



AT THE SHOW

Putting business leaders together	Page 9
Interview with LNG2019 chairman	Page 10
South Korea's plans for IGU	Page 11
Scenes from the show	Pages 12&13
Programmes	Pages 14&15
Digital communities	Page 16

Host Partners:



Principal Sponsors:



27th WORLD GAS CONFERENCE WASHINGTON DC

THE OFFICIAL WGC 2018 SHOW DAILY BY



Friday 29 June 2018
upstreamonline.com

Gas has energy in the pipeline

SENIOR energy sector leaders expressed optimism at WGC 2018 about the broad potential of North American pipeline projects amid an abundance of US natural gas, but expressed concern that opposition groups could derail the full potential of the abundant resource.

Pages 4&5

US Energy Secretary Rick Perry

Photo: ANDREW MANGUM

Algerian bounty
Country looks to attract international investment to its shale sector. [Page 6](#)



Renewables knock
'New animal' poses tough competition for fossil fuel industry. [Page 7](#)

Industry opinions
Three Q&As with sector leaders over future direction for gas industry. [Pages 8, 18&20](#)

Mozambique quest
Gas sector opens door to huge levels of investment. [Page 17](#)

Mexico signs deals
Bid round awards sealed for batch of operators. [Page 22](#)

Tariff case verdict
Norwegian state wins lawsuit brought over cut to gas transportation rates. [Page 24](#)

upstream
Get up to speed with the latest news from the world of oil and gas. Visit us at Stand C5 or log on to www.upstreamonline.com

ConocoPhillips keen on smaller scale LNG

[Page 2](#)

Gas industry has work to do to secure future role

[Page 3](#)

EXPERIENCE COUNTS

Woodside has demonstrated world-class capabilities during more than 60 years exploring, developing, producing and supplying oil and gas.



Please visit us at stand #1621

woodside.com.au



Indonesia to wait for next FSRU

INDONESIA'S next liquefied natural gas floating storage and regasification unit will now be "post 2020" as the republic has challenges to overcome before it can realise its touted small-scale LNG ambitions, writes *Amanda Battersby*.

State-owned oil company Pertamina and national electricity company Perusahaan Listrik Negara have ambitious plans for small-scale LNG to bring clean fuel to customers, particularly in the remote eastern part of the archipelago.

Various tenders have been touted and some already floated for FSRUs, mini-FSRUs and small LNG carriers as part of Indonesia's grand small-scale LNG plan.

Ensuring affordability for customers is one key challenge, according to Pertamina engineering manager, Maya Kusmaya.

"We have to consider the price, the affordability" to ensure that customers "can absorb the LNG at a certain price," he told the World Gas Conference.

"The challenge that we face from this small-scale LNG distribution is that we have to find efficient, effective logistical infrastructure, because the volumes can be very small... sometimes only 0.5 or 0.1 million cubic feet," added Kusmaya.

Also capital expenditure is a very real concern — many of the frontier areas that Pertamina is eyeing do not have public jetties or supporting facilities.

Jetties and related storage tanks make up a significant slice of the up-front cost of small-scale LNG projects and securing financing for these is understood to be a headache.

"This will be a very complex project, involving complex distribution logistics and also some new technology in small-scale LNG carriers especially with lower draft because some of the locations may [be on] very shallow rivers," said Kusmaya.

Another issue for this ambitious LNG distribution project will be to line up skilled labour for the operation and maintenance of the facilities, particularly in outlying islands.

PLN and Pertamina intend to initially distribute locally produced volumes from the Tangguh Train 3, Bontang and potentially Donggi Senoro liquefaction projects.

However, Indonesia could well find itself an importer of LNG if new gas fields are not soon exploited.

Sourcing volumes from various sources could present another headache for Indonesia given the tight specification of gas that is required as feedstock in PLN's power plants.

LNG



Looking forward:
Mike Culligan, manager,
LNG technology &
licensing, ConocoPhillips
Photo: ANDREW MANGUM

ConocoPhillips keen on smaller scale LNG options

US giant argues market has a **growing appetite** for **lower and medium** end of the scale developments

KATHRINE SCHMIDT
Washington, DC

US OIL company ConocoPhillips is keen on the potential of small and mid-scale liquefied natural gas projects, arguing that the market for this kind of production is continuing to gain momentum.

The US independent's Optimized Cascade Process has been a staple technology for decades in some of the world's largest LNG plants, but there are also opportunities seen for more diminutive projects.

"Our technology is unique and it's very scalable," Mike Culligan, ConocoPhillips manager, LNG technology and licensing, told a panel at WGC 2018.

"From 1 million tonnes per annum all the way up to 7 million tpa, we can design and build plants... We do have a very strong interest in helping the world build out small to mid-scale projects where it's appropriate."

ConocoPhillips is known for its Optimized Cascade Process, first

implemented at Alaska's Kenai LNG plant in 1969, which went on to be licensed by a wide range of high-profile projects, including Wheatstone LNG in Australia, Atlantic LNG in Trinidad, and Sabine Pass and Corpus Christi LNG in the US.

The company also holds equity in LNG projects in Australia and Qatar.

Citing IHS Markit data, Culligan indicated about 11% of today's LNG capacity includes trains of 3 million tpa or smaller, with about 3% of current global production coming from facilities with trains of 1.5 million tpa or smaller.

For projects in construction, about 8% of that 90 million tpa of capacity have projects with trains of 1.5 million tpa or smaller. For projects that are in or have completed a front-end engineering and design phase, about 14% fall into that smaller and midscale range. "There's a pick-up in the

number of trains being built at that smaller train size," Culligan said. "There will be a growing trend of capacity coming from small to midscale trains."

In the broader perspective, however, smaller scale LNG is an "important and growing piece of the puzzle, but by no means a revolution".

However, with affordability as a key aspect, project execution is ever more important regardless of the scale of the project, he said.

"The real focus among a lot of developers and engineering, procurement and construction contractors especially, is really a more back-to-basics approach of removing costs and scope that may have bloated and made projects more expensive, and just smarter execution through modularisation," he said.

"That's really what's driving lower-cost plants now (more) than

technological innovations." He suggested standardisation in general — rather than any specific construction model — is also a key aspect to bring down costs.

ConocoPhillips is not presently involved in any small-scale US projects at or beyond the FEED stage, Culligan told Upstream on the sidelines. But he told the panel he does see scenarios particularly in the US market that could make sense for such projects.

"You like to be in a place with the cleanest, sweetest gas with the most infrastructure already there," he suggested, although he did add that some greener field projects with a particular advantage or minimal infrastructure could work as well.

"So, a US Gulf Coast brownfield location that requires a relatively simple incremental expansion that could be done in smaller bites... that's really where to be, on the brownfield side."

OVERVIEW

Industry must grasp the nettle over methane

Gas sector needs to convince **energy users** that fossil fuel has a place in the future mix

BEATE SCHJOLBERG
and JULIA MARTINEZ

Washington, DC

GOVERNMENT regulation, innovation and transparency to combat methane leaks are key factors that need to be tackled for the natural gas industry to convince energy users that gas is a fuel for the future, industry players say.

Winning the argument for using natural gas has to start with putting methane at the front and centre of the issue, BP's upstream chief executive Bernard Looney said in a panel debate at WGC 2018 in Washington.

"Many see gas as part of the past and not part of the future, and they certainly see it as part of a problem and certainly not as a solution," Looney said.

"The energy transition that is happening in the world is, quite frankly, hard enough already as a challenge, without adding that to the mix."

If the industry wins the natural gas debate, Looney said it will have the future it deserves, both as a destination fuel but more so a transition fuel.

But in 2018, in what chief executive for OGC Climate Investments, Pratima Rangarajan, calls the "year of methane", the industry is already short on time.

Backed by 10 major oil companies, OGC Climate Investments in 2016 set up a billion-dollar fund to invest in technologies to reduce greenhouse gas emissions.

"Time is really our biggest challenge at this point," Rangarajan said. "I do not think this is an innovation problem - this industry has innovated for years."

Policy and regulations are what will drive markets toward reducing emissions, Rangarajan said. "What we need for scale is for everybody to do it because you have to. If we want scale and if we want speed, we need to make this a public-private partnership."

Areas for innovation include leak detection. "We want to move this from people driving around in cars looking for leaks to something that is getting data 24/7. For that, there are plenty of innovators," said Rangarajan.

Regulation is also important because much of the older equip-

ment that is more prone to leakage is owned by smaller companies that may not have come as far in their anti-leakage work as the larger players, according to Greg Guidry, executive vice president for Shell's unconventional business in the Americas.

