydrogen in terms of impacts on climate change and can thus play an important and complementary role in the transformation towards net-zero economies,” the researchers said. “It is important to reiterate that no single hydrogen production technology, including electrolysis with renewables, is completely net-zero in terms of GHG emissions over its life cycle and will therefore need additional GHG removal from the atmosphere to comply with strict net-zero targets.”

The research paper can be read here.
CCUS in Saudi: bags of potential but thin on details

In the wake of Saudi Arabia’s pledge to become net-zero by 2060, Global Voice of Gas takes a look at the Kingdom’s plans for CCUS

IAN SIMM

Eyebrows were raised earlier this autumn when Saudi Arabia joined the growing list of countries to set a mid-century target for reaching net zero carbon emissions. Given that the kingdom is the world’s top oil exporter and one of its biggest producers, it is a stretch in the minds of most to envisage how the circle of maintaining and even expanding oil production can be squared with the elimination of emissions by 2060.

But considering the importance of the oil sector to the Saudi economy, this is a challenge Riyadh must wrestle into submission and while ambitious plans for renewables and gas have been announced, carbon capture utilisation and storage (CCUS) will have a vital role to play.
Targets
Crown Prince Mohammed bin Salman launched the Saudi Green Initiative in October, noting that the country would spend 700bn riyals ($187bn) on a package of more than 60 initiatives to reduce carbon emissions by 278mn metric tons/year by 2030 without having “an adverse financial or economic impact on oil exports”.

This comes as state-owned firm Saudi Aramco continues work to increase its maximum sustainable capacity of oil production from 12mn barrels/day to 13mn b/d while recently announcing plans to reduce its Scope 1 and Scope 2 greenhouse gas emissions to zero from its wholly owned operated assets by 2050.

During this period, exports are expected to account for a higher percentage of Aramco’s output as the kingdom seeks to decarbonise its domestic power sector. These plans were laid out by Minister of energy Prince Abdulaziz bin Salman who said that the role of gas and renewables in the Saudi power mix will rise to 50% each by 2030. Renewables currently account for only a negligible share, while gas contributes 50-55% and oil provides the remainder.

Essentially, as Saudi Arabia uses less oil at home, it plans to export more crude oil and refined products for processing and utilisation overseas, thereby further ‘offshoring’ of the kingdom’s emissions.

Despite the repositioning, Saudi Arabia will continue to leverage its position at the heart of global commodity trading to become a key cog in the nascent market for hydrogen, both green and blue, through carrier fuels including ammonia and LPG. Capacity for blue and green hydrogen production is expected to reach 4 MTPA by 2030.

However, speaking to Global Voice of Gas, David Cunningham, director of renewables, cleantech and sustainability at Gneiss Energy said: “Water scarcity and the cost of desalination domestically will make it difficult for green hydrogen to compete with the blue equivalent. That said, technology advancements will be required to reduce the emissions from the current blue hydrogen production process to avoid costly negative emissions offsets.”

As well as increasing oil output potential, to facilitate this strategic shift the kingdom is working to build out its gas and renewables capacities rapidly. Riyadh anticipates that installed renewables capacity will rise to 28 GW by 2023 and 59 GW by 2030.

Meanwhile, its gas ambitions revolve largely around the Jafurah basin, which is home to around 200 tcf of unconventional gas. Under Aramco’s $110bn development plan, production is scheduled to begin in 2024, providing 2.2 bcf/d of treated gas by 2036 for use in the production of blue hydrogen or to feed the Saudi Master Gas System grid.

System
These steps may seem out of alignment with conventional plans to reach net-zero, but rather than adhering to a renewables-first policy, Saudi Arabia is following the circular carbon economy (CCE) climate model developed by the King Abdullah Petroleum Studies and Research Center (KAPSARC) which is based on reducing, reusing, recycling and removing carbon. »
By doing so, Riyadh intends to capture emissions for industrial use or storing them in a manner that allows it to embrace the energy transition and reach environmental targets without cutting off the hand that feeds it. With this in mind, much will depend on Aramco’s efforts to build out CCUS capabilities.

Along with fellow regional powerhouse, the UAE and its state oil firm ADNOC, Saudi has been driving a significant carbon mitigation push. Joe McMonigle, the secretary general of the International Energy Forum (IEF) said recently: “Technologies that the Saudis are pursuing are CCUS, recycling and direct air capture. I welcome it because really up to this point, especially on CCUS, for example, it’s been the US, Australia, the UK and Norway that have been big investors. But if you have somebody like Saudi Arabia and some of these other Gulf countries willing to back these technologies with serious dollars, which I believe they are very sincere about, that could be a big gamechanger.”

