MANAGING TRANSITION IN AN ENERGY CRISIS

Energy crisis unpacked. How did we get here, and how can we get out?  
US momentum builds behind eliminating methane  
ESG at forefront as European interest peaks in African gas
it’s only human to see progress starts with partnership

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The opinions and views expressed by the authors in this magazine are not necessarily those of IGU, its members or the publisher. While every care has been taken in the preparation of this magazine, they are not responsible for the authors’ opinions or for any inaccuracies in the articles.
Dear friends and colleagues of the gas industry, partners in the wider energy sector, and valued stakeholders from all corners of the world.

Greetings.

It gives me great pleasure to welcome you to the second issue in 2022 of the Global Voice of Gas magazine, and my first issue as President of the International Gas Union.

I have been following this magazine with interest, and I always found its content engaging, topical, and accessible. It is a great communication channel for our industry to the outside world, and so it also serves an important mission of the IGU.

I think that it is necessary for the IGU, as the Global Voice of Gas, to keep open and credible communication with external audiences.

It is essential for the IGU to be delivering the collective voice of our members to the world and to be a conduit for productive dialogue with our industry’s stakeholders. Additionally, because our members represent 90% of the global gas market and every aspect of the gas value chain, from production, transit and use, including natural and decarbonised, hydrogen and renewable gases, it can also be valuable for the global energy, financial, and policy communities. Even though our members are a very diverse group of national gas industry representatives and businesses, often operating in very different environments, be that geographically, socially, or economically, they support a common goal of the IGU - maximising gas benefits to improve lives and deliver clean, secure and affordable energy to all.

Our members are focused on serving the people in their regions and supporting the global community in maintaining or achieving affordable, secure, sustainable, and available energy. I am convinced that the energy transition can only succeed if we keep a productive open dialogue between the industry and decisionmakers. The scale and complexity of the energy transition challenge and the current energy crisis are too large for any one solution to work alone. Solving these problems will require an equally multifaceted and vast set of tools to get the world back on track for energy transition and climate goals.

I strongly support the IGU’s view that an achievable transition is one that delivers clean, secure and affordable energy, using electrons and natural gas, renewable, low and zero-carbon gas, including hydrogen, and the necessary infrastructure to help individual countries meet Sustainable Development and Paris Goals. We do not insist that everything must be gas, but that gas is a key tool that ensures the availability of energy, its secure and reliable supply, and reduces environmental and climate impacts, whilst remaining accessible. Gas will continue to be a vital catalyst of and foundation for a more sustainable energy system, within the context of a just transition.

I look forward to leading the IGU Presidency for the next three years and delivering this message on behalf of our members far and wide.

This issue of the GVG is one such step, as it sheds light on the complex challenge of managing energy transition amidst energy crisis, and some important decisions that will be taking place in the coming months to shape the direction of travel for the gas sector. Importantly, it also features articles on the great promise that gas holds for energy access and development in Africa.

Welcome to the July 2022 issue of the Global Voice of Gas magazine and welcome to the Chinese Triennium in the IGU.

Li Yalan,
IGU President
Editors’ Note

Welcome to the eighth issue of Global Voice of Gas (GVG), an International Gas Union publication, produced in collaboration with Natural Gas World (NGW), that sets a new standard in communication for the global gas community worldwide.

As global energy markets remain extremely tight, resulting in soaring costs, the question facing many countries is how the energy transition can be managed in the time of a severe global energy crisis. Regrettably, fallout from the Russia-Ukraine conflict and suppressed investment in natural gas over the years have led to a resurgence in coal use. Running counter to the ambitious direction that the EU set out in its Fit-for-55 package, several bloc members including Austria, France, Germany and Italy have indicated they will boost coal-fired power generation, at least in the short term, to ward off the risk of winter energy shortages. High gas prices are likewise hindering efforts in Asia to move away from coal.

It is clear that some lessons must be learnt, to address the current crisis and avoid future ones, while ensuring that countries can stay on track to fulfilling Paris climate goals as well as their pledges made at last year’s COP26. While the global energy market could remain tight for some time to come — several years at least — the good news is that the current situation is beginning to trigger new investments in gas supply, and it should also trigger a re-evaluation of available options by policymakers to ensure that the world stays true to the long-term targets and manages future risks, not just the calamity at hand. Investors and developers of energy projects, be it gas or any other energy technology, need clarity on the direction of travel from governments and the financial community to guide these high stakes decisions. In simpler terms, energy infrastructure costs billions of dollars in money and thousands of hours in labour, and the payback comes years after the projects are built and energy is delivered. Without a sober policy assessment of how to reach energy transition and a long-term energy plan that can be built and put in operation (i.e. not a roadmap or an aspiration), these investments will not be made at the right times and in the right places, and the world could be seeing a worsening of multiple energy and commodity crises.

#EnergySecurity. In this issue of GVG, Didier Hollaux, the IGU’s incoming Regional Coordinator for Europe, stresses the need for EU policymakers to avoid making contradictory and unreasonable forecasts on the future role of natural gas when mapping a pathway out of the current energy crisis. In a special topical feature interview, one of Europe’s lead gas experts Anne-Sophie Corbeau breaks down the fundamentals of how the current energy crisis came to be, and what can be done to alleviate it, as well as the outlook for LNG. We highly recommend it to all who want to understand one of the most topical issues in discussions today.

#MethaneEmissions. Another core focus for this issue and a continued priority theme for the GVG are the ongoing efforts to tackle methane emissions. We speak with Roy Hartstein, CEO of Responsible Energy Solutions, about how the US natural gas industry is addressing the problem, and how voluntary initiatives can support each other to deliver a global, unified approach to monitoring, reporting and verifying emissions, as well as reducing them. Andris Piebalgs and Maria Olczak of the Florence School of Regulation, also elaborate on the EU’s progress-to-date in introducing regulation for energy sector methane emissions, as well as the implications for the gas industry. We also take a look at the joint launch announcement by the EU, the US and 11 other countries of the Global Methane Pledge Energy Pathway in mid-June.

#DevelopmentinAfrica. Africa can play a major role in helping to alleviate the current energy crisis and drive the energy transition forward, while capitalising on a major development opportunity for its own people and economies. We also explore how a handful of African countries are making use of gas to support exports and increase energy access at home, providing environmental, social and economic advantages.

Tatiana Khanberg,
Strategic Communications and Membership Director

Joseph Murphy,
Editor, Natural Gas World

Why guess about the future of gas?
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RODNEY COX
Director of Events,
International Gas Union

WGC2022
Despite ongoing Covid restrictions still affecting many countries and a global airline industry still restarting, the world’s most important gas industry event, WGC2022, still delivered attendees from 73 countries. The combination of the need for face-to-face meeting and networking, especially during times of energy uncertainty and energy transition, and the role of the World Gas Conference as the tier 1 event for our industry, saw over 9,500 attendees participate.

WGC2025
The 29th World Gas Conference (WGC2025) was officially launched on May 25 at WGC2022. China will host WGC2025 in Beijing from May 19 to May 23, 2025.

Topics such as carbon neutrality, energy security, the energy transition and digitalisation have always topped the agenda of the gas industry, and WGC2025 will provide a unique platform for you to explore these issues in depth at the right time.

WGC2025 will support efforts that lead dialogues, build consensus, deliver research results and application achievements so that IGU members and stakeholders can identify opportunities for adaptation and addressing emerging challenges.

Check out the special Welcome to Beijing 2025 News to coincide with the launch on-site at WGC2022.

For more details please contact conference@wgc2025.com.

LNG2023
The LNG2023 Call for Abstracts is now open at www.lng2023.org.

The LNG2023 Programme Committee invites authors to submit their abstracts now for the opportunity to speak directly to the industry professionals, all gathered to hear and debate the issues of most importance to the industry. Take this opportunity to contribute to the future of our industry and write your part in the world’s most extensive resource on LNG, reaching back to LNG 1 in Chicago in 1968.

Abstracts are invited across a range of topics relevant and important to the LNG industry, including:
- LNG markets and advocacy
- Operations and best practice
- Commercial stimuli
- Upstream/midstream gas production, processing, liquefaction
- Shipping, marine operations and marine terminals
- Downstream infrastructure and applications
- Plus, submissions will also be considered on any LNG related topic an author deems important to the industry

As the world faces the challenges of energy security, accessibility, and sustainability it is LNG that is uniquely placed to address these challenges and the role of LNG2023, as the world’s premier industry event, has never been more important.

Plan ahead to join us in Vancouver, July 10-13 2023 as our host the Canadian Gas Association (CGA) presents LNG2023 - Fueling a Secure Energy Future. Visit www.lng2023.org to find out more information and submit your abstract.

If you are looking to submit an abstract or require further information on the exhibition and conference location and dates contact the IGU’s Flagship Events Director, Rodney Cox, at rodney.cox@igu.org.

IGRC 2024
The IGRC2024 team was part of the Canadian pavilion at WGC2022 which included gas producers, pipelines companies, distribution companies, the First Nations LNG Alliance (the network of indigenous advocates for LNG in Canada), Industry Associations, the Government of Canada and the provinces of Alberta and British Columbia.

IGRC2024 comes at a pivotal time in international energy conversations. Natural gas and its world-class infrastructure have supported economic development, affordable energy options, and energy security for jurisdictions around the world. With a view to the future IGRC2024 promises an expanded conference with content across all technology readiness levels – from research through to demonstration.

June saw the IGRC2024 team brief the EU delegation in Canada on our three years of activity with an ongoing global conversation about innovation as a key to keep gas for the very long term as an affordable, reliable and clean source of energy; present our second quarterly IGRC2024 webinar focused on social innovation with presentations by three Indigenous Leaders in the natural gas sector and; participation in the Canadian Gas Association (CGA) Annual Technical Conference Find Your Energy.

All the latest details on IGRC2024 are at www.igrc2024.org.

10-13 JULY
WGC2025

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Working Group and ASEAN State Members highlighted how natural gas plays a crucial role in striking a balance between clean energy targets and ensuring affordable energy. Natural gas is not only a lower-carbon alternative, but it also can provide an uninterrupted and flexible energy supply, in particular to the 760mn people globally who have inadequate electricity access and the 2.5bn without clean cooking access.

ASEAN energy ministers in September 2021 emphasised the continuing role of natural gas in bringing about the region’s cleaner energy future, and the need to continue the pursuit of a common gas market for ASEAN by enhancing the connectivity and accessibility. Planned new regasification terminals (RGTs) in Cambodia, Indonesia, Thailand and Vietnam will allow ASEAN to continue to expand the distribution networks in the region. This includes the Trans ASEAN Gas Pipeline (TAGP) and additional regasification infrastructure. By 2020, TAGP had connected six member states through 13 pipelines with a 3,631-km length and 9 RGTs with a combined capacity of 38.75 MTPA.

Indonesia aims to raise natural gas production to 12 bcfpd by 2030, and position gas to have a 24% share of the national energy mix by 2050. To realise its energy security and domestic demand goals, the Indonesian government continues developing gas pipelines and promoting research and development. The government is reaching out to investors to support its gas development programme, for the country to reach its ultimate objective of net-zero emissions in 2060.

The Singapore Energy Market Authority (EMA) in June 2022 established a standby LNG facility (SLF) to enhance the country’s energy security and resilience until March 31, 2023. Relying on imported natural gas to generate around 95% of its electricity, EMA has put in place a set of measures to secure Singapore’s energy supply and ensure the orderly functioning of the broader energy sector since last year.

Vietnam’s power development plan (PDP) VIII (2031-2030) with a vision to 2045 (“Draft PDP8”), announced in February 2021, envisions gas-fired power emerging as the backbone of the power system, with 22 GW of gas-fuelled generation capacity set to come online in the next decade. The share of gas in the power mix is expected to reach 21-22% in 2030 and 24-25% in 2045.

The Philippines has six LNG receiving terminal projects in the pipeline, with the first expected to come online this year, in order to fulfil the natural gas requirements of power plants. According to its Power Development Plan 2020-2040, a rapid increase in power generation from natural gas is vital to provide the country’s intermediate and medium-term supply requirements. As of December 31, 2020, a total of 3.5 GW of committed gas-fired capacity is expected to become operational between 2022 and 2025. By 2040, natural gas will command a share of between 26% and 40% of the total generation mix, depending on the scenarios.
Argentina
- Development of shale gas from the Vaca Muerta basin has improved in productivity and development costs, and producers are investing in new treatment capacity to increase deliveries in the next few years. Exports of gas to Chile are the immediate target and they have the potential to increase, especially during the off-winter months.
- Gas demand has recovered strongly in important market segments, with industrial gas demand even recovering to pre-pandemic levels. But demand for CNG for vehicles remains below the 2019 level. There was higher gas demand from residential and commercial markets in May and June due to cold weather.
- Demand at thermal power plants reached record levels in early 2022, because of drought that severely impeded Argentina’s hydroelectric capacity.
- Gas production in Brazil has continued to increase, reaching 136 bcm per day in April 2022 versus 131.4 bcm per day in the same month last year. Some 87% of this supply is offshore associated gas.
- Domestic consumption averaged 75 bcm per day in January-March 2022, down from a peak of 105 bcm per day in October last year when a severe drought meant that gas-fired power generation was in greater demand.
- To supplement domestic supply, Brazil imports gas from Bolivia by pipeline and LNG from international suppliers (there are currently five LNG terminals in operation – all FSRUs – and one in construction and another three planned for 2024-2025). Due to high water levels at hydropower reservoirs following a rainy period, the regasification of LNG hit a new low of 5.3 mcm/d in March 2022.
- Petrobras expects to complete the construction of the Route 3 offshore pipeline in the second half of 2022, enabling the supply of 18 bcm per day of extra domestic gas.
- The imbalances in the Argentine market prompted the government to launch the construction of a new large gas pipeline from the Neuquen basin to Buenos Aires. The first stage is intended to be in operation by winter 2023.