"You need broad participation. In the US the regulation is not far off, and it is necessary to get it in place very soon," Guidry said. In addition, companies should also implement voluntary measures that go above and beyond regulatory requirements, he added.

Looney emphasised the issue was not a difficult one, but that the industry must put methane firmly on the map.

"Gas will not win the argument that it needs to win if we do not all put methane as an issue on the table," he said. "We must also not appear defensive or stuck in our own world. We have to be prepared to speak about the issues as well as the benefits."

The challenge with methane leakages is not unlike safety in the sense that companies should not compete against each other, but collaborate to set up common principles and share best practices, Looney said.

Transparency is crucial, according to Looney and other panellists including Donald Chahbapour, director for climate change compliance at gas and power player National Grid.

"Information on methane should be as readily available to investors and the public as financial information," said Chahbapour. Among other things, his company has cut the target for replacing 16,000 kilometres of old pipes to 20 years from 30 to 40 years previously.

US player SouthWestern Energy has noticed clients want details on methane and other climate data when deciding whether to buy gas, said Jennifer Stewart, senior vice president of government and regulatory affairs.

She urged the finance industry to share the responsibility to push for lower methane emissions. "If there was more pressure from

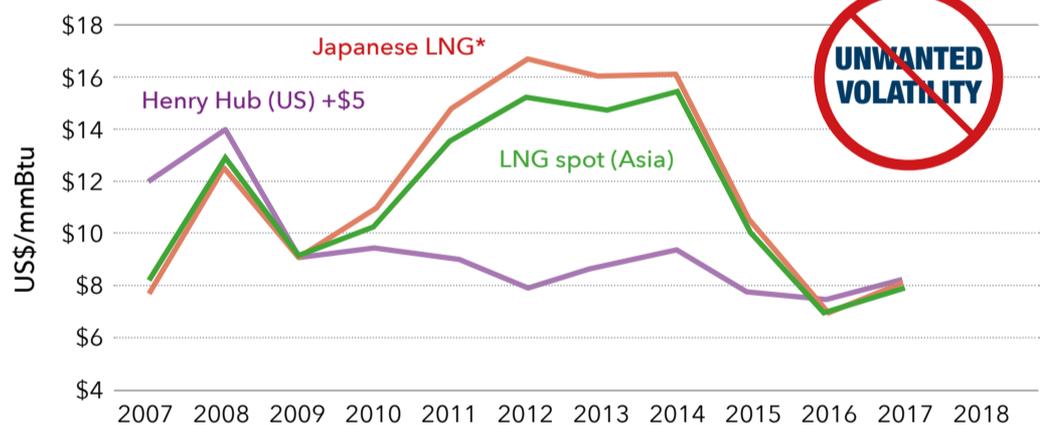
debt and equity capital markets to produce hydrocarbons responsibly, the pressure would be immense," Stewart said. "If capital markets turned off the spigot, that would be very motivating."



Transparency is key:
BP upstream
chief executive
Bernard Looney
Photo: ANDREW
MANGUM

PRICE STABILITY

Natural Gas Prices



* Japanese LNG import price from Australia

Sources: Bloomberg; Thomas Reuters

Alaska LNG offers an unprecedented level of price stability.

ALASKA LNG™

Alaska-LNG.com

A subsidiary of the Alaska Gasline Development Corporation | AGDC.us

ALASKA
GASLINE
DEVELOPMENT CORP.

Gas will not win the argument that it needs to win if we do not all put methane as an issue on the table.

Bernard Looney, BP

US

Leaders say do not let politics dictate pipeline decisions

Infrastructure is key but **US Energy Secretary warns** too many projects are being denied

KATHRINE SCHMIDT

Washington, DC

SENIOR energy sector leaders expressed optimism at WGC 2018 about the broad potential of North American pipeline projects amid an abundance of US natural gas, but expressed concern that opposition groups could derail the full potential of the abundant resource.

US Energy Secretary Rick Perry cautioned against letting “politics” get in the way of building out pipeline infrastructure that is key to supplying major US metro areas in times of crisis or peak demand.

He contrasted his home state of Texas with New York state, where the Constitution pipeline that

aimed to transport Marcellus gas to New York was recently stalled by a series of court challenges after a water permit was denied amid environmental concerns.

Without identifying the project by name, Perry expressed concern about security of supply should the area face threats such as a cyberattack or extreme “polar vortex” weather event.

“Their health and well-being is being put in jeopardy,” he said of inhabitants of the state.

“At that particular point in time, the leadership of that state, that’s keeping pipelines from

being built for strictly political purposes, are going to have a real reckoning. I wouldn’t want to be the governor of that state facing that situation.

“We need to have a conversation in this country: is that a national security issue that outweighs political concerns?”

The transnational fight over the Keystone XL pipeline has been among the highest-profile of the pipeline cases, but far from the only one.

The 125-mile Constitution Pipeline, backed by units of Williams and Cabot Oil & Gas, had applied in 2013 for Federal Energy Regula-

tory Commission (FERC) permission to carry 650 million cubic feet per day of gas to supply New York. The state’s Department of Environmental Conservation (DEC) denied the project a water use permit in 2016.

Pipeline backers filed lawsuits but courts ultimately sided with the DEC and the environmental groups that had filed amicus briefs on the case, and the US Supreme Court declined to take up the issue.

The Natural Resources Defense Council (NRDC) said the court moves have backed a “clear precedent that states have the power to

stop dangerous fracked-gas pipelines within their borders, even after the federal government has otherwise approved the project.”

In documents against the line, the NRDC expressed concern that the pipeline would disturb dozens of communities and hundreds of waterways, impacting trout streams, wetland and clearing almost 500 acres of forest.

Constitution still has recourse to push the project forward by applying to FERC to overrule the prior decisions.

Al Monaco, chief executive of midstream provider Enbridge,





At the conference: US Energy Secretary Rick Perry
Photo: ANDREW MANGUM

said his company sees “huge” opportunity in infrastructure development due to abundant shale natural gas supplies, but faces uncertainty on regulatory issues.

“There’s a looming challenge that could compromise this North American advantage and its ability to gain market share, and that is opposition to traditional forms of energy,” Monaco said.

“That is in particular against pipelines being the main point of attack. Infrastructure and pipelines are essential to realising this competitive advantage.

“Today pipelines are under

siege. Initially it was the green-field projects, then that opposition went to development projects for gas infrastructure. And now it’s going all the way to existing operations.”

The lack of capacity is affecting customers’ pocketbooks through higher oil prices in the northeast, he said.

•• Meanwhile, the Department of Energy (DOE) and the Overseas Private Investment Corporation (OPIC), the government’s development finance institution, have unveiled plans to support US energy companies investing in Latin America. A joint announce-

ment at WGC 2018 said OPIC has committed to mobilise \$1 billion in investments in Mexico’s energy sector over the next three years.

In addition, the DOE will identify regions and sectors throughout Latin America that present opportunities for US energy companies, while OPIC will assist by providing financing.

“This partnership will advance North American energy security and unleash economic growth for our Latin American neighbours,” said US Energy Secretary Rick Perry.

Argentina hopes Vaca Muerta will appeal

THE government of Argentina is hoping to attract new operators and service companies to help unlock unconventional resources in the Vaca Muerta shale formation, writes Fabio Palmigiani.

According to Argentina’s new Energy Minister Javier Iguacel, the Vaca Muerta has about 800 trillion cubic feet of recoverable gas reserves that can be developed throughout the next decades via large investments.

“We think the Vaca Muerta is a great investment opportunity. Over the past few years, we have been copying the model the US has successfully adopted for its shale discoveries in the Permian basin,” Iguacel told a keynote session at WGC 2018.

“We want to share the opportunity (of Vaca Muerta) and our energy resources and be part of the shale revolution,” he added.

Iguacel said Argentina is working hard to become more competitive in the international arena and reduce costs.

“We feel competition and an open market is the way to unlock these resources. We have been reducing costs, but we are still about 25% higher than the Permian basin,” he added.

Argentina has been producing natural gas from dozens of wells in the Vaca Muerta, and output is on the rise with “many projects coming on stream in 2019”,

SEARCH FOR INVESTORS

Country aims to draw in more operators

said Iguacel. Among the new unconventional projects set to progress to full development are Tecpetrol’s Fortin de Piedra and Total’s Aguada Pichana Este and Rincon de la Ceniza in the prolific Neuquen province.

Output from the seven most advanced Vaca Muerta developments is expected to double 2016 levels by the end of the year to 113,000 barrels per day of oil equivalent, potentially peaking at 1.25 million boepd by 2031, according to research company Wood Mackenzie.