He added: “You can’t even meet these hydrogen goals, which is one of the alternative fuels that has the most momentum, unless you have economy-wide uptake of CCUS.”

Meanwhile, Gneiss’ Cunningham noted that as “the lowest cost producer of oil combined with an abundance of sub terrain storage, Saudi Arabia is best placed to make the economics of CCUS work.”

**CCUS plans**

With CCUS set for such an important role, it is worth considering Riyadh’s and Aramco’s CCUS plans.

In March, the Oil & Gas Climate Initiative (OGCI), of which Aramco is a founding member, published a report on Saudi CCUS which noted that the kingdom has announced initiatives for more than 30 commercial facilities over the last three years, and potential investment in CCUS projects nearing construction has more than doubled since 2017 to $27bn.

The report which was “spearheaded” by Aramco outlined the export of low carbon goods from energy intensive industries, large-scale hydrogen production and exports and the provision of carbon dioxide storage as a service as areas in which Saudi Arabia can achieve a competitive advantage.

This supply chain was highlighted last year through a successful pilot project with Japan’s Institute of Energy Economics (IEEJ) to gasify oil residues from refineries to generate 40 T of blue ammonia for shipment to Japan and capturing 50 T of CO₂ to be used in methanol production at and in enhanced oil recovery (EOR) at the company’s Uthmaniyah field. Then in March this year, it signed an memorandum with Hyundai Oilbank to export LPG to South Korea for conversion to hydrogen with the Saudi firm to re-import CO₂, also for oilfield injection.
There can be little doubt that Saudi Arabia has the capacity, the ambition, the political will and the financial clout to become a world leader in CCUS. To this point, Justin Alexander, director of Khalij Economics, told GVG said that while he does not see CCUS as playing a major role in the achievement of global climate goals, “in Saudi Arabia the existing infrastructure, reservoirs and EOR expertise means this is one of the few places where it may be viable”.

However, as stakeholders cast a critical eye further down the supply chain, the reach of zero-emission claims are likely to depend on the details laid out by Aramco when it publishes its first sustainability report next year – while the company intends to reach net-zero for Scope 1 & 2 emissions, it has said little about indirect Scope 3 emissions, and the industry and its many critics will hope for some clarification.

It has become particularly apparent in the wake of COP26 that not all energy transitions are equal though and there is an undeniable pragmatism about the Saudi approach, balancing a net-zero push with keeping the lights on.

While the OGCI report notes that most applications are currently immature and small scale, it identifies carbonate production, synthetic fuels and mineralisation as offering “significant” economic opportunities within CO₂ utilisation with biomass and direct air capture seen as means of “offsetting emissions in hard-to decarbonise sectors”.

Of the potential regional hubs identified for CCUS in Saudi Arabia, the oil and gas centre of the Eastern province is unsurprisingly highlighted as offering the “most diverse cross-sectoral profile of industries, with representation from power and all industrial sectors” and has “potentially suitable storage resources” that will help achieve economies of scale.

The region around the capital Riyadh is “dominated by power generation” it notes, “but includes other industries, such as cement, refining, and iron and steel”, while the basaltic formations in the Western region along the Red Sea coast could be developed for CCUS.
The technologies strengthening the environmental case for gas

Global Voice of Gas looks at two innovations in technology that will help make natural gas even cleaner

JOSEPH MURPHY

Innovations in technology will be crucial for net-zero ambitions to be realised, and the Oil and Gas Climate Initiative (OGCI) Climate Investments, a fund worth more than $1bn backed by many of the world’s leading oil and gas companies, is supporting some of these breakthroughs.

OGCI Climate Investments, is investing in nearly two dozen companies working on technologies to reduce methane and CO₂ emissions as well as recycle CO₂, helping them on their way to commercialisation. Two of those companies operating in the methane monitoring and measurement space, GHGSat and SeekOps, spoke with Global Voice of Gas about their work.

Tracking emissions from an individual source

GHGSat began its journey as a Quebec-based start-up in 2011 and now gives leading oil and gas players the means to track their methane emissions from their individual facilities from satellites. These satellites offer unparalleled resolutions that enable operators to find and ultimately eliminate the smallest of plumes, its CEO Stephane Germain explained. And their small size versus typical greenhouse gas monitoring satellites minimises capital costs.