Brazil
- Gas production has improved significantly compared to June 2022, impacted the Central Bank reserves. Despite record-high prices averaging $35 per mmBtu in May and large imports of LNG are still required. Imports of LNG at higher prices (up to $20 per mmBtu) during the May-August period that exceeds even the most favourable forecasts. During January-March 2022, gas represented 19.1% of electricity generation.
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- Petrobras expects to complete the construction of the Route 3 offshore pipeline in the second half of 2022, enabling the supply of 18 bcm per day of extra domestic gas.
- The Gas Law that was sanctioned in April 2021, coupled with Petrobras’ asset divestment programme, has created a more dynamic Brazilian gas market with new private players and investors entering all segments of the gas value chain. January 1, 2022 marked the opening of an effective gas market in Brazil, with eight new supply contracts signed between suppliers, consumers and local distribution companies. The federal government issued CNPE Resolution 3/2022 on April 7, 2022, providing further guidelines on the transition to a more open and competitive market.
- In March 2022, the federal government launched the Zero Methane programme, focused on incentivising the utilisation of agricultural and other organic waste for the production of biogas and biomethane. Several such projects have been developed, with some requiring access to natural gas transport networks, which means the same quality standards must be assured.
- Green hydrogen and ammonia projects have been announced at Porto de Pecem in the northeast and Porto do Açu in the southeast. The national development of these fuels will require a sharp increase in renewable energy capacity.

Colombia
- Colombia is one of the greatest examples in the region of widespread gasification, with supply now available to 80% of the population, or 36mn users. Colombia’s main gas demand comes from industrial customers followed by residential clients.
- In June 2022, Gustavo Petro was elected as Colombia’s new president, hailimg from the hard left. It is expected that he will move the country in the direction of eliminating dependence on oil, gas, coal and all mining operations in the next 20 years. He seeks to prohibit new exploration permits in the extractive industry, while preserving contracts that have already been signed. However, the president’s agenda will probably not dramatically affect the natural gas sector, as it remains crucial for the energy transition in Colombia.
- Ecopetrol, Colombia’s leading oil and gas company, is set to take a leadership role in the energy transition. It will be in charge of supplying the country with oil and gas from existing deposits over the next 15 years, and developing new low-carbon sources of energy such as hydrogen and green gases.

Chile
- Chile covered around 70% of its gas consumption with LNG imports in 2021, and a further 15% with pipeline imports from Argentina. In the first five months of 2022, Argentine gas imports accounted for a higher share of supply in the country’s central part (51% versus 49% for LNG imports.)
- The LNG that supplies the Chilean market is mainly delivered under long-term contracts, which has allowed the country, despite the high global spot prices, to maintain the competitiveness of natural gas in the domestic market, in spite of the volatility in international markets.
- While a new government assumed office in March of this year, continuity in Chile’s energy policy is expected, with a focus on how the country can achieve carbon neutrality by 2050 as well as intermediate goals in 2030. Gas will help replace coal in electricity generation, in order to fully phase out the latter fuel by no later than 2040.
- Natural gas will also continue to provide flexibility to variable renewable energies that are being incorporated into the country’s electricity mix at a rate that exceeds even the most favourable forecasts. During January-May 2022, natural gas represented 19.1% of electricity generation.

Trinidad & Tobago
- Several upstream gas developments are expected to commence gas production in 2022 to meet existing domestic and LNG contractual commitments. Despite this extra supply coming on stream, Trinidad and Tobago’s total gas supply still falls short of LNG and domestic demand, thus paving the way for the country to secure gas from Venezuela, subject to US sanctions.
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- Trinidad and Tobago’s national gas company NGC submitted its first Oil and Gas Methane Partnership (OGMP) report for 2021 on May 31, 2022. The country’s energy minister Stuart Young met with US special envoy for climate, John Kerry, on June 8, and discussed its agreement to sign the Global Methane Pledge.
Japan and increased efforts to reduce emissions. With hydrogen projects accelerating, clean energy goals raised. They are also ramping up efforts to decarbonise the industry, expanding gas supply chains and diversifying the energy mix.

As the global energy crisis looms, the region is managing shortages across the region threatening widespread blackouts. For power has pushed gas prices to new highs while energy stations have put pressure on regional markets. Strong demand lockdowns and prolonged maintenance shutdowns of power plants have put pressure on regional markets. Strong demand has been working through complexities never seen before. The gas industry across the North Asia and Australasia region has been working through complexities never seen before. The war in Ukraine, weather events, earthquakes, easing lockdowns and prolonged maintenance shutdowns of power stations have put pressure on regional markets. Strong demand

**North Asia & Australasia**

**JEN THOMPSON**
CEO, Australian Gas Industry Trust, and IGU Regional Coordinator.

The gas industry across the North Asia and Australasia region has been working through complexities never seen before. The war in Ukraine, weather events, earthquakes, easing lockdowns and prolonged maintenance shutdowns of power stations have put pressure on regional markets. Strong demand for power has pushed gas prices to new highs while energy shortages across the region threaten widespread blackouts. As the global energy crisis looms, the region is managing their immediate energy shortages by increasing gas imports, expanding gas supply chains and diversifying the energy mix. They are also ramping up efforts to decarbonise the industry with hydrogen projects accelerating, clean energy goals raised and increased efforts to reduce emissions.

**Japan**

Japan is experiencing its worst power crisis since the Fukushima disaster, sparking the government’s first ever electricity supply warning. Citizens have been asked to reduce energy use or face mandatory blackouts. In response, Japan is taking steps to shore up its gas sources by seeking to increase LNG imports initially from the US energy-rich states of Alaska and Pennsylvania. It will also work to expand US LNG supply by providing finance to certain Japan-US projects which can boost production in a relatively short period of time.

**South Korea**

South Korea has established ties with new suppliers in an effort to curb price rises resulting from increased LNG import costs. Korea Gas Corp (KOGAS) announced that it signed an LNG trading agreement with TotalEnergies Gas, laying the foundation for long-term strategic cooperation. South Korea has also agreed to expand bilateral cooperation with the United Arab Emirates, accelerating their cooperative work on hydrogen and renewable energy to ensure a stable energy supply chain and launch several working committees to advance industry technology.

**Korea**

Korea is embracing its hydrogen future by setting out ambitious plans to become a global leader in the development of H2 projects. It is planning to source a third of its energy from hydrogen by 2050, which would make it the largest single source of energy nationally and a significant goal, considering that the EU is only targeting a 14% share of its mix. The government has committed $2.3bn to establish a public-private hydrogen-powered fuel cell electric vehicle market by the end of 2022.

**China**

On the back of a prolonged lockdown, China’s gas-fired power generation shrank 19% to 897 hours in January-May 2022. China usually sources 40% of its gas from overseas, however it has posted some of the largest declines in LNG imports in the first six months of 2022, down more than 20% year on year. Some have reported that the weak Chinese demand, the largest spot purchaser in Asia, has mitigated the need for any significant draw on volumes from outside the region.

**Australia**

The culmination of the war in Ukraine, the energy transition, a bitterly cold start to winter and high demand for gas fired power to replace coal stations closed for maintenance saw the east coast of Australia facing sharp price rises and blackouts.

For the first time, the Australian Energy Market Operator triggered the Gas Supply Guarantee Mechanism citing a threat to system security. The regulator was forced to suspend the wholesale electricity day-ahead market and cap gas prices at $40 per GJ after spot and forward market prices shot up in Melbourne from around $10 to $383 per GJ and then up to $800 the next day. The suspension was implemented on June 15 and lifted on June 24 after domestic supply improved.

Santos CEO Kevin Gallagher says they are doing all they can to accelerate the development of the Narrabri coal seam gas project in New South Wales. Santos hopes to have gas flowing in 2025 instead of the planned 2026.

Southern Green Hydrogen, is planning on developing what could be the world’s largest green hydrogen plant with a reported cost of about $4.5bn. More than 80 companies entered the race to develop the project, with the field recently narrowed to four. Japanese trading house Mitsui, a subsidiary of German specialty gas company Linde, and two of Australia’s largest companies, Woodside and Fortescue, are still in the race.

**New Zealand**

As the government works on a gas transition plan to move away from fossil fuels as part of efforts to decarbonise the economy, New Zealand’s 380,000 natural gas consumers face higher bills after the Commerce Commission approved an increase of 3.8% per year for the next four years. The rises follow a commission review of the prices the gas pipeline operators can charge to maintain the distribution network. Natural gas plays an essential role in the transition to decarbonisation, and this investment ensures the network continues to provide safe and reliable supply of natural gas over this horizon.

A joint venture of two New Zealand power providers, A joint venture of two New Zealand power providers,
Egypt, Israel and the EU signed a deal to increase LNG sales to European countries, which aim to reduce their dependence on supplies from Russia as the war in Ukraine drags on. The deal will allow Israel to send more gas via Egypt, which has facilities to liquefy it for export by sea. The agreement is part of Europe’s efforts to diversify energy sources away from Russia and import hydrocarbons from other sources.

Africa does not import Russian oil, but, like the rest of the world, is facing steep price increases. In many African countries, the price of oil has enormous impacts on electricity generation. In West Africa, diesel generators account for more than 40% of total electricity consumed, while Senegal currently relies on oil for half its electricity generation. This has enormous economic impacts: as fuel prices soar across the continent, businesses in countries like Nigeria, which has seen the cost of diesel increase by more than 200%, are struggling to stay afloat. The rising cost of natural gas also makes utility-scale electricity generation much more expensive in markets like Ghana, Cote d’Ivoire, and Nigeria.

Tanzania’s government has signed a natural gas deal with Shell and Equinor together with Ophir Energy, ExxonMobil, and Pavilion Energy, with the intent of building an LNG export terminal. The signing of the deal will expedite the start of the construction of a $30bn LNG export terminal planned to be constructed near large-scale deepwater natural gas discoveries off Tanzania’s southern coast. The project is planned to be commissioned by 2029-2030.

The Minister of Mines & Hydrocarbons of Equatorial Guinea has signed agreements with Egypt’s leading private sector energy and utility provider TAQA Arabia for the development of LNG, CNG and several gas utilisation projects in Equatorial Guinea. The Egyptian company has been a pioneer in introducing CNG for vehicles in Equatorial Guinea. The west African country plans to convert 50% of its car fleet to run on CNG, as part of its climate strategy.

QatarEnergy signed a partnership deal with TotalEnergies for the North Field East expansion of the world’s largest LNG project. The Gulf state is partnering with international energy companies in the first and largest phase of a nearly $30bn expansion of the North Field project. The North Field Expansion plan includes adding six LNG trains that will ramp up Qatar’s liquefaction capacity from 77 to 126 MTPA by 2027.

Abu Dhabi National Oil Co. plans to build a new LNG plant, as the world’s producers race to expand their exports amid surging demand. The LNG facility, to be built at Fujairah on the UAE’s Persian Gulf coast, will be able to produce as much as 9.6 MTPA. The UAE currently has three liquefaction trains with a combined capacity of 5.8 MTPA at Das Island, which is located inside the Gulf.
Asia’s energy transition at risk

Increased supply is essential to stabilise global gas markets, restore confidence in the fuel’s long-term affordability and avoid Asia increasingly returning to coal in the face of supply constraints.

Ross McCracken

Despite Asia having the largest gas markets in the world, natural gas makes up only a relatively small share of primary energy consumption in many of the continent’s major economies. Even in China and India, with their impressive rates of gasification, thanks to strong policy commitments to substitute coal use and improve air quality, gas made up just 8.2% and 6.7% of primary energy consumption respectively.

Although there are exceptions – e.g. Pakistan, Bangladesh, Thailand – coal generally accounts for a greater share of primary energy. In many cases, such as India, China and Vietnam, much more than half. Even in Japan and South Korea, coal has a much greater share than gas.

This heavy use of coal has resulted in high levels of greenhouse gas emissions and local air pollution, with Asian cities being home to some of the worst air quality conditions in the world.

Coal has been the backstop of Asian energy systems for two primary reasons, in many cases local availability, but more generally because of its relatively low price. But when the environmental and ecological implications of coal use are factored in, both local and global, the cost of coal is much higher, prohibitively so, if the world is to get on track for net zero carbon emissions by 2050.

As a result, all of the major Asian economies have made a reduction in coal use a central part of their climate change mitigation strategies.

LNG benefits

Across Asia, rising demand for energy and limited domestic fuel supply options led more countries to tap into the rapidly evolving international LNG market. Even in long-standing LNG exporting countries, such as Indonesia and Malaysia, the balance has shifted towards imports to provide more of the cleaner burning fuel.

LNG has brought huge benefits, for example, to South Asia, where LNG imports have addressed domestic gas deficits which slowed down the economy, held back industry and resulted in power shortages. Similarly, in China, a major gas producer in its own right, LNG imports have allowed the expansion of city gas use, displacing coal, particularly for heating in the country’s colder north, as well as in heavy-duty transport, where LNG-powered trucks have displaced diesel.

Rising prices

The rise in LNG prices from the second half of 2021 to unprecedented levels has thus come as a major shock for economies that have become used to importing significant quantities of the fuel, and which have hinged a significant part of their decarbonisation plans on early reductions in greenhouse gas (GHG) emissions by increasing gas use at the expense of coal.

LNG prices had already spiralled higher in the second half of 2021, as growing demand for the fuel, largely in Asia, moved ahead of supply. Large increases in liquefaction capacity from 2018-2020, which totalled 93.7 MTPA, were rapidly absorbed at affordable prices by gas-hungry markets.