Iguacel was appointed Energy Minister earlier this month, replacing Juan Jose Aranguren, after he was dismissed by Argentinian President Mauricio Macri in a cabinet reshuffle amid a financial and currency crisis, as well as an outcry over fuel prices.

upstreamonline.com
Search the archive:
Vaca Muerta

The transition to low carbon is underway and we’re hitting the gas.

To meet the dual challenge of more energy and fewer emissions, we need to make every type of energy cleaner and better.

Natural gas is not just a cleaner alternative to coal in power generation, it’s the ideal complement to renewables as a solution to intermittency. And with our commitment to taking a leading role in addressing the methane challenge, we’re producing more natural gas as we transition to a low carbon future.

See how we’re advancing the energy transition at bp.com/energytransition



Exports can have long reach

INCREASING gas exports from Algeria to its unstable neighbours in North Africa and the Sahel could help reverse the tide of illegal immigrants moving north through the country and on to Europe, according to the chief executive of Algerian state oil company Sonatrach.

"Gas is available everywhere, but it is not available for everyone. We need to find the best way of getting energy to the people that need it," Abdelmoumen Ould Kaddour said at WGC 2018 on Thursday.

The company is investing heavily in pipelines in Algeria to increase access to gas for its 40 million population from its current 60%, but Kaddour sees Algerian gas playing a role in helping create opportunities for people in fractious neighbouring countries to solve the growing immigration crisis.

Algeria is bordered by the likes of Mauritania, Mali, Niger and Libya, making it a transit point for would-be immigrants to Europe from those countries and elsewhere in Sub-Saharan Africa.

"If we do not solve the situation of security, the immigrants will keep flowing up north," Kaddour argued.

"We need to have an overall international strategy to get more sources of energy into those countries so that they can stabilise their populations and give them some sort of opportunities so they can stay where they are.

"We cannot keep going the way we are doing it now," he said.

NORTH AFRICA

Sonatrach in talks as it eyes shale bounty

Algeria hopes to attract international investment to unconventional sector

EOIN O'CONNOR
Washington, DC



Opportunities: Sonatrach chief executive Abdelmoumen Ould Kaddour
Photo: ANDREW MANGUM

ONHYM
المكتب الوطني للهيدروكربونات والمعادن
ΕΘΣΟ | ΗΦΣΛΟΣΡ, ΟΘΣΟ, Λ ΣΚΣΥ, Χ
OFFICE NATIONAL DES HYDROCARBURES ET DES MINES

90 years of Expertise
in Hydrocarbons and Mines
Exploration and Production



www.onhym.com

SONATRACH is talks with a clutch of oil majors as the Algerian state player aims to exploit its vast unconventional gas reserves.

"Algeria is known as having probably the third-largest reserves in shale gas, after the US and China," chief executive Abdelmoumen Ould Kaddour said at the World Gas Conference 2018 in Washington on Thursday.

Energy Minister Mustapha Guitouni said earlier this year that the country plans a new energy law to attract more international investment by promising more tax incentives to operators as a rise in domestic gas consumption has hit export volumes.

Kaddour said on Thursday: "We have around 730 trillion cubic feet of (shale) gas, and this has not been developed as of now. So we are talking to our partners — like Total, Eni, ExxonMobil and Anadarko — to develop this.

Sonatrach late last year said it planned to work more closely with French major Total on shale exploration — as well as offshore, petrochemical and solar energy projects — after the pair settled long-running disputes over profit-sharing on oil and gas contracts.

"Developing the shale gas business is certainly an exciting opportunity for Algeria, because shale gas... is a logistics-oriented business," Kaddour said.

The Sonatrach boss said Algeria has evaluated some of its shale gas fields, with projections that devel-

opment could bring as much as 15,000 jobs per field.

"We are predicting that we can produce between 25 billion and 30 billion cubic metres (per annum) by 2025 and going up to 70 Bcm by 2030 or 2040. That will represent something like \$70 billion of income for Algeria."

However, Kaddour said that international players hoping to break into the country's shale gas sector need to bring more than just field development dollars to the table.

"I would like to see some schools or health facilities being developed around those areas," he said. "If you talked about shale gas 10 years ago, people did not like to see this business developed (in Algeria).

"However, we have explained to them that it is a safe technology and industry and everybody is looking at this development. We are going to create jobs, build schools and health facilities."

Sonatrach itself has said it will invest around \$56 billion between this year and 2022, mainly in the upstream sector and gas pipeline infrastructure.

"We need to invest in finding new resources, new sources of gas. Gas is the most important industry in Algeria," he said.

"We are investing probably around \$10 billion to \$12 billion per year on the development of the gas industry. We rely on partners and we need them to come with technology."

OVERVIEW

Renewables posing challenges

'New animal in an old environment' brings **tough competition** to fossil fuel industry

AMANDA BATTERSBY
Washington, DC

RENEWABLE energy presents one of the greatest challenges to the global gas industry today and in the coming years, according to newly-appointed International Gas Union (IGU) president Joe Kang.

"You have to look at the global energy mix. Fossil fuels used to take around 80% of the global energy mix, suddenly renewable energies jump in — taking 30% of the energy mix," Kang told Upstream.

"That's a huge challenge to the fossil fuels industry. So how are we going to deal with such a new animal in the old environment?"

IGU colleague and spokesman Mel Ydreos added that coal also remains a threat to the gas industry, especially in the "emerging world", despite the drive by many administrations to reduce pollution.

"We have to continue to work on cost competitiveness because coal on a marginal basis is cheaper. And that means we have to be very innovative in the way we drive costs down in all aspects of gas production, shipping, liquefaction — the entire value chain," said Ydreos.

He noted there have been "tremendous" productivity improvements within the upstream part of the gas business.

"In the last five years we've doubled productivity, particularly here in the US in the way we extract shale gas. We've seen cost reductions in the way we build liquefaction plants in terms of the modular nature of construction," he said.

However, replicating the US' shale gas success in other nations might be some way off, said Kang.

"The US is well equipped with infrastructure and so many technologies like fracking, horizontal drilling and measurement while drilling. Other countries, they lack the infrastructure, also there's some bad geology — like in China."

The IGU's stance on fracking is that the process can be carried out "with respect".

"It can be done efficiently, safely and the innovations that have taken place are actually reducing the footprint significantly," added Ydreos. "Gone are the days of not having green completions."

•• Joo-Myung Kang — known by most as Joe Kang — will be officially inaugurated as the new IGU president today during the World Gas Conference 2018 closing ceremony after having his position formally endorsed by the not-for-profit organisation on 25 June.

WGC 2021 will take place in South Korea, while China will be the host three years after that.



Warnings: International Gas Union president Joe Kang
Photo: ANDREW MANGUM

COOEC

An International Energy Service Contractor
Providing **Innovative and Integrated EPCI Solution**

Production
YAMAL PROJECT

Fabrication
QINGDAO YARD

Annual Fabrication Capacity: 270,000t
Total Area: 1,200,000m²
Quay Water Depth: 10-12.4m
Quay Line: 1,645m

WEB: www.cnoocengineering.com
E-mail: international@mail.cooec.com.cn

OVERVIEW

'Enormous' potential ahead for gas industry

On the eve of WGC 2018, **Upstream** surveyed a number of leading figures in the **international gas industry** on topical issues shaping the sector.

Blue Jenkins, EQT Corporation chief commercial officer, responds

Upstream: How do you see the prospects for the gas sector over the coming decade and beyond?

Blue Jenkins: In a word, enormous. North America has enormous resources of natural gas that can be produced very economically. On the demand side, in North America and across the globe we have only just begun to realise the enormous potential for this natural gas resource to contribute to both economic growth and a cleaner environment.



Upstream: How important a role will LNG play both for your company itself and the industry in general over the years ahead?

Blue Jenkins: LNG will play an increasingly important role in energy markets over the coming years as global energy demand increases and governments and consumers seek out cleaner sources of primary energy. In North America, LNG is forecast to be the single largest source of new demand for at least the next decade.

As the largest producer of natural gas in North America, EQT is very focused on this growing demand segment and on partnering with LNG projects that need a reliable partner for gas supply.

Upstream: If you are a producer what percentage of your output is gas today? How has that changed in the past decade and how do you expect it to develop in the years ahead?

Blue Jenkins: EQT is the largest gas producer in North America. Our production for 2018 will be approximately 93% gas and 7% liquids by volume. Looking forward, EQT has ample opportunities for long-term growth within our core development areas and we do not expect that the production mix will change much over the coming years.