“Our vision is to monitor greenhouse gas emissions from every industrial facility in the world, every day, using satellites,” Germain said. “Our first satellites are already in orbit and we will increase our capacity by ten times in the next two years.”

The market for methane monitoring and quantification has expanded rapidly over recent years amid growing awareness of its potency as a greenhouse gas. This has spurred demand for various monitoring methods from aircrafts, drones and satellites to hand-held cameras and fixed sensors. All these methods have a role to play in driving reductions in methane emissions from the oil and gas industry, Germain said.
After some years talking with the oil and gas industry to understand their needs, and after securing the necessary financing, GHGSat launched its demonstration satellite in 2016. Experience gained from operating this first unit led to improvements in design, which the company incorporated when it took its second satellite into orbit in September last year. It added a third to its constellation in January 2021.

GHGSat began by working with the biggest players in the oil and gas space, leveraging its relationship with OGCI Climate Investments, which owns roughly a third of the business. The remainder is split between the company’s founders and institutional investors.

GHGSat wrapped up its Series B funding round over the summer, raising $45mn from investors including OGCI Climate Investments, the Quebec government and Space Capital. The proceeds will go towards expanding the company’s satellite constellation and getting the infrastructure in place to support them, as well as enhancing the analytics that GHGSat can offer clients. In addition to its own data, GHGSat provides data from other, public satellites, and also has access to public databases and other sources to enhance its offering.

The company’s ambition is to have 10 satellites up and running by the end of 2023, with three more expected in orbit by next summer. It is also working to overcome the difficulty that the shortwave infrared light used by satellites has with accurately detecting emissions from offshore. Last summer it kicked off a one-year research and development project with Chevron, Shell and TotalEnergies to test a new technology called Glint Mode, where satellites receive a sun glint off the surface of the water by looking at sites obliquely, which makes it possible to observe emissions.

**Targeting the long tail of emissions**
Approaching methane quantification from a different angle is SeekOps, which places its sensors on board unmanned aerial systems. These sensors both transmit first-look data to operators in real-time and provide quantification in detail.

While SeekOps’ work right now is primarily in North America and Western Europe, it is also looking to make forays into North Africa and the Asia-Pacific area and has done some initial work elsewhere as well.

“SeekOps’ role in the decarbonisation ecosystem is evolving, as the emissions monitoring space itself develops,” CEO Iain Cooper told GVG. “This is a very dynamic space as is evident by the recent regulatory changes suggested by the EPA, and the feedback to the industry following on from COP26.”

Like others operating in the space, SeekOps recognises the need for many methane detection and measurement technologies to come together to make a difference.

“We are part of the ‘cascade of scales’ needed to totally address methane emissions, and complement...”
the larger scale surveys that can be undertaken by satellite and manned aircraft,” Cooper said. “We provide accurate and sensitive monitoring around oil and gas facilities, enabling both leak localisation and quantification, which in term enables the operator to triage their repairs and prioritise the order in which the leaks are fixed, enabling efficient use of third-party repair companies.”

SeekOps primarily targets the “so-called long tail of emissions” that can be overlooked by other detection techniques.

“While they may be low in volume individually, we have seen with the data that we have recorded across a range of different environments and operational considerations, that these more insidious leaks can be typically harder to identify, and can persist unseen for sometimes years at a time,” Cooper said.

With its detection threshold of less than a 0.02 kg/hr leak rate, SeekOps can find these types of leaks that may have been missed in regular surveys using optical gas imaging (OGI) cameras, and repair them quickly. The drawback to OGI cameras is that they are deployed only in a two-dimension plane and results can depend on the skill of the operator.

“Repeat monitoring using the SeekOps sensors enables complete coverage across a facility and can be used to both assess the effectiveness of repairs, and also the trend of the overall site towards zero emissions,” Cooper said.

SeekOps’ in situ technology also overcomes issues that reflectivity-based sensors have over water and snowy regions.

“Recent work in the UK sector of the North Sea has enabled many operators to perform top-down assessments of their emissions in the marine environment for the first time, and have highlighted differences from the traditional bottom-up calculations, that have previously been used to generate ‘emissions factors,” Cooper said.

While they may be low in volume individually, we have seen with the data that we have recorded across a range of different environments and operational considerations, that these more insidious leaks can be typically harder to identify, and can persist unseen for sometimes years at a time

IAIN COOPER, CEO, SEEKOPS
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