Even during 2020, the year in which the global economy was worst affected by COVID-19 containment measures, LNG demand grew, maybe not by much...
As the World Bank states, this will require major increases in production. These need to come not just in terms of LNG imports, but in terms of domestic gas production, which would ease both demand for internationally-traded gas and the pressure this places on importing countries’ balance of payments while import gas prices are high.

Already the LNG industry is moving to step up supply. The US, which has abundant gas reserves, has seen an FID taken on the Plaquemines LNG project, which should add 13.3 MTPA of new capacity as early as 2024, the first such decision since 2019. Qatar’s major North Field expansion is well underway and will raise liquefaction capacity from 77 to 126 MTPA from 2027. Elsewhere, from Africa to Asia, LNG projects have gained a new impetus from the current energy shortages. Increasing gas supply to Asia is essential, if a long-term reversion to coal is to be avoided. This would require Asian countries with substantial gas reserves examining their domestic investment environments with a view to making the most of both their domestic natural gas resources and their potential for biogas and other renewable gases. It also requires a stabilisation of the LNG market, which can only come about through substantial increases in LNG supply capacity to meet growing Asian demand on the one hand and the step-change in European LNG consumption prompted by the Russia-Ukraine conflict on the other.

Increased supply is not the only stabilisation mechanism – demand reduction and substitution are also important. Both India and China have made extraordinary progress in the development of renewable energy resources, but, even so, renewables’ contribution to primary energy supply continues to pale in comparison to their dependence on coal.

Renewables accounted for just 5.4% of Chinese primary energy supply in 2020 and 4.5% in India. In Asia’s more advanced economies the situation is similar – Japan 6.8% and South Korea 3.0%.

The bottom line is that renewable energy has a mountain to climb in Asia and gas remains the primary means of early GHG reductions, as well as contributing to cleaner local air quality. Increased supply is essential to price stabilisation and the restoration of confidence in gas’s long-term affordability. In the absence of such action, Asia’s climate plans face derailment, especially if renewables are used to make up for a lack of gas rather than to displace coal-fired generation assets permanently.

The bottom line is that renewable energy has a mountain to climb in Asia and gas remains the primary means of early GHG reductions, as well as contributing to cleaner local air quality.
US LNG playing an increasingly important role in climate and energy security

The Madre de Dios basin is a foreland basin with a prospective area of 45,000 km² and some 3,000 km of sedimentary infill. The basin includes the complex fold thrust belt with outcrops of Paleozoic, Cretaceous and Tertiary age on the south and SW bordered by a foreland basin covered by Quaternary alluvial deposits. Hydrocarbon exploration in the Madre de Dios basin has been progressively carried out by different companies, which show the existence of a gas potential that has been proven with the discovery of the Candamo field.

- There exist at least 5 prospects and 17 leads located in the fold thrust belt and in the foreland area. The leads can be upgraded through acquisition of additional detailed seismic and non-seismic methods to confirm closures.
- The estimated volume for prospective resources is of 18,915 BCJ.

The start-up of Trains 1 and 2 at Cheniere Energy’s Sabine Pass in 2016 was a seminal moment for the US gas industry and beyond. The US was deploying a unique combination of brownfield sites, the rapid expansion of low-cost shale gas production, and the interconnectivity of the US’ vast gas network, to enter the global LNG market at pace.

Within just six years, an expanding Sabine Pass had been joined by Cove Point LNG, Cameron LNG, Corpus Christi, Freeport, Elba Island and most recently Calcasieu Pass. Total baseload liquefaction capacity reached 86.1 MTPA, which puts it in second place, after Australia (87.6 MTPA) and ahead of Qatar (77.1 MTPA).

The expansion of the Panama Canal, completed in 2016, was also a significant boon. It doubled the capacity of the canal and allowed much larger ships passage. With the majority of US LNG plants on the US Gulf Coast, close to the prolific Permian basin, this increased the opportunities for export to the fast-growing, LNG-hungry nations of Asia.

But underlying all of this was the expansion of US gas production. This was so large that not only could it accommodate the creation of an LNG export industry, but also huge growth in pipeline exports, most notably to Mexico, increased domestic industrial gas use and a substantial level of coal-to-gas switching within the US power generation sector.

In particular, the recently unlocked abundance of shale gas was a critical factor in bringing the construction of new coal-fired generation plants in the US to a halt, thereby delivering significant reductions in power sector greenhouse gas (GHG) emissions (although recently, there has been a price-driven reversal of the emissions trend and massive switching back to coal).

From bust to boom

However, at a point before COVID-19 hit, global LNG capacity additions overtook demand growth for a period, and Qatar announced a major expansion of its own capacities. Then the market also took a substantial hit from the COVID-19 pandemic and, by May 2020, LNG spot prices were testing record lows.

This downturn and the prospect of increased supply, based on Qatar’s planned rise in capacity from 77 MTPA to 113.6 MTPA, may only be the beginning.
Russia’s offensive in Ukraine in late February 2022 proved to be another seminal moment for Europe and the LNG industry. In response, Europe has sought to radically reduce its dependence on Russian fuel imports. While oil and coal exports from Russia can be routed to non-European markets, most of the European gas comes from the Russian pipeline supplies, which are not easily replaced.

To address this challenge, Europe is instituting a plan to reduce its dependence on Russian gas, REPowerEU, a key element of which is to boost gas imports from its existing non-Russian pipeline gas suppliers by 10 bcm/a and to increase its purchases of LNG by 50 bcm/a, with the likelihood that the region will take more, if it is available.

European countries with no LNG import capacity, most notably Germany, are rushing to deploy floating storage and regasification units, as are others heavily dependent on Russian pipeline gas, such as Italy, with little spare capacity available from their existing facilities. European LNG imports have already reached record levels, driven by the need both to replace Russian gas volumes and rebuid gas-in-storage ahead of winter.

Europe’s newfound desire for LNG has fundamentally changed the expected supply/demand balance of the LNG market. The US, with its robust project pipeline, and Qatar, with its North Field expansion plans already underway, look well placed to meet this unexpected leap in demand.

**Shovels at the ready**

The US unquestionably has a strong pipeline of near shovel-ready LNG projects. What they seek is off-take agreements with buyers to secure financial closure. In the downturn of 2020, this was a tough call, but in the wake of Europe’s appeal for LNG, buyers around the world have taken note and are rushing to secure supplies.

In April, US LNG developer Venture Global announced a final investment decision (FID) on its Plaquemines LNG project, the first such decision for a new US LNG plant since 2019. The project’s first phase will have 13 MTPA capacity, rising to 20 MTPA in the second phase. The company has also signed purchase agreements with New Fortress Energy and ExxonMobil for its 20 MTPA CP2 project, which will be adjacent to its existing Calcasieu Pass facility and has a start-up target of 2025.

Announcements of new off-take agreements have been coming rapidly. Norway’s Equinor has agreed a deal to take LNG from Chenniere, half of which will support the planned expansion of the Corpus Christi LNG plant beyond seven trains. Cheniere also secured a deal with South Korea’s Posco in May, the same month that Energy Transfer LLP and NextDecade both announced new supply agreements with customers in Asia and Europe, boosting significantly the prospects for their respective Lake Charles and Rio Grande LNG projects.

Meanwhile, Driftwood LNG developer Tellurian, confident of rapidly improving market conditions, kicked off construction in March ahead of a formal FID. Phase one of the project will deliver up to 11 MTPA of capacity, with a total of 27.6 MTPA envisaged over four phases. By July last year, Tellurian had already secured sales and purchase agreements amounting to 9 MTPA from international major Shell and trading houses Vitol and Gunvor, making it a front runner to declare an FID on the first phase of the project this year.

Overall, consultants Wood Mackenzie estimate that more than 50 MTPA of new US liquefaction capacity will see FIDs in the next 24 months. Indeed, the total could be twice that, WoodMac says, if the EU institutes a total ban on Russian gas imports at the earliest practical opportunity, possibly in 2024. Underlining the US’ outstanding potential, data company GlobalData estimates that the country will account for 57% of new LNG capacity worldwide in the period 2022-26.

**Upstream response essential**

Such a rapid second-phase expansion for the US...
LNG industry will require feedstock. US natural gas production was on a consistent upward trend for most of the last decade, but peaked and fell in 2020, a result of the COVID-19 pandemic. Since then, it has experienced something of a plateau as shale drilling firms have focused less on growth and more on capital discipline. The US still has vast proven gas reserves. At the end of 2020, proved shale gas reserves amounted to 318 tcf, and total proved gas reserves 473 tcf. As reserve levels fluctuate according to what is economically recoverable and produced, US proven reserves fell in 2020, but should have rebounded at year-end 2021 because of the rise in US natural gas prices.

Strong demand for gas has driven gas prices up globally. In the US, although far cheaper than in Europe, at close to $7/mmBtu, gas is relatively expensive for the US economy. Yet despite the increase in both oil and gas prices, US drillers have yet to respond with production increases on the same scale as earlier periods of price strength.

At the same time, although less than half its peak, the US still generated 844 TWh of electricity from coal-fired generation in 2020, around six times that of Germany.

Upstream activity in the gas sector consequently needs a shot in the arm to help the LNG industry achieve both international and domestic goals: to deliver the LNG needed by Europe; to keep Asia’s coal-to-gas switching decarbonisation plans on track; and to keep gas economically competitive within the US to consolidate and improve upon the gains already made in lowering the carbon intensity of US power generation.

US natural gas production and prices

Source: EIA

EU LNG exports (bcfpd)

Source: EIA
Energy crisis unpacked. How did we get here, and how can we get out?

Natural gas expert Anne-Sophie Corbeau reflects on how the current energy crisis has emerged, how long it is here to stay and the need for greater investment in natural gas supply.

Anne-Sophie Corbeau is a Global Research Scholar at the Center on Global Energy Policy at Columbia University’s School of International and Public Affairs. Her research focuses on hydrogen and natural gas. She has over 20 years of experience in the energy industry, including as head of gas analysis at BP.

Is the current energy market tightness triggering the level of extra investment in gas supply and infrastructure that is necessary to bring down prices to affordable levels?

The IEA has recognised that annual upstream investments in gas supply in 2020 and 2021 were lower than the need for additional alternative gas supplies. We can see how buyers’ and sellers’ views diverge: European buyers want an 8-10 year contract and sellers want a 15-20 year contract. The most striking fact however is how many long-term contracts Chinese companies are signing (26 since early 2021 and counting), which is a good sign for LNG projects looking at taking FID.

Beyond LNG, there is the question about investments in gas supply to meet domestic demand (and sometimes export needs as well). For example, in Europe, this brings the question about fast tracking domestic gas supplies (such as fields in the Black Sea) as a way to reduce dependency on Russian gas. In the US, we are seeing unusually high gas prices. The growth in US domestic gas demand and US LNG exports have exceeded supply growth as investors want companies to focus on return on investments rather than spending.

It is important to remember that the definition of affordability will vary from one market to another, and from one consumer group to another within the same market. For a Southeast Asian consumer, $25-30/mmBtu is simply unaffordable. Also, the mechanisms governing gas price formation differ, which means that the impact of higher commodities varies on a regional basis: spot prices are at record-high in Europe and Asia, while oil-indexed prices have increased but remain substantially lower. Those countries which have regulated gas prices, but are exposed to imports at spot prices, are seeing national budgets stretched - this might lead to an increase in those regulated gas prices.

How long might we be staying in this high and volatile pricing environment?

There are two different questions here: high prices and volatility. We always knew that the period 2022-25 was going to be tight, due to the lower LNG export capacity additions. But it is now much tighter because of 1) Europe’s immediate needs of additional LNG and 2) one of the largest plants expected to come online during that period (Arctic LNG-2) seems now likely to be delayed. There are two different questions here: high prices and volatility. We always knew that the period 2022-25 was going to be tight, due to the lower LNG export capacity additions. But it is now much tighter because of 1) Europe’s immediate needs of additional LNG and 2) one of the largest plants expected to come online during that period (Arctic LNG-2) seems now likely to be delayed. More LNG capacity is set to come online in 2026 and beyond, and it will hopefully rebalance the market. It is therefore quite likely that high gas spot prices are with us for a few more years, unless a major rebalancing happens.

How long might we be staying in this high and volatile pricing environment?
Volatility is another issue. Currently, volatility is due to the war situation and uncertainty in the markets. In my opinion, volatility will likely become structural. It will increase, first because, in the medium term, Europe will become a market which outbids others to get the LNG it needs, and that means it will no longer fulfil its role as the balancing market; and second, because it will progressively lose what was helping it to play that balancing role. Europe has been acting as the balancing market because it used three pillars to smooth the shocks in global gas markets: coal/gas switching, the interaction between Russian pipeline gas and LNG, and Europe’s large storage capacity (about 100 bcm). Looking forward, coal capacity will likely resume its decline in line with the Fit for 55 objectives, even if recent events result in some capacity coming back to ensure lights stay on next winter. The willingness of Russia to play a role in smoothing any shocks is frankly in question given recent events – if anything, Russia is reducing exports to Europe precisely at a time when the global LNG market tightens (due to the accident at Freeport LNG). We are therefore left with storage, where regulation could reduce market forces. Finally, even if and when Europe resumes its role as the balancing market, its gas demand will become increasingly variable as the share of renewable energies grows and weather patterns become unpredictable (record cold/mild winters or extremely hot summers). 

European companies are facing the question on how to align the long-term objective of decarbonisation with the very immediate need for additional alternative gas supplies.

How did we end up here, aside from the obvious events? Could long-term planning have eased the pressure? What are the key lessons for the future to help minimise shocks?