Upstream: What are the main challenges that the gas sector faces?

Blue Jenkins: While gas is plentiful in the US and Appalachia, a lack of new pipeline infrastructure into New York and New England has resulted in some very high energy costs and even

the import of LNG from outside the US to supply peak demand needs.

The infrastructure challenge is due to a regulatory environment that does everything possible to impede or stop new projects. This example illustrates a broader principle.

The mere existence of large, very economic resource is only the first step — infrastructure is necessary before the benefits can actually be realised.

Public policy has recently become a higher-profile challenge. Initiatives at the Federal level to subsidise uneconomic nuclear and coal generation may reduce the amount of gas utilised in power generation while also trimming the economic benefits that consumers have enjoyed from lower electricity costs.

Actions taken on global trade also have the potential to damage the ability of US energy producers and many energy-intensive, export-oriented manufacturers to compete in global markets.

Upstream: How can governments help to further encourage the exploitation of gas?

Blue Jenkins: Governments need to be aware of how dramatically global gas markets have changed and the tremendous opportunities created by these changes.

Oil has long been a globally-traded commodity, with significant liquidity and clear pricing. LNG has historically been an opaque and illiquid market.



Focused: EQT chief commercial officer Blue Jenkins
Photo: EQT

However, LNG markets today now look much more similar to oil. This developing LNG market significantly de-risks opportunities for governments to access LNG as a lower-cost and cleaner alternative to both coal and oil.

Governments need to be willing to reassess the place of oil and coal in their energy mix in light of the economic and environmental benefits of natural gas.

Upstream: Can the industry persuade public opinion that gas is part of the solution for the energy transition rather than part of the 'fossil fuel' problem? If so, what more should be done by the industry to try and win that argument?

Blue Jenkins: I hope so. From a purely quantitative standpoint, natural gas is clearly part of the solution rather than part of the problem.

The US is a case in point. Over the past 10 years, a significant amount of coal generation has

retired and been replaced by natural gas.

According to Energy Information Administration statistics, US carbon emissions from the power sector are now at levels not seen since 1993. More than half of this reduction in carbon is the result of utilising natural gas instead of coal.

Natural gas is also a great solution for addressing air quality concerns. In Pittsburgh, where I live, and where historically much of the electricity was generated with coal, the switch to using natural gas over the last 10 years has greatly benefited air quality. The number of 'Unhealthy' air quality days decreased from 28 in 2007 to 1 in 2017.

All of us in the gas industry are members of communities that can benefit from broader use of natural gas. We should all be advocates for the economic opportunities and environmental benefits of this abundant fuel.

Upstream: What is your company currently doing to control emissions and what more do you plan to do?

Blue Jenkins: All of the employees at EQT live, work, and play within the region in which we operate, so each of our employees has a personal stake in minimising the environmental impacts of our operations. At the company level, we have a duty to act in a safe and environmentally sensitive manner.

In practice, this means that that we continuously seek improvements and innovations to conserve energy, reduce emissions, and lessen the footprint of our operations. One of the most significant improvements we've realized is the extension of our lateral lengths from approximately 6000 feet in 2015 to 13,000 feet in 2018.

Doubling our lateral lengths has allowed us to roughly halve our environmental impact across the board. This is not just good policy, but good economics.

27th WORLD GAS CONFERENCE WASHINGTON DC

Friday 29 June 2018



WGC 2018
putting business
leaders together

An Interview with Mr Wang Zhedong, Shenergy Group and LNG2019 National Organising Committee Chairman

The 19th International Conference & Exhibition on Liquefied Natural Gas (LNG2019) takes place in Shanghai, 1-5 April 2019

What are your main objectives for LNG2019?

I have long engaged with the LNG X series, since my own first attendance at LNG 11 in 1995. We are very pleased that the conference will come to China for the first time next April. I strongly believe that LNG2019 will maintain its role as the premier event for the industry, providing us with a close look at the rapid development of China's LNG market within the global value chain. I also hope that delegates will come from all over the world to enjoy the unique charm of my hometown, Shanghai; where the West meets the East.

What can delegates expect from LNG2019?

The delegates at LNG2019 will hear the views and insights of more than 40 Plenary Speakers from regulators, leading energy companies and institutions from around the world. LNG2019 will also feature over 150 papers presented to delegates providing them with cutting-edge insights. LNG2019 will

also be the largest exhibition in the LNG X series history and the event will also offer training, technical and social tours in Shanghai.

Why is Shanghai the best setting to host this event?

Shanghai, as a charming city with global influence, is always the ideal platform for international activities. Shanghai also enjoys a long history of LNG application with the 1st LNG tank built in China in 1999. LNG nowadays meets half of the city's gas demand and powers the sustainable development of Shanghai.

Why did Shenergy want to get involved in organising LNG2019?

Shenergy is the major gas supplier of Shanghai, operating two LNG terminals and LNG shipping and fuelling facilities for vehicles and vessels. As a key member of the Chinese host associations, Shenergy is well placed to contribute to the organisation of the event. We will open our doors to Shenergy

facilities for the technical tours. Shenergy is communicating extensively with partners across the industry to promote LNG2019 to help provide a successful delegate experience.

What support will LNG2019 receive from national and local government and the Chinese major companies?

LNG2019 has the attention of the National Energy Bureau and the support of the Shanghai Municipality. Senior officials will deliver speeches and the Chinese energy majors will actively participate. The three national oil companies will also have a high-profile presence, including presentations from their senior management. COSCO, CSSC and the major downstream gas distributors along the LNG value chain of China have confirmed their attendance at LNG2019 as well.

• *Early bird delegate registration for LNG2019 is now open – visit www.lng2019.com/registration for more information.*



Gas industry has a strong story to tell and it must be

By Joe Hamrock, President and CEO of NiSource Inc

Attending the World Gas Conference has reinforced my belief in our industry and the important role we play in the quality of life around the world. It was an honor and privilege to share the stage with so many leaders focused on advancing the role natural gas plays in serving the needs of customers, building strong communities and enhancing economic development.

While each company serves distinct customers and geographic areas, this forum demonstrated the industry's

progress and underlines that our shared path forward is dependent on our commitment to taking advantage of several key opportunities.

In the years to come, we will look back at WGC2018 as a transformative event that joined the present and future of the industry. Here are a few of the areas I'm eager to take back to NiSource.

We have a strong story to tell and we must be proactive in sharing it with customers and stakeholders. Our industry enables progress and improves

lives and economies. We must engage broadly – with our employees and customers at the core – in sharing the message on the critical role natural gas plays in providing essential energy throughout the globe.

Natural gas is now the No. 1 power source in the U.S. – an unimaginable shift from just a few years ago. Beyond the power sector, natural gas is the hidden ingredient in almost everything we use daily – it's the primary fuel used for heating and cooking, and is an unmatched energy source in

our industrial and commercial processes.

While telling our story, we must proactively and transparently engage stakeholders in an ongoing dialogue, even in the era of digital media. These actions are key to our industry's reputation and our ability to act as a trusted broker in the energy conversation.

Secondly, innovation and progress are happening at

a rapid pace and we have significant opportunities to embrace these changes in ways to help our customers, the environment and our employees. We are safer, more reliable and cleaner than ever before, and we continue to challenge each other to get better. Let's celebrate the progress we've made, sustain the pace of innovation, and





Wang Zhedong
Photo: ANDREW MANGUM

A Few Words About the Republic of Korea's Big Plans for the IGU during its Presidency: Introducing the 2018-21 Triennial Work Program

In its 2018-2021 Triennial Work Program (TWP), the Republic of Korea will build on the momentum created by the previous presidencies and continue to enhance the Global Voice of the international gas industry.

The world is on the brink of an unprecedented global energy transformation, while facing the challenge of meeting growing global energy demand, the need to mitigate greenhouse gas emissions and improve air quality, and the obligation to bring affordable energy to the billion people without it.

The IGU as the global voice of gas, has been focused on tackling these critical global issues. The previous USA Presidency invested tremendous efforts to deal with key industry challenges, and achieved commendable success on many fronts, through stronger engagement and enhanced advocacy and communications. But, much more has to be done.

The Korean presidency will aim to demonstrate that gas is the perfect catalyst for the energy transition, and it will do so through the lenses of environmental leadership, market vitality, and value creation. The foundation of Korea's plan will rest on three pillars of strong advocacy, transparent governance, and delivering value to members.

Welcome to the journey toward World Gas Conference 2021, welcome to Korea!

A Sustainable Future Powered by Gas as an Affordable, Accessible and Abundant Energy Source

A sustainable future powered by gas is the theme of the Korean triennium in the lead-up to the 28th World Gas conference (WGC).

The Korean presidency will work to emphasize that gas is one of the few energy sources that can be used across all sectors of the global economy: to generate electricity, to provide heat and feedstock fuel for essential industrial processes, to provide a variety of domestic applications including heating, and to fuel the transport of people and goods. That makes it the ideal fuel for energy transition.

Strategic Guidelines for the Workplan

To ensure that our workplan remains focused to deliver the sought outcome for the IGU and the industry, we developed a strategic guideline trichotomy. These guidelines will be used by the work of the committees and task forces to inform and focus their work.

STRATEGIC GUIDELINE TRICHOTOMY

Show	Enhance	Propel
Environmental Leadership	Market Vitality	Value Creation
Overcoming environmental challenges	Affordability	Technological innovation
Enhancement of energy efficiency	Flexibility	Collaboration with renewable energies
Advocacy for policy and public acceptance	Policy Cooperation & Partnerships	Accessibility improvement
The gas industry should increase its effort and contribution in overcoming global environmental challenges, while enhancing energy efficiency. With these efforts and IGU's advocacy work, we will endeavor to improve the public acceptance of gas and demonstrate to the global community that natural gas is the key energy source for our sustainable future.	To expand global gas markets in an era of energy transition, we will make efforts to enhance the affordability of gas and remove barriers that could dampen gas demand. We will also work with other major organization to promote the benefits of gas and support the development of informed policy frameworks.	We will encourage technological innovations, to support the role of gas in a greater variety of sectors, including transport and renewables. We will also work on improving the accessibility of natural gas worldwide. Gas could deliver economic and social development and enhance the quality of life. It fuels economic prosperity, creates new jobs. Gas can life people out of energy poverty.

We expect this plan to deliver a great variety of outcomes that will be valuable to our members, from comprehensive reports to seminars, workshops, and shorter informational publications to support advocacy.

This work will be supported by the IGU Committees and three key task forces that were set up.

There are a total of 11 thematic Committees, including: Exploration & Production, Storage, Transmission, Distribution, Utilization, Sustainability, Strategy, Gas Markets, LNG, Marketing & Communication and R&D, and Innovation.

While the three Task Forces (TF) are: TF1, Strategic Communications and Outreach, will have oversight and provide insight to the IGU's strategic positioning and advocacy activities. TF2, Energy for All, will focus on energy access and economic development. TF3, Energy Policy, will carry out case studies identifying the global, national and regional policies that facilitate natural gas use and share these policies with our members and key policy makers.

The only thing left to do is to get started, and the Korean Presidency team and IGU cannot wait to roll up our sleeves and get to work on the Sustainable Future Powered by Gas!

proactive in sharing it

accelerate the acceptance and integration of new technologies and data into our businesses.

Lastly, natural gas IS a critical part of the future of energy in the U.S. and across the globe. As BP Chief Executive Bob Dudley said, "we're a destination fuel." We are all working towards a clean energy future and natural gas has been a key partner in the growth of renewable energy. Natural gas will play a larger role in the energy mix because our industry will continue to make it accessible,

affordable and abundant. It's also the major reason the energy sector has lowered emissions while growing more reliable, resilient, safer, and ultimately, sustainable.

This is a pivotal moment for our industry. Now is the time for us to capitalize on all the benefits of natural gas, while enhancing safety, reliability and the value we deliver.

• *Joe Hamrock is president and CEO of NiSource Inc. He is the First Vice Chair of the American Gas Association.*

A Call for Committee Member Nominations!

THE Korean Presidency Team is currently accepting nominations for Committee working groups from Charter and Associate members.

IGU welcomes the opportunity for hundreds of global professionals and subject matter experts to join to help shape the critical work that the IGU Committees undertake.

Historically, roughly 1000 senior energy professionals from IGU member associations and companies collaborate and produce materials on the industry's most pressing issues and groundbreaking developments to advance the global gas industry.

We look forward to welcoming new members to the IGU team!

*NOTE: Only Charter members, can nominate candidates. If a candidate is not party to the Charter member, they must obtain the Charter member endorsement to apply.

Scenes from the show...



Photos: ANDREW MANGUM/CAROLINE EVANS



WGC 2018 conference program

THE WGC 2018 program benefits from the unrivaled expertise of more than 1000 industry specialists from around the world.

This international outreach helps to create a truly global gas event representing the entire gas value chain.

Some 600 speakers will address technical, commercial and strategic issues and opportunities facing the global gas industry through a mixture of session types including Keynote Sessions and Keynote Luncheons, Current Debates, Industry Insights and Technical & Innovation Center Sessions.

All conference sessions are categorised into these nine areas of interest to help you choose the most relevant sessions for you:



Transmission, Distribution & Storage



Strategy, Pricing & Regulation



Environment & Sustainability



Markets & Utilization



Exploration & Production



Marketing & Communications



Workforce Development



LNG



Research, Development and Innovation

Download the WGC 2018 Event App to access full program information and speaker profiles, plus much more. Password: 27wgc2018



Keynote sessions

8:30am — 10:00am	Keynote: Innovation To Drive The Energy Industry Forward Moderator: Jason Bordoff, Founding Director, Center on Global Energy Policy, Professor of Professional Practice in International & Public Affairs, Columbia School of International & Public Affairs Opening Remarks: Ryan Zinke, United States Secretary of the Interior, United States Department of the Interior Panelists: Rob McNally, Senior Vice President, Chief Financial Officer, EQT Corporation Barbara Humpton, USA CEO, Siemens Corporation Jason Zander, Executive Vice President, Microsoft Azure Fred Krupp, President, Environmental Defense Fund Richard Ward, Vice President, Strategy & Marketing, Baker Hughes - a GE Company	<i>Hall D</i>
1:10pm — 2:25pm	Keynote Luncheon: Energy Systems Of The Future Moderator: David Carroll, President, International Gas Union (IGU) Panelists: Daniel Yergin, Vice Chairman, IHS Markit Ernest J. Moniz, Secretary of Energy (2013–2017), United States Government & President & CEO, Energy Futures Initiative Spencer Abraham, Secretary of Energy (2000–2005), United States Government	<i>Ballroom C</i>
3:55pm — 4:55pm	World Gas Conference 2018 Closing Ceremony Speakers: David Carroll, President, International Gas Union (IGU) Joe M. Kang, Incoming President, International Gas Union (IGU) Ungyu Paik, Minister of Trade, Industry & Energy, Ministry of Trade, Industry & Energy, South Korea	<i>Hall D</i>

WGC 2018 Industry Focus — Fueling The Future

Digitization and Big Data are revolutionizing the energy industry by increasing efficiency and reducing costs, providing opportunities across the industry. Learn more about emerging technology, innovations and cyber-security at WGC 2018, including sessions still to come today:

Today at 8:30 — Keynote Session: Innovation To Drive The Energy Industry Forward

This session will explore:

- The future is coming... we need to be ready!
- How can innovative technologies, business models and operating practices shape the future of the global natural gas industry?
- What are the challenges and opportunities for our industry in preparing for the future?
- Which innovations in the E&P, transport and LNG sectors have had the greatest impact?
- What are the consequences of technological change in the electricity sector?
- Is there a role for hydrogen in the transportation and heat sectors?

Today at 10:20 — Current Debate Session: Forecasting The Future: Predicting The Industry Game Changers And Disruptors

Moderated by Rice University's Baker Institute. Panelists include Sempra LNG & Midstream and Energy Futures Initiative, Institute of Energy Economics, Japan (IEEJ).

Please refer to the WGC 2018 Event App for full programme information.

Special Events

8:30 Young Professionals Program: WGC 2018 Young Professionals Program continues today in recognition of the key role of young professionals in the gas industry. The program aims to acknowledge, develop and support the industry's future leaders.