How we ended up here is a long succession of events, which individually could have pushed prices up, but together have created a multiplier effect that nobody anticipated. In my view, there are six reasons besides low investments in gas supply: four on the demand side, and two on the supply side.

The four reasons on the demand side are: 1) the strong economic rebound, which drove energy and therefore gas demand up, 2) the unusual weather events, which have increased demand for heating (exceptionally cold winter in Asia in early 2021, long winter in Europe) and for cooling (hot summers), 3) the lower-than-expected generation from renewables (wind in Europe, hydro in Brazil and China, nuclear notably in France), and 4) the high levels of other commodities (such as coal and carbon, which have contributed to increase the switching price in the power sector).

Two factors influenced the availability of gas on the supply side: the numerous issues affecting LNG’s availability on global gas markets in substantial manner – fires, force majeure, declining production, and other types of unplanned maintenance. And the final factor was Russia’s behaviour: as soon as mid-2021, Russia started reducing pipeline gas flows to Europe. This culminated with the war in Ukraine and the current situation where flows of Russian pipeline gas to Europe are significantly reduced: daily deliveries as of mid-June are two-thirds of the 2021 normal levels. In a sense, the European Commission’s objectives in the REPowerEU have been reached, but this is mostly Russia’s doing.

Typically, this kind of situation can be considered as a security of supply issue. While energy security (and affordability) had taken a back seat in Europe in favour of sustainability over the past few years, there was nonetheless a high level of preparedness. However, it is important to understand that we had already reduced the role of the levers typically used in a supply disruption scenario, even before the war started. Before February 2022, Europe was already facing record natural gas prices, so that consumers already tried to reduce demand or switch to alternative fuels. However, the coal and oil markets were already significantly tight, limiting switching. And as Russian gas pipeline flows were low, Europe was already turning to alternative gas supply sources. Disruption scenarios typically simulate a sudden supply route disruption combined with extreme high demand (very cold winter), but they do not anticipate a disruption occurring in an energy system already stretched to the limit even before a major gas disruption occurs. It’s also fair to say that Europe also got exactly the signal to reduce carbon emissions.

With Europe rushing to import more LNG to reduce its reliance on Russian gas, to what extent will this drive shipments away from Asia and what will be the economic/environmental impact of this? Asia is and remains the key growing market for gas and LNG. But Asia’s LNG demand has stalled, declining in early 2022 (-8% during the first five months of 2022). We can already see that high gas prices are impacting the region, especially those LNG importers which traditionally used a significant share of spot cargoes to complement their long-term contracts. As Europe is outbidding other countries in the race to replace Russian volumes, LNG has become unaffordable, and countries have to turn to other fuels. In some cases, gas shortages result in rolling blackouts. If Asian LNG demand stops growing because LNG has become too expensive, then it means that coal is going to stay and the region will directly leading to more renewables. It is still difficult at this stage to know how this is going to play out and there will be variations among countries, but we can feel that there is a return to cool right now, which is not the right signal to reduce carbon emissions.

What new supply is the most likely to come to market to help alleviate the pressure?

Traditional LNG export plants take on average five years to be built (Calcasieu LNG being a notable exception). We already know that the next few years will see limited LNG export capacity additions in countries such as Mozambique, Senegal/Mauritania, Australia, and Indonesia while Arctic 2 LNG in Russia is likely to face delays. Beyond that, most projects sanctioned over the past three years will arrive from 2025 onwards.
including the expansion in Qatar, new plants in Canada and the US, as well as in Mozambique (depending on when work is resumed on the Mozambique LNG project). Looking beyond those projects, many additional projects are looking at taking final investment decisions (FID) and working on securing buyers. Some projects are well placed and have already secured such long-term contracts. Importantly, many of these projects feature CCS and other ways to reduce their carbon emissions, while keeping an eye on methane emissions. Because of the EU methane strategy, the carbon footprint of LNG will become a key feature of LNG supply sources, as important as the price and delivery terms.

To what extent is the current environment likely to trigger a resurgence of long-term, oil-indexed contracts, after years of movement towards hub-based, shorter-term and spot deals?

Affordability is absolutely essential for the LNG industry. Any forecast about gas or LNG demand shows that the Asian region is key, not Europe. In Europe, the push towards decarbonisation means that gas demand will come down in the long term, and so will LNG imports. In Asia, there is a role for gas to play, but it needs to be affordable to displace coal. Consider that very few countries in Asia have a carbon price or tax. Gas is often not advantaged, especially when imported gas has to compete with domestic coal. Currently, oil-indexed LNG looks cheaper than spot-based LNG, but in 2020, it was the other way around. Hence the importance of a balanced portfolio that enables us to navigate the ups and downs of various commodities. I would also like to add that, LNG based on Henry Hub indexation is also currently cheaper than pure spot-based pricing (JMM or TTF), even though Henry Hub prices are quite high these days. Meanwhile, some investors in new LNG projects need long-term contracts and we have seen a return to 15 or 20 year contracts recently. Investors want some guarantee that their project will not end up as a stranded asset.

Is the currently elevated gas price undermining the case for blue hydrogen as a climate solution in the long-term?

It really depends on which country you are looking at. Of course, if you want to import natural gas to produce hydrogen, blue hydrogen seems out of the money right now. It also depends on how you calculate the cost of green hydrogen – based on a PPA with renewables at a low price, or based on the current electricity prices, which are also extremely high in Europe. I observe that most organisations, even IRENA or the IEA, do have some blue hydrogen in their forecasts even if in some cases, it is not always easy to know how much blue hydrogen there is in their forecasts. But blue hydrogen is likely to be produced in countries with an abundance of cheap gas and where CCS is available. This is the key to be competitive against green hydrogen in the future. This leads me to two very important considerations regarding blue hydrogen: first, the industry needs to scale up CCS massively, if it wants blue hydrogen to be developed. CCS will also be needed in the industry and power sector and is key for gas to stay in the energy mix. For years, we have heard about CCS, its role and its potential, but numbers do not add up. The Global CCS Institute said in its last report published in late 2021 that there was just above 110 MT of CCS under development. That would be just enough for the production of around 13-14 MT of blue hydrogen (assuming all these plants are dedicated to hydrogen) – a fraction of the 90 MT currently consumed. Second, there needs to be absolute clarity on how the emissions are calculated (so-called life cycle assessments (LCA)), and how the LCA of blue hydrogen can be lowered. Otherwise, the industry will have to face other articles such as How Green is Blue Hydrogen. That means tackling and effectively reducing methane emissions.

The industry needs to scale up CCS massively if it wants blue hydrogen to be developed.

Delivering energy for a better world

Through the strength of our North American assets, we are dedicated to expanding the global use of LNG and net-zero solutions, clean power and modernized energy networks. At Sempra Infrastructure we develop, build, operate and invest in the infrastructure critical to meet the world’s energy and climate needs.
Energy security and energy transition took centre stage at the event in Daegu, South Korea.

DALE LUNAN

Discussions about energy security, and how it can be ensured without jeopardising climate goals, was the focus of many discussions at the landmark World Gas Conference 2022 in Daegu, South Korea, in late May. The conference brought together more than 9,500 attendees from across the world for five days of workshops, sessions and debates that provided crucial insights into the key themes affecting the natural gas industry today.

Among the highlights was an opening address by former UN secretary general Ban Ki-moon, who gave a stark warning that time was running out to address greenhouse gas emissions. He stressed the critical role that natural gas could play in driving down these emissions, especially when coupled with carbon capture and storage.

“We have no time to spare,” he said. “We are fast approaching the tipping point. Urgent action is needed to change the paradigm of our lives, lifestyles and energy uses.”

The conference, the 28th in its history, also marked the end of a chapter for the International Gas Union and the beginning of a new one. Madame Li Yalan, the general manager of Beijing Gas Group, assumed the role as IGU president, replacing Dr Joe Kang of Korea. Madame Li will be welcoming the global gas industry to the next WGC conference, scheduled to take place in Beijing in 2025.

At a time when natural gas prices are soaring, amid strong energy demand and short investment in supply, exacerbated by geopolitical instability, a common theme through many of the panel sessions, debates and keynotes was the unique value proposition for natural gas: abundance, reliability and environmental benefits.

Dr Axel Wietfeld, CEO of Uniper Hydrogen, said the Russia Ukraine conflict has elevated the issue of gas supply security throughout the EU and around the world. But the discussion about supply security and reliability is expanding outwards from the energy industry to encompass everyone who uses natural gas – even individual consumers, who are being challenged to “eat or heat” in the face of growing price pressures, especially in Europe and Asia.

“In the public discussions, and in the public opinion, it has become clear how important the secure, reliable and affordable supply of energy is for industrialised economies,” Wietfeld said.

On Day Four of WGC2022, President Li Yalan also brought up supply security and affordability as critical considerations for China, as it moves to increase its use of natural gas and to begin a long-awaited move away from coal.

By 2025, she said, China is targeting gas consumption of 430 bcm, an increase from 370 bcm in 2021, while cutting coal’s share of the country’s energy mix to less than 45%. By 2030, it is targeting gas consumption of 600 bcm, while by 2050, forecast consumption of 868 bcm will account for more than half of all natural gas use in Asia.

But Asian gas prices, Li pointed out, are far higher than elsewhere, and shortages - especially in the winter – are common. Still, increased gas use remains a policy priority in China, but the price needs to be reasonable.

Affordability is even more critical in emerging economies, where vast swathes of populations - mainly rural - have no access to modern energy like natural gas and electricity and instead use wood or other highly polluting fuel for their cooking and other energy needs.

In those economies - in places like Nigeria, Pakistan or India - governments are looking at investing upwards of 15% of their respective GDPs to reach decarbonisation goals. Acting on their own, they have little chance of achieving those aspirations – they desperately need help from more affluent economies.

“Emissions don’t respect borders,” James Rockall, CEO of the World LPG Association, told the last session on the final day of WGC2022. “It doesn’t really matter if your country is doing really well but your neighbour is doing really badly. You might be best to actually help your neighbour be better than worry about your own emissions.”

Relatively speaking, he said, it’s easier for wealthier economies to reach their goals of carbon neutrality, than it is for emerging economies. The UK, as an example, expects to spend about $2 trillion to eliminate its 1% share of global emissions and get to net zero by 2050.

Nigeria, on the other hand, expects to spend about $400mn to get to net zero, Rockall said, but the impact of Nigeria’s efforts - which by 2050 will be the third most populous country in the world – will be huge compared to the UK’s small contribution.

“It’s controversial to think, but if the UK were to invest its $2 trillion into Nigeria, it would still have a lot of money left over to help itself, having also helped Nigeria.”

The 28th World Gas Conference in the IGU’s history, also marked the end of a chapter for the International Gas Union and the beginning of a new one.
COVID-19 marked only the start of two years of turbulence for the global natural gas industry, the International Gas Union (IGU) said in its Global Gas Report 2022, released at the World Gas Conference in Daegu, South Korea. Pandemic-related lockdowns in 2020, with brief periods of excess supply and very low prices, gave way in 2021 to tight markets, extreme price volatility and a compounding geopolitical challenge this year to energy security in the wake of conflict in Ukraine, according to the report, which was a collaborative effort between the IGU and Snam, and produced by Rystad Energy. To achieve the Paris Agreement goal of capping global warming at well below 2°C and fulfilling net zero aspirations by mid-century, greenhouse gas emissions will need to peak before 2025. And this offers an opportunity for natural gas to make a major contribution.

“Within the limited time available, governments, policymakers and industry will need to develop realistic and achievable strategies to curb emissions across all sectors,” the IGU said. “Natural gas, together with decarbonised and low or zero-carbon gases, will play a critical role in supporting these decarbonisation initiatives.”

The post-COVID world will bring renewed challenges in addressing emissions, which have resumed an upward trend since 2020, the IGU said, particularly in the power sector, where a post-pandemic demand surge was layered on top of a move back to coal-fired generation as gas prices outpaced those for coal.

As pandemic restrictions took hold of global economies in 2020, natural gas demand dipped to 3,753 bcm from 3,842 bcm in 2019 and prices fell dramatically: the average price at the Dutch TTF fell to a record low of $1.20/MMBtu in May, while LNG cargoes from the US were cancelled between April and July. In 2021, as COVID restrictions eased, natural gas demand recovered to 3,913 bcm, outpacing capacity additions and pushing prices sharply higher. Gas prices on the Asian spot market and at the TTF hit record highs, ➤
with Asian spot peaking at $54/mmBtu as Europe and Asia competed for LNG cargoes.

Then in 2022, extreme market volatility in Europe caused by high demand and a weak supply response from renewables was exacerbated in late February by the onset of the Russia-Ukraine conflict, sparking yet another surge in prices, with the front month contract on the TTF climbing to a record $68/mmBtu in early March.

As gas prices surged in 2021 and 2022, power generators began moving back to cheaper coal, which saw its share of the global power mix increase to 36% in 2021 from 35% in 2020. Global CO2 emissions, in turn, increased 5% between 2020 and 2021, the GGR notes. Reversing this shift, the report notes, will require a strengthened focus on gas availability, emission prices and CO2 and pollution policies.

The war and global sanctions against Russia that ensued, brought the issue of energy security – and particularly natural gas supply security – into sharp focus, highlighting the value of developing diversified supply sources, IGU Vice President Andreas Stegher said in Daegu.

“Infrastructure will play a critical role in connecting demand and supply and diversifying sources and means to which we are providing energy to consumers,” he said. “Molecules will be not just natural gas but the new gases for sure. That is where technological investment and innovation are needed to support these low- and zero-carbon gases and sustain both economic growth and environmental sustainability and reduction of emissions.”

Additional infrastructure - Germany alone is fast-tracking the development of four LNG import terminals - can increase security, the GGR notes, and while extreme weather in some parts of the world have put renewable energy to the test, natural gas has proven time and again to be a reliable source of electricity generation that can offset shortfalls from other sources.