10:20 Workshop: The Role Of Voluntary Action In Methane Management

Moderator: Brian M. Jones, Senior Vice President, M.J. Bradley & Associates, LLC

Opening Remarks: Bill Wehrum, Assistant Administrator, Office of Air and Radiation U.S. Environmental Protection Agency (EPA)

Panelists: Leonardo Gelpi, Climate Change / GHG Management Manager, Eni Spa
 Melissa Adams, Chief Corporate Social Responsibility Officer, WGL Holdings/Washington Gas
 Richard Hyde, Director External Affairs, Southern Company Gas
 Vanessa Ryan, Senior Advisor, Shale Issues, Chevron Corporation
 Martha Yolanda Herrera Zapata, Project Engineer, Innovation and Technology Center (ICP- Colombian Petroleum Institute), Ecopetrol

This workshop session will discuss voluntary mechanisms in the oil and gas industry and how they play an important role in providing the tools and support necessary to implement successful, transparent methane management programs. It will focus on how current partners are taking full advantage of their widely recognized voluntary programs, specifically the Global Methane Initiative, the Climate & Clean Air Coalition's Oil & Gas Methane Partnership, the US EPA's Methane Challenge Program, the ONE Future Coalition, and API's Environmental Partnership; resulting in increased operational efficiency, safety, and environmental benefits, in a cost-effective manner.

WGC 2018 Closing Ceremony – Join us at 3:55 In Hall D

The Closing Ceremony will culminate with the official handover to the Korean hosts of WGC 2021 and is a chance to reflect on the achievements of the week.

The DC Youth Orchestra who have played for US Presidents and Diplomats will kick off the ceremony and world renowned live artist Joe Castillo will create a captivating 'Sandstory'.

Join us as we say goodbye to America and welcome the Republic of Korea as the new host of the World Gas Conference 2021.

Speakers:

David Carroll, President, International Gas Union (IGU)

Joe M. Kang, Incoming President, International Gas Union (IGU)

Ungyu Paik, Minister of Trade, Industry & Energy, Ministry of Trade, Industry & Energy, South Korea



General information

FOR up to date event information please download the WGC 2018 Event App. Password: 27wgc2018

The app is an essential tool to help you navigate the event and contains the program for the week, speaker profiles, exhibition layout, networking features and much more.

For inquiries please visit the App Helpdesk near the Registration Area in the Grand Lobby or email apphelp@wgc2018.com.

For media and PR inquiries please visit the CWC and Edelman teams in the Media Center, in Salon A.

Shuttle buses are provided for delegates between all event hotels and the venue — please visit the WGC 2018 Event App or refer to the Pocket Guide for schedule information.

Follow us on social media for event highlights and share your experiences and photos using #WGC2018. Search for 27th World Gas Conference (WGC 2018).



WGC 2018 EVENT APP

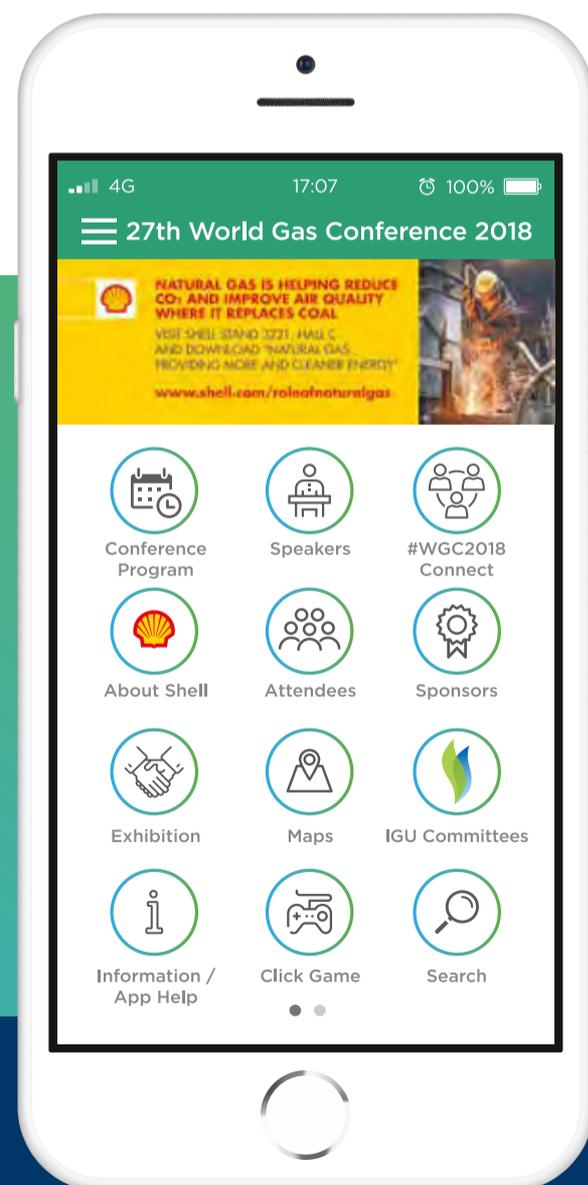


BENEFITS

- Message fellow attendees
- Share contacts
- Take notes
- Access the schedule
- Post photos
- Rate sessions
- Join the attendee list
- Check-in to sessions
- Share over social media



- 1 Scan the QR code to download the app from Google Play or the App Store.
- 2 Open the event app once the download has finished.
- 3 Enter the password: 27wgc2018
- 4 You will be prompted to log in. Here you will enter your verification code which will be sent via email.
- 5 You will now have access to all your area specific features.



If you have not received your invitation or verification email, please email apphelp@wgc2018.com or visit the App Helpdesk onsite at the event.

FOLLOW US: Search for #WGC2018 on 



Photo: AP/SCANPIX

Around the city — show your badge!

EVERY hotel room for the event is within walking distance of the Convention Center, numerous restaurants, and the major attractions of Washington, DC including the Smithsonian Museums, the US Capitol, the White House and the Washington Monument.

We have teamed up with Destination DC to secure discounts at local attractions, restaurants and retailers for all our event attendees when you produce your conference badge!

More information about the promotions available can be found on the WGC 2018 Event App.

We hope this helps you to explore the city and find local areas of interest to make sure you don't miss out on anything DC has to offer during your stay at WGC 2018!

Digital communities drive trust in an era of fake news

By Katie Mehnert, founder & CEO, Pink Petro and Experience Energy

Three years ago, when oil prices plummeted and the global market began to contract, Pink Petro created the first global digital community for women in energy.

During times of crisis, our need for community becomes profound. Women and men were drawn to our mission to unite energy leaders around the world and bring an end to the gender gap in energy.

But Pink Petro quickly became more than just a platform to promote inclusion in energy. It became a trusted circle, a resource for critical news and insights on the energy transition, tech disruptions, policy and workforce shifts happening to shape the next era of our industry. It became a place to create a culture that's powering our story into the social age, where everyone, everywhere is connected.

Throughout history, communities have played a vital role in disseminating news and information. You relied on those close to you to keep you up to date on everything you needed to know. It was a matter of survival, not just curiosity.

But the model has always been flawed.

Did you ever play the game of telephone in school? If you did, you saw how the same information could change dramatically as it was passed from person to person.

There are also those who would

manipulate the process of news dissemination for personal gain. That particular flaw has come to light recently, as the concept of community as a reliable news source has come under fire. The prevalence of "fake news" circulating on various social media platforms has created a justified lack of trust. And the increasing polarization of major news media has left us wondering about tainted stories and underlying agendas.

And this doesn't mean communities are losing their outsized role in providing us with the news and information we want and need. If anything, their power is growing.

In the world of energy, digital communities like Pink Petro are giving our industry a voice they've never had before. They are providing its people an opportunity to participate in that conversation and shape it. At Pink Petro, we believe it's about promoting both genders, with a focus on giving women a seat at the table and a voice, on stage and online. This gives the world outside the industry a chance to explore the opportunities energy has to offer.

We also believe that orchestrating a balanced energy conversation, one that promotes a mix of resources, drives the very thing we stand for: inclusion. Inclusion of people, genders, generations, nationalities, ideas and technologies.

In an industry now in fierce

competition for talent with industries we power like tech, finance and health care, this is critical. It's also critical as our industry faces more increased scrutiny for the years we've done very little to own our value and story in the public eye.

There's a trick, though. The big social media networks have grossly underestimated the importance of trust in building community. That's why we've made trust core to what we do. We know our members — all 10,000+ of them — because they make Pink Petro what it is. If we don't look out for them, we're not doing our job: We connect people and give them a voice; but we also inform and educate.

That's a big job — just like the old days, only with a lot more technology.

The insights and conversations at World Gas Conference are vital to the growth of the industry. But they don't stop at events, nor do they need to be closed to our industry. They need to continue where consumers and the next generations are hungry for information: online and in trusted communities.

I hope you'll join us here at WGC 2018, online on social media and on Pink Petro. The time is overdue. It's time we own the story in the relationship and social era, drive ongoing insights and articulate our value to society.