The gas industry’s future, the IGU believes, will be closely tied to its sustainability, with immediate emission reduction benefits due to the low-carbon profile of natural gas.

“It is a key moment for the gas industry to demonstrate the near-, medium-, and long-term value of gas technologies,” the report notes. “Policymakers, on the other hand, should not discount a viable, available, flexible, and ‘decarbonisable’ solution to the energy transition, such as natural gas.”

Over a longer term, even greater reductions will flow from the gas industry’s status as an enabler of low- and zero-carbon technologies, such as hydrogen, biomethane and carbon capture, utilisation and storage (CCUS).

But CCUS investments, the report says, need to be scaled up rapidly to meet a global capture target of 8 gigatonnes/year by 2050. Over the next decade, capture capacity around the world is expected to increase to 550 MTPA from about 45 MTPA today.

Current production levels of low- and zero-carbon gases are similarly limited. Blue and green hydrogen today accounts for less than 1% of hydrogen demand, while biomethane represents just 1% of gas production.

Still, interest in both new gases is gathering momentum, with more and more countries committing to targets and funding. Japan, South Korea and Australia have recently produced roadmaps to inform the development of their hydrogen economies, while the EU sees 35 bcm of biomethane and 20 MT of clean hydrogen demand annually in Europe by 2030 - about 25% of the EU’s total current natural gas market.

“It is clear that gas infrastructure investment remains critical for meeting global energy demand ... [but] it should be future-proofed to assure investors of their long-term environmental and economic value.”

JOE KANG, IMMEDIATE PAST PRESIDENT OF IGU
LNG delivers in time of crisis

The surge in LNG demand has demonstrated the economic and environmental value of gas at a time when the world is contending with its worst crisis in memory, the IGU has said in its World LNG Report.

JOSEPH MURPHY

LNG has demonstrated its crucial role in providing secure, reliable and sustainable energy over the past year, at a time when the world is contending with its worst energy crisis in memory, the International Gas Union (IGU) said in its World LNG Report published on July 6.

Global LNG trade surged 4.5% year on year to 372.3 MT in 2021, on the back of a strong post-pandemic recovery in energy demand that spurred increased LNG imports. And the IGU expects LNG consumption to continue growing through 2022, as the global energy market has heightened further due to fallout from the Russia-Ukraine conflict.

The LNG industry adjusted quickly to rallying demand, but the price trend over the past year has also vindicated the case for increased investment in supply, the IGU said. Spot LNG prices have surged to historic highs, particularly in Europe. S&P Global’s Head of Established Benchmarks, Vera Blei, said that the net effect of last year’s trends was a reversal in the previous relationship between East Asia’s Japan Korea Marker (JKM) and the US Henry Hub.

“LNG plays a critical role in global energy security and economic stability, and this role has never been greater than now,” IGU Secretary General Milton Catelin commented. “As the world considers its options for navigating through the unprecedented times, policymakers should consider the options that are available and the time that is required to bring new supply online.”

“Policy clarity, beyond the short-term, is absolutely essential to achieve a successful and secure energy transition and to solve the climate problem,” he said.

On the demand side, China replaced Japan as the world’s top LNG importer in 2021, increasing its intake to 79.3 MT from 68.9 MT. On the supply side, growth has been spearheaded by the US, which ramped up its exports by 22.3 MT, or 49.8%, in 2021. Egypt and Algeria also increased their shipments, by 5.2 MT or 39.1%, and by 1.2 MT or 11.4%, respectively. Australia remained the biggest LNG exporter, shipping out 78.5 MT of the fuel, up from 77.8 MT in the previous year.

Russia contributed 8% of the world’s LNG supply in 2021, of which 43.9% went to Europe. With Russian gas supply to the continent already in steep decline, and the EU pledging to fully eliminate Russian energy imports by 2027, growing LNG exporters like the US and Qatar will play a major role in diversifying Europe’s energy sources and improving its security.

Liquefaction and regasification outlook

Global liquefaction capacity did not rise as fast as traded volumes last year, expanding by only 1.5% or 6.9 MTPA to 545.9 MTPA, which meant that the utilisation rate increased to 80.4% from 74.6% in 2020. This demonstrates the need for further investment in supply to keep up with demand.

Rystad Energy’s Senior Partner and Head of Consulting Asia-Pacific, Jon Fredrik Muller, said at a conference in London to mark the report’s release that utilisation rates would rise further this year, as continued European competition for LNG cargoes spills into the winter demand curve.

The new projects that came online over the year included PFLNG Dua (11.5 MTPA), Corpus Christi T3 (4.5 MTPA) and Yamal LNG T4 (9.9 MTPA). A further 12.5 MTPA of capacity entered operation in the first four months of 2022, bringing the global total to 472.4 MTPA.

These additional projects were Sabine Pass T6 (6.5 MTPA) and the Calcasieu Pass LNG T1-T12 (7.5 MTPA).

Global regasification capacity reached 901.9 MTPA by April 2022, with new terminals coming online in Indonesia, Croatia, Turkey, Kuwait and Mexico, while expansions took place at existing facilities in China and Japan. The launch of the Krk LNG terminal in 2021 gave Croatia access to LNG for the first time, bringing the total number of markets for the fuel to 40, supplied by 19 exporting countries.

The project pipeline for both liquefaction and regasification terminals is substantial. As of April 2022, there was 136.2 MTPA of liquefaction capacity either under construction or approved for development. However only 7.7 MTPA is due to enter production in the second half of this year, with the rest entering operation between 2023 and 2027. A record 50 MTPA of liquefaction capacity was greenlit in 2021, with Qatar’s North Field East development being by far the biggest contributor, adding 32 MTPA to the project pipeline.

There is a further 1,034.5 MTPA of capacity yet to reach the market, with 466.5 MTPA under construction or approved for development. As a result of financial institutions shying away from investment in fossil fuels, in favour of clean energy.

As such, it is crucial for new liquefaction plants to be increasingly innovative in a decarbonising landscape, leveraging on solutions to continue driving down emissions in the liquefaction process and the rest of the LNG value chain,” the IGU said. “It is also important to have clarity and consistency in the policy environment, which impacts financial risk and liquidity provision.”

Meanwhile, there is some ‘164.8 MTPA of new regasification capacity under construction, with 80.4 MTPA on track for launch by the end of the year. This capacity is situated not only in established markets but also new ones, with Ghana, Senegal and the Philippines due to join the ranks of LNG importers.

Catelin noted that despite the challenges posed by the energy crisis, “the world must stay the course of the energy transition, and natural gas, together with a growing portfolio of decarbonised, low and zero carbon gases, will be key to making that possible.”

“Gas is the fastest available and sustainable long-term vehicle to get the world back onto the energy transition path, and the inherent flexibility of LNG allows it to be delivered to almost anywhere in the world,” he said.
EU policymakers need to avoid making contradictory and unreasonable forecasts on the future role of natural gas when mapping a pathway out of the current energy crisis, Didier Holleaux, IGU Incoming Regional Coordinator for Europe, tells Global Voice of Gas.

Europe faces the difficult task of making energy more secure and affordable, while also striving to phase out Russian gas supply over the coming years and accelerating the energy transition. But there is a lack of clarity in EU policy regarding the future role that natural gas will play. The European Commission has estimated that its Fit for 55 legislative measures could reduce EU gas demand by 116 or more bcm a year by the end of the decade. More recently in RepowerEU, the commission has stated that a reduction in demand for natural gas of as much as 270 bcm a year may be possible. At the same time, the commission has discussed securing 50 bcm of additional LNG from the US, while EU member states have reached out to various LNG and pipeline suppliers to diversify their imports.

This mixed messaging risks deterring investment in needed natural gas supply and infrastructure. Holleaux says, at a time when prices are at an unprecedented high and many countries are looking to build new LNG import terminals to replace Russian supply.

“These different statements contradicting each other do not help in encouraging investment,” he says. “The commission has clearly not taken into account the full complexity of the gas economy.”

The current geopolitical crisis in Europe simultaneously highlights the critical part that natural gas could play in the continent’s economy, and could undermine the fuel’s reputation as a provider of secure and affordable energy, according to Holleaux.

“Instead of being a commodity you can rely on, today it could be perceived as a source of supply that could be disrupted for political reasons,” he says.

High gas prices today have made biogas and renewables more competitive, he says, and therefore could accelerate the energy transition. But at the same time, the adverse effect is that the operation of some coal-fired power plants could be extended, resulting in greater emissions for longer. Notably, Germany, Austria and the Netherlands announced in June they were preparing to ramp up coal-fired power generation to conserve gas use. Gas must play a part in providing a cleaner source of baseload energy supply in Europe, Holleaux says.

Since the conflict in Ukraine began, a raft of new LNG import projects in Europe have been proposed, as well as extra internal infrastructure to transport gas across the continent. In the past, such projects have often received EU financial grants, fast-tracked permitting and other support. Holleaux calls for the commission to update its PCI list, to take into account the EU’s new needs in light of the energy crisis.

On biogas, Holleaux says Europe needs fast-tracked and less complex permitting to spur the development of supply. Contracts for differences are also needed to give investors greater certainty. In its Repower EU plan, the commission calls for the development of 35 bcm of biogas supply by the end of the decade, and the European Biogas Association has said that this goal could easily be reached and then some, under the right conditions, including the introduction of a transparent system for guarantees of origin.

Regarding hydrogen, Holleaux is hopeful that a market will emerge where consumers can easily access information on where, when and how the hydrogen is produced, whether through electrolysis, steam methane reforming, pyrolysis or other techniques, what is its CO2 content, and all other relevant information.

“Then the market can decide what type of hydrogen they want in order to decarbonise,” he says. “Today we don’t have the technology to meet the 100 g target.”

“It’s not black and white. It’s not like projects outside the taxonomy won’t get money,” he says. “But it’s a lost opportunity to have a taxonomy that is more relevant to future energy transition needs.”

Over the years the EU has also been scaling down the number of natural gas developments in its projects of common interest (PCI) list. PCIs can enjoy access to EU financial grants, fast-tracked permitting and other support. Holleaux calls for the commission to update its PCI list, to take into account the EU’s new needs in light of the energy crisis.

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“Then the market can decide what type of hydrogen they want in order to decarbonise,” he says.
Europe advancing towards deal on methane emissions regulation

The final version of the regulation will be an outcome of a very fragile compromise, and the depth and breadth of new obligations on the importers is one of the key unknowns.

Andris Piebalgs
PART-TIME PROFESSOR
FLORENCE SCHOOL OF REGULATION; FORMER EU ENERGY COMMISSIONER

Maria Olczak
RESEARCH ASSOCIATE
FLORENCE SCHOOL OF REGULATION

In December 2021, the European Commission presented a proposal for a regulation on methane emissions reduction in the energy sector mandating the oil and gas operators to monitor and mitigate their emissions. The proposal, including new requirements for energy importers, is now being negotiated by legislators. What impact will it have on market participants?

Obligations on EU operators
The regulation creates new obligations for the operators active in the oil and gas production, gas transit- and distribution (up-, mid-, down-stream), including underground storage and LNG terminals, and even operating, closed, and abandoned coal mines. The coal part of the proposal is not discussed in this article. The operators may also be found responsible for emissions from inactive wells.

The proposed regulation introduces new rules for:
(a) measurement, reporting and verification (MRV) of methane emissions at the source- and site-level; (b) leak detection and repair (LDAR); (c) limits on venting and flaring; (d) transparency tools in case of emissions occurring outside the Union borders.

On the Measurement Reporting and Verification, the proposal requires the operators to move from emissions estimates toward direct emissions measurement gradually. The operators will report the data to the competent authorities. Verification and enforcement involve independent accredited verifiers, the International Methane Emissions Observatory (IMEO) and the competent national authorities.

On Leak Detection and Repair, the European Commission suggested the harmonisation of current practices in terms of the frequency (every three months), emissions detection threshold (500 ppm), repair time (within five days after detection), reinspection (within 15 days), record-keeping and reporting obligations.

On venting and flaring, the proposal introduces a ban on routine flaring and venting. Non-routine venting is allowed in the case of an emergency, malfunction or where unavoidable and only if flaring is infeasible. Article 17 of the regulation proposal sets out flaring standards, e.g. the obligation to install combustion devices with auto-igniter or continuous pilot and a complete destruction removal efficiency for hydrocarbons.

The regulation will be directly applicable in all 27 EU member states, as it creates rights and obligations for EU institutions, member states, and the oil and gas sector.
operators. The regulation will guarantee that the same rules will apply in all EU countries.

Obligations for gas importers
The legislation suggests a 2-step approach to tackling emissions outside the union borders. Firstly, the proposal introduces three emission transparency tools: importer reporting requirements, methane transparency database and methane super-emitters monitoring tool.

Every year, the importers (entities which place fossil fuel energy from a third country on the EU market as part of their commercial activity) will be required to provide competent authorities with specific information obtained from the exporters. The report includes the origin of the imported gas, whether and how exporters measure methane emissions, whether they apply regulatory or voluntary measures to control its methane emission, whether the exporter’s reports are verified, and, if yes, the name of the entity that performed independent verification. This information will constitute the basis of the publicly-available methane transparency database managed by the European Commission. It will be supplemented by the methane emitters global monitoring tool using satellite data to identify high methane-emitting sources.

Secondly, by the end of 2025, and based on data gathered through methane monitoring tools, the commission intends to strengthen the requirements applicable to importers regarding MRV and emission mitigation. Apart from the regulatory sticks, the European Commission is offering some “carrots” to the fossil fuel energy importers, who will be responsible for the designation of one or more competent authorities, which will play a vital role in the monitoring and enforcing regulation at the country level. As a result, several competent authorities could be designated per Member State, which may create coordination challenges. Moreover, the regulation does not specify how competent authorities should be, mentioning that they should have adequate powers and resources.

Another closely related issue relates to the penalties, which the Member States should decide according to article 30(1). It means that the operators will need to comply with the same rules. Still, their performance will be assessed by very different institutions with different capabilities to evaluate their performance and potentially be paying different penalties in different member states.

Another question is the availability of independent accredited verifiers, who will be responsible for checking the statements of different operators. The regulation specifies that they should receive accreditation from national accreditation bodies. Still, only a few of them specialising in the verification and validation of GHGs in the oil and gas and mining exist now, and in many countries, there are none. Once the regulation enters into force, there will be little time to set up such companies, and insufficient verification capacity may delay the verification process. Moreover, some of the verifiers’ tasks overlap with the verification tasks of IMEO, e.g. the verification of methodologies and statistical methods employed by companies to quantify methane emissions data.

The Council will likely opt for a more lenient approach, while the European Parliament will advocate for more stringent obligations on emissions associated with energy imports.

Implementation challenges
Once the final version of the regulation is adopted, the focus will move from policymaking to policy implementation. Here, several potential challenges are emerging.

Article 4 specifies that each Member state is responsible for the designation of one or more competent authorities, which will play a vital role in the monitoring and enforcing regulation at the country level. As a result, several competent authorities could be designated per Member State, which may create coordination challenges. Moreover, the regulation does not specify how competent authorities should be, mentioning that they should have adequate powers and resources.

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The discussions on the proposal achieved significant progress at the Council level under the French Presidency, and it has been discussed at the working group level at several meetings. While the member states welcomed the proposal, they raised several issues related to the additional burdens and costs related to the emission reporting and flexibility in implementing the regulation. As of July 1, the Czech Republic will take over the Presidency in the Council. The Council will likely adopt a political agreement on the proposed law (a “general approach”) in the second half of this year.

The work is accelerating in the European Parliament. On June 2, the European Parliament announced that two committees, ENV and ITRE, will be working together and presenting a joint report on the Methane regulation. In its report from October 21, 2021, the Parliament welcomed the EU methane strategy and plans to prioritise reductions in the energy sector.

The Council will likely opt for a more lenient approach, while the European Parliament will advocate for more stringent obligations on emissions associated with energy imports.
US momentum builds behind eliminating methane emissions

Voluntary initiatives offer incentives for all operators to do more, and validate their achievements to buyers, investors and other stakeholders.

JOSEPH MURPHY

The global scramble for LNG is accelerating efforts by the US natural gas industry to eliminate methane emissions, as suppliers look to provide key markets with energy supply that is not only affordable and secure, but also demonstrably cleaner, Roy Hartstein, President of Responsible Energy Solutions, tells Global Voice of Gas.

Responsible Energy Solutions assists companies in the US gas value chain in finding innovative solutions to measure, monitor and reduce methane emissions, and meet environmental social and governance (ESG) requirements. The company is an approved assessor for the MiQ standard in which gas supply is certified according to its methane emissions performance, and Equitable Origin standards.

To date, Responsible Energy Solutions has undertaken eight MiQ audits across various basins in the US, including the oil-rich Permian in West Texas, where significant amounts of associated gas are extracted, the Haynesville shale, where a mix of dry gas, oil and natural gas liquids is produced and the Marcellus, the largest US natural gas basin.

“We’ve looked at different basins and different types of production, and we’re seeing very consistent efforts to mitigate methane, and the momentum doesn’t appear to be slowing,” Hartstein says. “And we’re seeing these efforts not only by the producers – big and small ones – but also pipeline operators, so the focus on reducing methane is expanding along the value chain.”

MIQ works by grading producers’ gas from A to F. To get an A, the methane intensity of the supply must be no greater than 0.05%, while for B, the limit is 0.10%, C 0.20%, D 0.50%, E 1.00% and F 2.00%. There are also requirements for operators to implement best practices and rules on how producers should detect and quantify their emissions.

We’re seeing these efforts not only by the producers – big and small ones – but also pipeline operators, so the focus on reducing methane is expanding along the value chain.

ROY HARTSTEIN, PRESIDENT, RESPONSIBLE ENERGY SOLUTIONS

The solutions being used include eliminating natural gas-driven pneumatic devices, changing practices to eliminate associated gas venting and flaring and recovering vapours from natural gas liquids and oil production. Hartstein also points out that innovative technologies are continually being developed to meet this increased methane focus. These include low-cost acoustic sensors to monitor for leaks, pressure monitors and flow sensors that alert operators when a problem is detected, as well as improved technologies for methane detection and quantification.

The efforts help companies that pursue independent certification under the MiQ and Equitable Origin standards.

But MiQ and Equitable Origin are only two of many voluntary initiatives at play. In the US, initiatives include ONE Future, comprising over 50 US gas firms that have committed to reducing their methane intensity below 1% by 2025, and Illinois-based GTI which launched its Veritas initiative last year, the goal of which is to bring together data from emissions factors and direct measurements by satellites, aircrafts, drones and cameras, to create a standardised methodology for measurement, reporting and verification of methane emissions.

Internationally there is also the Oil and Gas Climate Initiative (OGCI), whose members are targeting a reduction in methane intensity of well under 0.20% by 2025. Through the $1bn OGCI Climate Investments fund, they are also investing in new technologies to tackle methane emissions. Then there is the Oil and Gas Methane Partnership (OGMP) 2.0 framework, which aims to create a gold standard for accurately and transparently reporting methane emissions and is aiming to reduce the industry’s emissions by 45% by 2025 and 60–75% by 2030. Another initiative is the Methane Guiding Principles that seeks to reduce methane emissions across the value chain, by improving the accuracy and transparency of data, encouraging effective business practices and advocating for sound policy and regulation.

Proactive not reactive

While improvements in quantification methods are key, Hartstein stresses the need for operators to focus more on reducing methane emissions than merely calculating the amount emitted. Operators’ attention should also be on proactive, preventative action on emissions, rather than reacting to problems when they occur. “As an industry, we need to build up data analytics to show what the source and cause of the largest and most frequently recurring sources of emissions are, so that operators can carry out preventive maintenance instead of responding to the same problems again and again when monitoring systems flag them,” he says.

Whether technology is implemented through voluntary initiatives or regulation, companies need the flexibility to implement solutions that are most effective for their operations, he says, while giving them the room...
Both voluntary and regulatory programmes should recognise those differences and give operators the opportunity to implement solutions that work best for a particular situation.

ROY HARTSTEIN, PRESIDENT, RESPONSIBLE ENERGY SOLUTIONS

Building a greener gas business

Sustainable development is the only acceptable formula for growth - the needs of today must not be met at the expense of future generations. This requires a transition to sustainable power sources such as renewable energy, as well as accelerated greening of hydrocarbon-based value chains. As a gas business feeding gas-based industries, The National Gas Company of Trinidad and Tobago Limited (NGC) is working to reduce its own carbon output and that of the wider energy sector through an extensive Green Agenda.

In partnership with subsidiaries of The NGC Group and other stakeholders, the Company is working towards realisation of solar, green hydrogen and biogas projects in Trinidad and Tobago. Alongside these projects are advocacy and public education initiatives; research undertaken with academic organisations; and integration of sustainability metrics as performance indicators across the Group. The Company is also partnering to reduce the carbon intensity of local industry, towards creation of a more sustainable industrial hub - Point Lisas 2.0.

Focus on methane

Tangential to its Green Agenda is NGC’s commitment to production of annual Sustainability Reports. Since 2018, the Company has been reporting on its social, governance and environmental performance through these Reports, and has been progressively expanding its disclosures. In alignment with global standards for these publications, NGC is now actively monitoring and reporting its emissions, with methane being the primary focus. Since 2021, an infrared camera and satellite data are being used to visualise emissions from transmission and distribution pipeline corridors, plant environments, valve and metering stations and other associated infrastructure. This data is informing NGC’s leak detection and repair (LDAR) programme, which is one of the most cost-effective abatement options for methane, promising both economic and environmental wins. In furtherance of its emissions reduction campaign, NGC also opted to join the Oil and Gas Methane Partnership (OGMP), led by the United Nations Environment Programme (UNEP). This Partnership is a voluntary association of governments, international organisations, NGOs and energy stakeholders working together to measure, transparently report and reduce methane emissions. NGC’s membership signals its intent to not just lead national efforts in methane mitigation but help shape the global offensive. The Company intends to leverage knowledge-sharing platforms to spread the word and help equip companies along the entire local energy value chain to tackle emissions in their own operations.

In 2022, NGC submitted its first Upstream and Mid-Downstream report to the OGMP for the 2021 reporting cycle. NGC is committed as a member of the OGMP to achieving the “Gold Standard” of reporting (Level 4/5) within three (3) years for operated assets and five (5) years for non-operated assets. The company’s performance targets and implementation plan were detailed as part of the submission. This included the techniques, strategies and management systems that demonstrate the path the Company will be taking to reduce all its methane emissions sources: fugitive emissions, incomplete combustion (stationary, mobile and flaring) and venting of natural gas.

NGC’s performance targets, in alignment with the OGMP Framework, are set to achieve:

- An overall reduction of 75% in venting methane emissions and 50% in fugitive methane by 2025, compared to 2021 base year.
- A 50% reduction in overall GHG emissions by 2025, compared to 2021 base year.

Through continued monitoring, reporting and mitigation measures, NGC is intent on achieving its operational target of near-zero emissions. The ultimate goal is to support the wider Group objective of building a greener business and a globally recognised sustainable energy brand.

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In furtherance of its emissions reduction campaign, NGC along with its value chain partners are working to eliminate avoidable emissions and ensure it is producing gas that is cleaner. This is critical to the transition to sustainable energy sources.

There may come a time when some operators that may need regulatory pressure to clean up their act, but there’s still a desire that it should have lower emissions, Hartstein said. “The need is for not only a secure energy supply, but also a cleaner one. That’s driving the marketplace to respond with actions on methane emissions reduction that are demonstrable and can be independently validated. Both voluntary and regulatory programmes should recognise those differences and give operators the opportunity to implement solutions that work best for a particular situation.”

Hartstein believes that while events today may complicate the energy transition in the short term, he sees the realities of climate change powering the need for an accelerated energy transition in which certified low emissions natural gas and LNG becomes the norm rather than the exception.

“US LNG is in high demand, but there’s still a desire that it should have lower emissions,” he says. “The need is for not only a secure energy supply, but also a cleaner one. That’s driving the marketplace to respond with actions on methane emissions reduction that are demonstrable and can be independently validated through processes like the MiQ Standard and independent certification work that we’re doing.” The challenge will be to create synergies across all these initiatives, sharing standards and methodologies and creating a more consistent approach to methane emissions management internationally.

There may come a time when some operators that have not taken action to reduce methane emissions may need regulatory pressure to clean up their act, but Hartstein says that voluntary initiatives are in the meantime encouraging all operators to do more, as well as validate their achievements.
Establishing a pathway to reducing methane emissions

The pathway builds on the Global Methane Pledge adopted by over 100 countries last year.

The EU, the US and 11 countries launched the Global Methane Pledge Energy Pathway in mid-June, aimed at accelerating reductions in methane emissions in the oil and gas sector.

Methane is the second most important greenhouse gas after CO₂, and its warming effect is significantly stronger in the short-term, making it an important driver of climate change in the nearest decade, with an atmospheric life of about 10 years. It is critically important that mitigation of methane emissions is not seen as an alternative to CO₂ reducing measures, because even though carbon dioxide molecules have a lower heat trapping capacity, they also have a very long life, accumulating in the atmosphere for millennia and impacting the temperatures far beyond mid-century. In other words, today’s meaningful impact on slowing down the global temperature rise, both methane emissions and carbon dioxide need to be tackled proactively.

The oil and gas industry is not the biggest contributor of anthropogenic methane emissions - the greatest source is agriculture and waste. But there are still significant reductions that the sector can make globally, building on the already substantial progress that they have made to date.

The pathway’s unveiling after the EU, the US and over 100 other countries signed up to the Global Methane Pledge last year, which has a collective goal of reducing global methane emissions by at least 30% from 2020 levels by 2030, while developing the best available methodologies to quantify methane emissions.

By delivering on this pledge, it is estimated that global warming could be reduced by at least 0.2 °C.

In a joint release on June 17, the White House and the European Commission said in their joint statement.

“Without any doubt, mitigating methane emissions is a priority and an opportunity to further enhance the environmental case for gas. It makes all kinds of sense. The gas industry is committed, like no other, to prevent the loss of its product and to ensure that it maximizes its contribution to the sustainable energy future and an achievable energy transition. However, gas industry action alone would be insufficient to reduce methane significantly. All sources should be considered and addressed.”

The IGU concludes: “Without any doubt, mitigating methane emissions is a priority and an opportunity to further enhance the environmental case for gas. It makes all kinds of sense. The gas industry is committed, like no other, to prevent the loss of its product and to ensure that it maximizes its contribution to the sustainable energy future and an achievable energy transition. However, gas industry action alone would be insufficient to reduce methane significantly. All sources should be considered and addressed.”

A number of voluntary initiatives within the gas industry are also addressing the problem.

The IGU is supportive of all effective efforts and initiatives for further methane action, and what makes them effective are reduced emissions – and that is what needs to be at the heart of all policies and pathways,” the IGU comments.

The Pledge Pathway is a great initiative, because it is global and because it has potential scope for building capacity in areas where that is needed, and we hope that this will be a great initiative focused on driving reductions and attracting greater levels of funding to support those efforts and to make a real difference.”