Flight Bar

10% off Food and Beverages all week

Happy Hour from 5pm- closing on the Monday, Tuesday and Wednesday

777 6th St NW, Washington, DC 20001, USA

flightdc.com

Gordon Biersch Brewery

10% off Food and Beverages

900 F St. NW, Washington DC, 20004

gordonbiersch.com

Farmers and Distillers

10% of Breakfast, Lunch and Dinner (dine in only)

600 Massachusetts Ave NW, Washington DC, 20001

farmersanddistillers.com

Cure Bar & Bistro

15% of total bill (excluding alcohol)

1000 H St. NW, Grand Hyatt, Washington DC, 20001

washingtondc.grand.hyatt.com

Cabinet

15% off Breakfast & Lunch (excluding alcohol)

1000 H St. NW, Grand Hyatt, Washington DC, 20001

washingtondc.grand.hyatt.com

Ana at District Winery

10% off food and beverages in the restaurant and ½ off at the wine tasting bar

385 Water St SE, Washington, DC 20003, USA

districtwinery.com

National Building Museum

Free admission

401 F St. NW, Washington, DC 20001

www.nbm.org

AFRICA

Mozambique gas sector ready for huge levels of investment

Message: ENH chief executive Omar Mitha
Photo: ANDREW MANGUM

Country sees plenty of opportunities for big players to join despite competition from neighbours



FABIO PALMIGIANI
Washington, DC

MOZAMBIQUE expects to attract multi-billion-dollar investments to its oil and gas sector over the next few years, but the African nation will face some direct competition from neighbouring countries.

Speaking at a keynote session at the World Gas Conference in Washington, Omar Mitha, chief executive of Mozambique's state-owned company ENH said its government has adopted a series of legal frameworks in accordance with international standards in an effort to attract more operators.

"We are competing directly with Tanzania, but I think in the long term there will be plenty of opportunities in the region to generate power from natural gas," Mitha said.

"Mozambique will (have) huge capital expenditure requirements on its own, and energy is expected to be one of the main pillars for the development of many countries in Africa such as Malawi, Zambia and Zimbabwe."

Mitha did not address the recent rise in violence in the country, where earlier this month seven people were killed and more than 160 homes were set on fire in Cabo Delgado province, which is to be home to a huge liquefied natural gas complex.

Despite social unrest, which started last October when an armed group attacked a police station and military post in Mocimboa da Praia, international oil companies with investments in Mozambique are moving forward with their developments in the country.

Italy's Eni and US supermajor

ExxonMobil announced on Thursday that marketing efforts are under way for the Rovuma LNG project, which will produce, liquefy and sell natural gas from fields in the Area 4 block off Mozambique.

"We have made significant progress on marketing and are now in active negotiations on binding sales and purchase agreements for Rovuma LNG with some affiliated buyer entities of the Area 4 co-venturers," said Peter Clarke, president of ExxonMobil's Gas & Power Marketing Company.

"These commitments will help us progress towards a final investment decision, which we expect to reach in 2019."

If sanctioned, the initial phase of the Rovuma LNG project will see the development of the Mamba reservoirs in Area 4.

ExxonMobil will lead construction and operation of the liquefaction trains and related onshore facilities, while Eni will lead upstream developments and operations for the project.

"We are working together to develop the remaining gas fields, which will feed the Rovuma LNG trains," said Eni chief gas and LNG marketing and power officer Massimo Mantovani.

The partners approved the Coral South floating liquefied natural gas development in Area 4 last year.

Along with Eni and ExxonMobil, the other co-venturers in the Rovuma LNG project include China's CNPC Exploration & Development Company, ENH, South Korea's Kogas and Portugal's Galp Energia.

Time for new LNG models

OFFTAKE agreements for liquefied natural gas facilities must become more flexible, company officials said on Thursday.

"It's not that easy to trade LNG because the contracts are outdated," Pavilion Energy chief executive Frederic Barnaud said at the World Gas Conference in Washington.

Barnaud noted that destination clauses and indexations make the contracts difficult to operate. "It's not whether it's short term or long term so much as how we market and trade LNG," he said.

However, LNG players are experimenting with new contract models to satisfy customer demands. Cheniere Energy's chief commercial officer Anatol Feygin said the company "is doing its best" to develop its business model as LNG output and demand grows.

Feygin said the company is trying to tailor contracts to meet customers' needs as it works toward a final investment decision for the sixth train at its Sabine Pass LNG facility in Louisiana.

"Things have changed dramatically and you've seen (LNG players) do some deals that will help bridge this gap," Feygin said.

CSSC | SWS 上海外高桥造船有限公司
SHANGHAI WAIGAOQIAO SHIPBUILDING CO., LTD.

INNOVATION & COOPERATION

SHANGHAI WAIGAOQIAO SHIPBUILDING CO., LTD. (SWS)
Add: No.3001, Zhouhai Rd, Pudong District, Shanghai, P.R. China
Tel: 86-21-38864500 E-mail: office@chinasws.com
www.chinasws.com

INDUSTRY OVERVIEW

Gas is key to US trade balance and global economy

On the eve of WGC 2018, **Upstream** surveyed a number of leading figures in the **international gas industry** on topical issues shaping the sector. **Sempra Energy chief executive Jeffrey Martin** responds

Upstream: How do you see the prospects for the gas sector over the coming decade and beyond?

Jeffrey Martin: Natural gas provides about one quarter of North America's energy today. It contributes to the economy at many levels, from the jobs of those who find, produce and deliver natural gas, to the businesses that depend on it as a clean fuel source for industrial operations and as a feedstock for the petrochemicals industry. It is equally important at home in the US — more than half of all residences are heated with natural gas.

The world economy is increasingly fueled by natural gas. Investments in natural gas distribution systems, pipelines, storage and liquefied natural gas infrastructure create new jobs and help advance changes that improve air quality and reduce greenhouse gases.

Natural gas has led to the shutdown of more coal-fired power plants than any government policies, due to the economic benefits and clean nature of gas-fueled power plants.

Countries are transitioning away from coal and oil, and looking for more energy security, supply source and price diversification, and commercial flexibility. That is why we believe American-produced natural gas is becoming a bigger part of the answer and our development of new LNG infrastructure should play an increasingly important role in the global gas market.

Upstream: How big a part does the gas sector play in your business and how has that changed in recent years. Do you see the role of gas in your business gaining in importance over the years ahead?

Jeffrey Martin: We've been in the natural gas business for more than 100 years. As global demand for natural gas is increasing, we expect to be at the forefront with developing world-class LNG export facilities to meet market demand for natural gas.

For the first time in decades, the US has become a net exporter of natural gas. There are now tremendous markets for US gas in Mexico, South America, Europe, Asia and the Middle East. Our Cameron LNG joint-venture project in Louisiana is expected to



come online next year to help meet this growing demand.

We also are developing the Port Arthur LNG export facility in Texas, which is offering LNG on commercially flexible terms. We see other potential areas for growth in the US Gulf coast region, as well. For our LNG business in Mexico, we're focused on the development of a brownfield conversion of our Energia Costa Azul LNG import terminal in Baja California to enable the export of LNG. This facility, called ECA LNG, is positioned to potentially become the one of the first LNG export facilities on the west coast of North America.

Upstream: How important a role will LNG play both for your company itself and the industry in general over the years ahead?

Jeffrey Martin: We are well positioned to continue our progress in the LNG sector, with potential to export LNG from the US Gulf coast and the west coast of Mexico. This is a unique advantage in our discussions with potential customers.

As demand increases, there's a growing view that there could be a shortage of new LNG export terminals globally in the next five years and we view that as a significant growth opportunity for us.

Upstream: If you are a producer what percentage of your output is gas today? How has that changed in the past decade and how do you expect it to develop in the years ahead?

Jeffrey Martin: While we purchase, store, transport, distribute and sell natural gas, we are not involved in the upstream exploration or production to any signifi-

cant degree. We have built our business model to minimise and manage commodity risk.

Upstream: What are the main challenges that the gas sector faces?

Jeffrey Martin: As LNG demand increases, one challenge will be to make sure that we embrace new technologies and plan for their use in the future. This is an opportunity for us as a company and industry to enhance the use of cleaner forms of energy, including natural gas.

California and some other states are exploring reduction in their use of natural gas, but solar and wind power are dependent on the weather and still aren't available around the clock.

So, even though many of our businesses are directly engaged in growing electrification, natural gas is critical in filling the gap and making sure the lights stay on when the sun isn't shining or the wind isn't blowing. Additionally, 90% of homes in Southern California continue to rely on natural gas for their heating and cooking, so, from a practical standpoint, I don't believe natural gas will be going away anytime soon.

Upstream: How can governments help to further encourage the exploitation of gas?