However, the Pathway is not an “Energy Pathway” yet, but an oil and gas pathway. Coal, which is responsible for the same share of energy methane emissions as oil or gas, is notably missing from the framework,” the IGU continues. “It is also important to highlight that the Global Methane Pledge is a commitment to reduce methane emissions from all sources, and we hope to see both an energy pathway, inclusive of all sources, and pathways for the whole economy.”

The IGU concludes: “Without any doubt, mitigating methane emissions is a priority and an opportunity to further enhance the environmental case for gas. It makes all kinds of sense. The gas industry is committed, like no other, to prevent the loss of its product and to ensure that it maximizes its contribution to the sustainable energy future and an achievable energy transition. However, gas industry action alone would be insufficient to reduce methane significantly. All sources should be considered and addressed.”

A number of voluntary initiatives within the gas industry are also addressing the problem.

The IGU has been at the forefront of promoting continuous progress on methane emissions identification, quantification, documentation, reporting and, most importantly, further reducing. We created an international advisory Group of Experts on Methane emissions reductions case study report showing various mitigation projects across the globe and value chain, with.

It is truly delightful to see that in such a short period, from the time when we started to actively discuss this topic to today, so much progress has been made and continues to be made by the gas industry and our partners in pushing the envelope.

From individual targets to group initiatives, the gas industry has shown both commitment and action – often via voluntary and highly ambitious initiatives. Some examples include: Global Methane Alliance targeting a 45% reduction by 2025; Oil and Gas Methane Partnership (OGMP 2.0), aiming to track performance; Methane Guiding Principles (MGP) to advance action to continuously reduce the methane intensity of oil and gas operations (OGCI), reaching its 2025 target to bring down methane emissions intensity to 0.25% early, and raising it to well below 0.2%, and Global Methane Initiative aimed at identifying and deploying practical and cost-effective mitigation technologies and methods. These are just some of the international examples, and there are many regional and local ones.

The gas industry has been actively working to minimize and eliminate emissions for decades, yet in the last few years, it has especially stepped up these efforts in recognition of the urgency to support the energy transition. Without a doubt, there is more to be done. No two gas systems are created equal – around the world, and across the value chain – and while there can be significant, cost-effective reduction opportunities in some areas of the global energy system, others may be facing diminishing returns on reductions investments – if for instance the baseline is already extremely low and near zero. The methane science and technology have been rapidly advancing and environmental uncertainty strengthening, so having the industry’s effort to go above and beyond existing safety requirements.

Reducing the global methane emissions is the right thing to do. Mitigating and eliminating methane emissions from the gas value chain provides an opportunity to ensure the industry can meet its commitments to securing a sustainable energy future, in which natural gas today, and increasingly low carbon, renewable, and decarbonised gases in the future, will play a vital role.
ESG at forefront as European interest peaks in African gas

Africa has certain advantages as a possible substitute for some of the gas that Russia has been supplying to the EU, but it also could face certain challenges from an ESG standpoint. International energy companies could respond to these challenges by emphasising their willingness to support African energy poverty abatement initiatives.

Jennifer Delay

The EU is currently facing a challenging set of circumstances with respect to natural gas supplies. The biggest challenge, of course, is Russia. That country has long been the continent's largest single supplier of gas. In 2021, data from the International Energy Agency (IEA) shows it provided the EU with about 155 bcm of gas, equivalent to no less than 45% of total imports and 40% of total consumption. This level of dependence has been a source of unease in Brussels for more than two decades, but this unease rose to the level of acute discomfort in the wake of the beginning of the Russia-Ukraine conflict in late February of this year. It led the EU to start contemplating serious measures, including the possibility of sanctions, to wean itself off of Russian gas. Perhaps just as importantly, it led a number of major European companies to stop buying Russian gas, even in the absence of sanctions, in order to avoid reputational damage.

In other words, European gas buyers' moved to stop buying Russian gas - or at least, to make plans for (or talk about) doing so. Nevertheless, this approach raises the question of how to replace all the gas that Russia has been providing.

There is, of course, no way to replace all of those volumes at once. There is simply no other single supplier in a position to provide the EU with gas in quantities comparable to Russia. There are also no such spare volumes in the market as a whole to substitute the gas from Russia entirely, until new supply comes online.

Thus, the EU also faces the challenge of finding a new combination of suppliers to replace Russian gas.

African advantages

In the face of such complications, it is hardly surprising that the EU would look to Africa as a potential source of gas. Africa has at least three major advantages at this moment.

On the one hand, it has the benefit of geographical proximity. Parts of North Africa are very close indeed to Southern Europe, and even the more distant portions of the two continents have some links via established maritime trade routes.

It also has the benefit of being, at least to some extent, an established gas supplier to the European market. Algeria has been delivering gas to Europe for years, and it has the subsea pipelines, LNG plants, tanker berths and LNG terminals to demonstrate its position as a reliable supplier, shipping 53 bcm of gas to the continent in 2021. Libya has an underwater pipeline across the Mediterranean to Italy, although that link goes mostly unused. Egypt has two onshore LNG plants and is working to set up an offshore LNG hub. Nigeria has the Nigeria LNG (NLNG) plant, with six production trains and plans to add a seventh.

Finally, Africa also has significant reserves of undeveloped gas. Nigeria alone has 5.7 tcm in proven natural and associated gas reserves, and there are millions of cubic metres more in frontier provinces offshore Senegal, Namibia, South Africa, Mozambique and elsewhere.

The rest of the story

Challenges faced by Africa as an alternative gas supply source for Europe do exist.

"Connecting infrastructure to deliver the volumes needed to European markets is needed, and new supply needs to be developed to provide more volumes to the market," the IGU notes. "All of that requires financing, for which Africa will have compete with other potential sources, including North America."

There are also challenges posed by political instability, such as that impacting Libya’s ability to get gas flowing through the Greenstream pipeline again, as it struggles with labour strikes, protests and factional clashes.

Finally, there are challenges to demonstrate that
In the face of such complications, it is hardly surprising that the EU would look to Africa as a potential source of gas. Africa has at least three major advantages at this moment.

**Energy poverty is an ESG issue**

Environmental, Social, and Governance (ESG) considerations are increasingly important drivers of investment decisions. Gas development in Africa provides an opportunity to alleviate its dire energy poverty, and as such, this is a potentially strong score on the ESG rankings. The continent is currently home to around 1 billion people, and more than half of them are currently living in conditions that do not afford them reliable, steady access to electricity and clean fuels. Instead, they depend on traditional biomass-based fuels—wood, charcoal, or dung—all of which pose significant health risks to their users because of the harmful smoke they produce. Wood and charcoal, meanwhile, also contribute to deforestation.

As the African Energy Chamber (AEC) has pointed out repeatedly, this is a human rights issue—and it is a human rights issue that gas can help remedy quickly and efficiently.

IOCs that are willing to engage with ESG-related questions ought to view African energy poverty abatement programmes as an opportunity. These programmes represent an opportunity to supply European customers with gas while providing Africans with a service that is valuable from an ethical and economic standpoint—and that also has the added benefit of discouraging deforestation and improving health outcomes by reducing wood burning.

Companies that choose this path will have to bear the costs involved in setting up the infrastructure to serve domestic markets. But the value returned by economic development and improved quality of life potentially for millions could make it worthwhile.

# Global Voice of Gas

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GLOBAL VOICE OF GAS
In a welcome show of progress, the government of Tanzania, Shell and Equinor have signed an initial Host Government Agreement (HGA) for the $30bn Tanzania LNG project. But there may be more challenges ahead for this oft-delayed initiative, such as competition from established LNG suppliers.

JENNIFER DELAY

Tanzania's government has taken a major step forward on a project that was, until relatively recently, making little to no progress. On June 11, it signed an initial Host Government Agreement (HGA) with Norway’s Equinor and the UK’s Shell on a $30bn LNG project.

The HGA lays the groundwork for the parties to negotiate a deal on the Tanzania LNG scheme, which envisions the development of three offshore sites – Block 2, operated by Equinor, and Blocks 1 and 4, operated by Shell – and the construction of a natural gas liquefaction plant in the southern Lindi region. The LNG plant will process gas from the deepwater offshore blocks, which are estimated to hold about 35 tcf (991 bcm) of gas. It will have two production trains with a capacity of 5 MTPA each.

The signing of the agreement represents a triumph for Tanzania’s President Samia Suluhu Hassan, who made the project a priority after assuming office upon the death of her predecessor John Magufuli in March 2021. Magufuli had treated another energy project – namely, the $10bn Lake Albert Development Project (LADP), encompassing the development of the Tilenga and Kingfisher oilfields near Lake Albert in Uganda and the construction of a crude export pipeline through Uganda and Tanzania to the port of Tanga – as more important. As a result, he did little to resolve the commercial disputes that caused discussions on all components of Tanzania LNG to stall out, preventing the signing of a final HGA by the original target date of 2019.

Another supplier for the market

Ostensibly, it is also good news for global energy markets, which have been under considerable pressure this year. Oil, gas and fuel prices were already trending upward at the beginning of 2022, but the bulls came out in full force following the outbreak of the Russia-Ukraine conflict in late February, as this event led many Western countries (and many major Western companies) to stop buying Russian oil and gas.

It has also led EU leaders to decide, as a matter of policy, that the bloc must stop using gas from Russia, which has long been the continent’s largest single supplier. In March, officials in Brussels unveiled a plan for cutting Russian gas imports by two thirds before the end of 2022 and then bringing them down to zero by 2030.

Under these circumstances, EU member states are eager to find new sources of gas supply, and a number of them are looking to Africa. German chancellor Olaf Scholz, for example, talked up Senegal’s potential during the first stop on his multi-nation tour of Africa in May and said German companies were keen to help that country carry out gas and LNG projects. Meanwhile, Italy’s prime minister Mario Draghi has expressed interest in working more closely with Egypt, Libya, Algeria and Angola to boost gas supplies to Italy, and foreign minister Luigi Di Maio and the Italian major Eni have signed several deals designed to support this goal since April.

As such, the news that Tanzania is moving closer to entering the ranks of LNG suppliers ought to lift the spirits of the EU member states that are trying to figure out how to replace all the gas that has been coming into the bloc from Russia. And it is a great deal of gas;
Enthusiastic responses

The signing of the HGA has drawn applause from a number of industry observers.

One of these was Douglas Rycroft, the director of Global Voice of Gas. He sees this development as very positive: "The agreement paves the way for studies and a potential final investment decision (FID) that could finally bring an end to years of waiting for another potential African hydrocarbon powerhouse," he says. "Current and near-term market fundamentals are hugely supportive of the development of the planned 10 MTPA facility, while the news is positive for the further buildout of the Tanzanian energy sector."

The African Energy Chamber (AEC) also waxed enthusiastic, praising the HGA and declaring that the deal demonstrated the success of Suhlu’s reformist policy approach. "The signing of the $30bn initial LNG HGA by Her Excellency Samia Suluhu Hassan is a big win, not only for Tanzania but for Africa at large," said AEC’s executive chairman NJ Ayuk in a press release. "The chamber both welcomes this historic development and encourages other African countries rich with natural gas to follow suit. The signing represents the same push, but with a (reform-minded) president and should be commended. When we open up Africa and create enabling environments for investment, capital will flow in, and this deal is an example of that."

A more measured take

David Thomson, vice president for sub-Saharan Africa research at Welligence Energy Analytics, has a more cautious response to the announcement of the initial HGA. Thomson believes Tanzania has the proper resource base to support the project under discussion. LNG plants must have access to approximately 1.1 tcf (31.15 bcm) of gas to sustain 1 MTPA of production capacity, he noted.

In the balance

Tanzania may have just taken a step toward a future in which it will be a valued new supplier of gas to the global market, which is undergoing a profound transition as the European Union shakes off its traditional reliance on Russian supplies. But on the other hand, it may also be in a precarious position, in which it has a significant amount of a commodity that the rest of the world would like to have more of, but has difficulty securing the means to develop quickly enough to outpace competing suppliers.

President Suluhu will have to work very hard to help this high-priority project succeed.
Angola is best known as an oil producer, and there are good reasons for that. It is the second-largest producer of crude in Africa and a member of the Organisation of Petroleum Exporting Countries (OPEC), and offshore oil projects and related operations generate about half of its GDP, a super-majority of its state budget funds and an overwhelming majority of its export revenues. However, the country does not just have oil. According to figures published by the National Petroleum, Gas and Biofuels Agency (ANPFG) agency earlier this year, Angola also has 13.5 tcf (382.3 bcm) of natural and associated gas.

This is enough gas that the international oil companies (IOCs) working in Angola started considering LNG projects in the late 1990s, and some of those IOCs went on to support the construction of Angola LNG, a 5.2 MTPA gas liquefaction plant in Soyo. That facility, built by a consortium that now includes Chevron (US), BP (UK), Eni (Italy), TotalEnergies (France) and Sonangol, the national oil company (NOCI) of Angola, came on stream in 2013. It processes associated gas from a number of the offshore oil fields that are being developed by its shareholders, as well as several offshore natural gas deposits, at its single production train, which can turn out 5.2 MTPA of LNG. The Angola LNG plant has not always operated at its full design capacity, but interest in its production is sure to pick up as a result of recent developments. That is, now that the EU has decided, as a matter of policy, to reduce and eventually to eliminate its dependence on Russian natural gas imports, buyers in its member states are looking for new sources of supply. However, the outlook is not entirely rosy. One major challenge facing the sector is the overabundance of associated gas.

Advantages – and a big challenge
On balance, then, Angola’s gas sector has some features that are likely to be a net positive over the next few years. It has substantial reserves, and it already possesses LNG capabilities. Additionally, it is operating in an environment that favours producers, as recent geopolitical events – namely, the Russian invasion of Ukraine, which has made Western gas consumers increasingly reluctant to buy from Russia – have heightened interest in diversity of supply. However, the outlook is not entirely rosy. One major challenge facing the sector is the overabundance of associated gas.

What’s wrong with associated gas?
It has already been noted above that Angola possesses both natural and associated gas. Moreover, both types of gas serve as feedstock for LNG production; Angola LNG processes natural gas from the Atum, Enguia, Polvo and Quiluma fields as well as associated gas from oil fields within Blocks 14, 15, 17 and 18. However, most of the country’s gas is associated gas. That is, it is contained within oilfields and is extracted within the process of crude production. This is not exactly surprising; indeed, it is characteristic of gas reserves along that section of Africa’s offshore zone. South of Angola, most of Namibia’s newly discovered gas reserves consist of associated gas that will have to be painstakingly separated out of crude oil. Northward, most of the gas in the zone assigned to the Republic of Congo (ROC) is also associated gas.

This prevalence of associated gas makes Angola different from the parts of Africa where more natural gas is available. According to The future of African oil and gas: Positioning for the energy transition, a report released by McKinsey & Co. on June 8, associated-gas accounts for more than one third of Africa’s total gas output. More specifically, it makes Angola’s gas sector directly dependent on the fate of the oil sector – and thus, by extension, on the energy transition. The McKinsey report made note of this dependency, pointing out that “the resilience of gas production in Africa is linked, at least partially, to the resilience of the continent’s crude oil production.” It also classified Angola as having relatively low resilience in comparison to other gas-producing states that relied on oil as a key source of revenue and economic activity.

In plain language, what this means is that as the world seeks to phase out the use of petroleum-based fuels, investors will have fewer obvious reasons to develop Angola’s offshore oilfields – even if gas, as a lower-carbon fuel, remains in use for a longer period of time. As such, IOCs are likely to lose interest in the prospect of extracting oil they do not need in order to obtain the gas they do need, especially since that gas they need is inescapably mixed up with the oil – especially if lower-cost and lower-carbon gas development opportunities are available in other locations.

JENNIFER DELAY

Angola’s gas sector is set to reap some benefits in the short term, largely as a result of Europe’s search for new suppliers to replace pipeline supplies of Russian natural gas. In the long term, however, Angola faces challenges from the fact that most of its reserves consist of associated gas, tying their prospects with oil demand growth.

Angola and its associated gas
Energy transition: Managed decline?

This naturally raises the question of how Angola’s gas sector can best manage the coming shift to renewables. The solution proposed by McKinsey & Co. is for relatively low-resilient African oil producers to make their hydrocarbon sectors more cost-competitive and less carbon-intensive, and thus more attractive to investors and more open to spending on renewable energy projects.

“These countries could further strengthen the resilience of their resources by considering initiatives to decarbonise their existing oil and gas operations and encouraging investment in lower-carbon energy infrastructure such as gas pipelines. This could reduce the risk of stranded gas resources,” the consultancy wrote in its report. “Countries in this archetype could diversify their energy revenues by fostering an enabling environment to encourage scale-up of renewable-energy projects that provide exposure to new energy revenue streams and help to ensure energy supply.”

There is some value in this approach, in that it could serve to convince outside investors that Angola has a favourable business climate and is committed to decarbonisation. But it does not erase the fact that most of the country’s hydrocarbon reserves take the form of oilfields - and that most of its gas is of the associated variety.

According to figures published by the ANPG agency earlier this year, Angola has 13.5 tcf of natural and associated gas.

This preponderance of oil and associated gas means that Angola is likely to become less interesting to IOCs as time passes and as the transition to lower-carbon energy progresses.

Certainly, the drop-off in interest levels will not be immediate. The world still requires the crude that Angola produces and the refined fuels that can be made from its oil, and it finds itself in greater need of Angola’s natural and associated gas as a result of the Russian invasion of Ukraine, which has thoroughly disrupted global energy markets. Over time, though, decarbonisation will bring demand for fossil fuels down. Petroleum-based fuels are expected to be the first to go, with gas remaining for a longer time because of its lower emissions levels. But in Angola’s case, the fact that this gas is associated may tie it with oil’s fate.

This is not good news for Angola, given its relative overabundance of associated gas. The country may be able to buy a temporary reprieve if it undertakes a massive exploration campaign and finds large natural gas reserves, but there is no guarantee it will succeed in doing so.

Internal benefits

In the meantime, is the Angolan government taking action to ensure that the country reaps benefits from gas that are beyond merely financial? If so, to what extent does Luanda intend to pursue domestic gasification initiatives that might benefit ordinary Angolans, as opposed to revenue-generating LNG export programmes?

The answers to these questions appear to be yes, but not to a great extent.

That is, Angolan authorities have taken some steps to promote domestic gasification. For example, they authorised the construction of the Angola LNG plant with the understanding that the consortium would be delivering some of its LPG production to the local market, where it could be used for clean cooking and home heating fuel. In Angola, as in many African countries, many households have no alternative to biomass fuels such as wood, charcoal or dung for lighting or cooking. As such, many of the country’s citizens remain vulnerable to the safety and health hazards posed by such fuels, as well as the greater risk of deforestation. And since its launch in 2013, Angola LNG has supplied most of the LPG consumed in Angola. As of last year, the figure stood at about 90% of the total, according to official data.

More recently, Angola’s government has approved and funded other domestic gasification projects, including plans for the construction of new storage and distribution facilities around the country. Thus far, however, its efforts have been relatively small in scale. Consequently, Angola’s domestic gas consumption levels have remained low. They do not appear to be headed for a major increase, given that government officials devote far more attention to crude oil exploration, production and refining than any gas-related activity.

This is perhaps inevitable, given the large share of associated gas in the country’s resource base. However, it is also unfortunate. Nearly half of Angola’s citizens still depend on traditional biomass fuels, so domestic gasification would have a significant impact on the population.
Establishing gas markets within Africa: Senegal and Ghana

Relatively little attention has been given to efforts to develop and establish gas markets within Africa itself. It is worth examining two such initiatives in Senegal and Ghana.

JENNIFER DELAY

Much of the time, mainstream press coverage of Africa’s natural and associated gas industry does not focus closely on Africa itself. Instead, it looks at the international oil companies (IOCs) involved in exploration and development projects and assesses their plans for exporting gas to other regions of the world via pipeline or tanker. Or it considers the question of what African governments might or might not be doing to attract foreign oilfield service providers (OSPs) and tanker. Or it considers the question of what African governments might or might not be doing to attract funds for the building of the pipe. It also noted at the moment that it would use the funds to identify suitable sites to market for local consumption. SGN said at the time that it would use the funds to identify suitable sites to market for local consumption.

From a business standpoint, this means that Africa represents an opportunity. For the gas industry, that opportunity could take the form of finding ways to deliver fuel to African consumers in heretofore untapped markets. And for gas-producing states in Africa, it could take the form of taking steps to ensure that those untapped markets operate both efficiently and fairly.

So far, this opportunity has remained mostly in the theoretical realm. The reasons for this are not difficult to discern. Africa’s relative poverty often complicates efforts to keep gasification programmes fiscally stable and self-sustaining. Even in cases where IOCs ease the way by making a share of their production available to local authorities, corruption and insufficient infrastructure can hamper efforts to process, transport, distribute, sell and collect payment for gas or fuels derived from it.

Nevertheless, there have been some attempts to establish new frameworks for local gas consumption in African states that are new to the gas industry. This article will take a brief look at initiatives in two such countries: Senegal and Ghana.

Senegal: State agencies and a central pipeline

Senegal has not yet officially begun extracting natural gas. However, it is due to take that step next year, when the UK’s BP and US player Kosmos Energy bring Greater Tortue/Ahmeyim online. This gas-bearing block, which straddles Senegal’s maritime border with Mauritania, contains about 15 tcf (425 bcm) of gas. It will support an export-oriented LNG project along with eventual pipeline deliveries to Senegal’s domestic market.

The GTA gas flowing through that pipeline will be under the authority of Senegal’s state natural gas concern, Senegal Gas Network (SGN). At present, though SGN doesn’t actually have much of a network. This is not exactly surprising, given that it was only formed in 2019 by the national oil company (NOC) Petrosen and the national power provider Senelec. But it is working with a number of other public-sector and multilateral agencies to lay the groundwork for domestic gasification.

One of those partner agencies is the US Trade and Development Agency (USTDA). In 2020, USTDA extended a $1.3mn grant to Dakar to pay for a feasibility study of plans for the construction of the country’s first major onshore gas pipeline. The agency did so with the understanding that Senegal’s sovereign wealth fund, Fonds Souverain d’Investissements Stratégiques (FONSIS), would use the results of the study to help attract funds for the building of the pipe. It also noted at the time that Senegalese authorities intended to use the gas largely for power generation.

Meanwhile, FONSIS and SGN also joined forces in 2021 to sign an agreement with Africa Finance Corp. (AFC), a pan-African multilateral institution that finances development projects, and UK-based West African Energy (WAE) on financing and support for the government’s gas pipeline network plan. Under that agreement, AFC will provide SGN with $245mn in funding for the development and establishment of a pipeline network that can transport gas from production sites to market for local consumption. SGN said at the time that it would use the funds to identify suitable partners and consultants, cover the cost of front-end engineering and design (FEED) work and support its efforts to arrange funding for pipeline construction.

Even with all this activity, Senegal is not on the road to domestic gasification in the immediate future. Instead, the process is likely to take two to three years. That is, BP and Kosmos have agreed to send some gas from GTA to shore, but they will not do so as soon as they begin production. Instead, the first field to provide gas for the Senegalese market is expected to be Yaakar-Teranga, another offshore site where BP is serving as operator. The USTDA study will assess the feasibility of building a 135- to 155-km pipeline capable of 2.5 tcm of gas from that field to shore for subsequent delivery to nine thermal power plants (TPPs). Five of these TPPs are already in place but are currently burning residual fuel oil, and Senelec hopes to finish building the other four by the end of next year.

This is fortunate timing, as Dakar expects BP to make a final investment decision (FID) on the Yaakar-Teranga project before the end of this year. Thierno Seydou Ly, the Senegalese Ministry of Petroleum and Energy’s director of Hydrocarbons, said in March that the field could start production in 2024 if the government keeps this deadline.

Presumably, then, SGN is looking to build pipelines and begin the process of establishing Senegal’s centralised gas network over the next two years or so, while BP and its partner Kosmos prepare to begin development work at Yaakar-Teranga – with gas from GTA following later, perhaps. The goals of this process are to increase Senegal’s domestic electricity production, thereby improving standards of living and supporting economic development, and to promote the use of a cleaner-burning fuel.

Ghana: Regional hub for LNG trade

In another part of West Africa, Ghana is taking a different approach toward building up gas demand within Africa. Rather than concentrating mostly on domestic opportunities, as Senegal has done, it is also investigating the potential for cross-border trade. Moreover, it appears to be doing so via a process that involves both private- and public-sector entities – unlike Senegal, where gasification has mostly involved public-sector agencies making arrangements for using gas produced by IOCs.

Ghana is still a relative newcomer to the gas industry, as it did not begin full commercial natural gas production until 2014, when the offshore Jubilee field came on...
stream. As of November 2021, though, it was reported by a representative of state-owned Ghana National Petroleum Corp. (GNPC) to be extracting gas at the rate of 280 mmcfpd, equivalent to 2.89 bcm a.

These volumes are already put to good use locally, as they are piped to shore for processing and delivery to local gas-fired TPPs. In fact, Ghana’s gas demand is strong enough that the country must import gas by pipeline from neighbouring Nigeria and by tanker from foreign LNG suppliers to meet demand.

Even so, Ghanaian organisations are eyeing the regional market, which they see as full of opportunities for suppliers of fuel. One such organisation is Tema LNG Terminal Co. (TLTC), an entity formed with the backing of Helios Investment Partners and African Infrastructure Investment Managers (AIIM) that owns the offshore Tema LNG terminal. In August 2021, TLTC revealed that it was working with an affiliated entity – Ecow-Gas, an infrastructure development company based in the Netherlands – to set the Tema terminal up as a regional gas supply hub. It expressed particular interest in supplying LNG to Liberia and Sierra Leone and explained that Ecow-Gas had won the exclusive right to build and operate new LNG regasification and storage facilities in these two states.

Just a few months later, in January 2022, GNPC expressed support for TLTC’s plan to make the country a regional hub for LNG trading. Hamis Ussif, the NOC’s manager for gas, told Bloomberg in an interview that his company intended to import LNG via the Tema terminal and then sell it onward to buyers in Ghana and elsewhere in the region. One likely market is Benin, which has already asked GNPC for help in securing additional gas supplies, he said. He went on to say that the NOC had already investigated a number of options for economical overland transport of small-scale LNG cargoes, saying that the company was prepared to deliver fuel via combinations of barges, pipelines and trucks.

Once again, though, even with all this activity, Ghana’s plans are not likely to come to fruition immediately. The Tema terminal project has been under discussion for some time, and its backers have said many times that they expected to take delivery of their first LNG cargo from Shell in just a few months – and just as many times, they have adjusted their schedule and pushed their deadlines back. As it happens, Ussif told Bloomberg in January that he expected TLTC to receive its first cargo in the second quarter of 2022. As of this writing, the quarter is rapidly drawing to a close, so another adjustment is probably imminent.

Conclusion

Despite the challenges described above, both Ghana and Senegal are making commendable efforts to develop and establish gas markets within Africa. The two states are approaching the matter quite differently, with varying degrees of state involvement and varying degrees of cooperation with IOCs. However, both are seeking to bring fuel to underserved consumers, and their efforts deserve closer study.