Jeffrey Martin: Just focusing on the US, our economy and national security benefit greatly from the export of energy resources, including LNG.

Specifically, there is an opportunity to improve NAFTA in ways that expand trade and investment. Negotiators should maintain the Investor-State Dispute Settlement (ISDS) to protect

investments in foreign lands and further expand it. Maintaining ISDS levels the playing field for US businesses and provides US investors with the same rights in foreign markets that foreign investors have in the US.

Government support of technology development also is essential, including research and development that encourages the advancement of emerging energy technologies.

Lastly, timely reviews and decisions on pending applications for LNG export facilities from the Federal Energy Regulatory Commission are critical in allowing new developments to move forward.

Upstream: Can the industry persuade public opinion that gas is part of the solution for the energy transition rather than part of the 'fossil fuel' problem? If so, what more should be done by the industry to try and win that argument?

Jeffrey Martin: Natural gas plays a key role in the US energy supply network — it's critical to making sure customers' energy needs are met when renewable sources are unavailable at different times of the day. It is a foundational fuel source used in cooking, heating and power generation, as well as to power trucks, buses, passenger vehicles and even fuel cells.

Natural gas is an essential ingredient in the manufacturing industry. It fosters innovations and serves as a feedstock for many of the products we use at home and work every day.

Natural gas also is key to helping to solve the US trade imbalance — this is a critical point. Exporting natural gas by pipeline to Mexico or shipping it overseas in the form of

Long-term view:
Sempra Energy
chief executive
Jeffrey Martin
Photo: SEMPRA
ENERGY



LNG is creating thousands of US jobs and powering our energy economy, while also creating a tremendous growth opportunity for our company.

Upstream: What is your company currently doing to control emissions and what more do you plan to do?

Jeffrey Martin: From our standpoint, this is a leadership opportunity. We're focused on using innovative technologies to reduce our emissions at all our businesses.

Some of the specific steps we are taking to reduce methane emissions at our California utilities — San Diego Gas & Electric and Southern California Gas Co. — include:

- Capturing natural gas during pipeline testing, instead of venting it to the atmosphere
- Conducting leakage surveys using unmanned aerial vehicles (drones), fiber optic cable and point sensors

- Implementing new advanced-monitoring technologies and practices in all natural gas storage operations

- Piloting a power-to-gas system that uses surplus renewable energy to drive a chemical reaction known as electrolysis that creates carbon-free hydrogen gas. The hydrogen gas can be blended with natural gas to create a lower-emission fuel source, and

- Supporting California regulatory agencies' advancement of energy infrastructure development and procurement policies to encourage dairy biomethane projects. By capturing biomethane from dairies and adding it to our natural gas distribution system, we can offset a significant amount of greenhouse gas emissions.

ENERGY TRANSITION

Gas needs to clean up for green ticket

Europe sees fossil fuel as key in transition role but work has to be done for longer term place in the energy mix

ANAMARIA DEDULEASA
Washington, DC



Capacity: Maros Sefcovic, vice president of the Energy Union for the European Commission
Photo: REUTERS/SCANPIX

GAS will be part of the energy transition of Europe, however, further actions to clean it are required for the heavily-renewables focused region, according to a panel at the WGC 2018 conference in Washington.

The future looks greener on the European side, as the 28-nation union is increasingly pushing for larger shares of renewables in its energy mix. Recently, the European Union revised its 2030 target to reduce CO₂ emissions by 40%, compared with 1990, and to cut by 60% or even 90% by 2050.

“As we work towards security of supply for our member states, we are looking at diversifying our sources, and are looking for new partners,” Maros Sefcovic, vice president of the Energy Union for the European Commission, said.

According to Sefcovic, the capacity of importing liquefied natural gas into Europe will be around 200 billion cubic metres per annum once a terminal in Croatia is built.

However, he said Europe is focused on clean energy, and while gas is expected to be a part of the region’s transition, it would not necessarily be for the long term.

“I see gas as a very important transitional fuel in our transformation process in Europe, as we try to accommodate more and more renewables,” he said.

“Gas, for sure, would be part of our energy transition, it would serve as a very important back-up fuel for intermittent renewables. So we want to establish solid relationships between Europe, as an energy importer, and all those who can supply gas at affordable prices, high quality and without any political strings attached.”

Sefcovic also suggested the US “would benefit greatly if it can capture the gas wasted from its operations”.

“I know that it would need some technological investments, but if that by-product is liquefied and shipped to Europe, I think it would be a very welcome contribution to European energy security and would really increase competition.”

According to Annie Krist, chief executive of GasTerra, a natural gas trader owned by Shell, ExxonMobil

and the Dutch government, “Europe has already decided that its future is low, if not zero, carbon”.

Krist said that, since most European governments agree that beyond 2030 there will be “no or hardly any role for fossil fuels, including natural gas”, the global gas industry should adopt a new approach.

She said that the way forward for the players eyeing the European market has to be “replacing declining natural gas as a source of energy with renewable gases, like biogas, blue hydrogen and green hydrogen”.

Krist’s view was shared by Klaus Schafer, the chief executive of German utility Uniper, which was formed when E.ON separated its fossil fuel assets into a separate company.

“The transition of the energy system that Europe has decided on is one of the biggest transformation projects that the world has seen, but this decarbonisation phase poses some challenges,” Schafer said.

“I believe the gas industry can contribute to this transitional process, even as a destination fuel, but some changes are needed. Renewables will be growing massively, but will need a partner. Gas needs to become decarbonised, green, if it wants to be part of Europe’s future,” Schafer said.

Meanwhile, Marco Alvera, the chief executive of GasNaturally, an initiative aimed at showcasing the role of gas in the forthcoming energy transformation in Europe, warned that “a more balanced approach” is required to create a sustainable and competitive market.

“We all know (Europe) is the best partner for renewables. However, I think we forget how fast gas itself is becoming a renewable source. We need to push the concept that gas is not a transitional fuel but a steady, clean one,” Alvera said.

According to Alvera, a GasNaturally study revealed that by integrating renewable gases and renewable electricity, the EU can save €140 billion (\$162 billion) a year.

COSL *Your Reliable Partner*

Delivering high-quality and cost-effective oilfield services

COSL is a leading integrated oilfield services provider in the international offshore and onshore market with over 50 years experience. We provide comprehensive services for the exploration, development and production of offshore oil and natural gas through our four business segments including drilling services, well services, marine support services and geophysical and surveying services.

www.cosl.com.cn coslmarketing@cosl.com.cn

OVERVIEW



Plans: Tellurian chief executive Meg Gentle
Photo: BLOOMBERG

Sector expansion on horizon

On the eve of WGC 2018, **Upstream** surveyed a number of leading figures in the **international gas industry** on topical issues shaping the sector. **Tellurian chief executive Meg Gentle** responds

Upstream: How do you see the prospects for the gas sector over the coming decade and beyond?

Meg Gentle: We expect the global gas sector to expand robustly over the next decade to support decarbonisation and clean air initiatives.

Natural gas can now be produced in the US for less than \$1.00 per million British thermal units in the field, providing a competitive and reliable source of fuel for the global growing economy. Gas production from the US is expected by the Energy Information Administration to increase by 20 billion cubic feet per day by 2025, which will require approximately \$170 billion of investment in pipeline and export infrastructure.

Upstream: How big a part does the gas sector play in your business and how has that changed in recent years? Do you see the role of gas in your business gaining in importance over the years ahead?

Meg Gentle: Tellurian is building a natural gas business that includes 27.6 million tonnes per annum of production from Driftwood LNG on the US Gulf coast, trading of LNG cargoes and development of new markets globally.

Our strategy is to secure low-cost natural gas, design and construct low-cost liquefaction and

deliver reliable and flexible LNG to a portfolio of global customers. We believe that industry participants with flexible, low-cost natural gas portfolios will be well positioned to succeed.

Upstream: How important a role will LNG play both for your company itself and the industry in general over the years ahead?

Meg Gentle: Tellurian forecasts that the world needs at least another 127 million tpa in liquefaction infrastructure to fulfil natural gas demand by 2025, and the need could easily be greater.

The US shale revolution has unlocked a tremendous resource base, and the low cost of production will increase gas supplies by 20 Bcfd by 2025. Tellurian's 27.6 million tpa Driftwood LNG plant will liquefy low-cost US supply and deliver it to global markets.

Gas is rapidly becoming a global commodity. Today's LNG market exhibits remarkable similarities to the global oil market of the late 20th century. In a commoditised market, low-cost suppliers will win. With a distinctive business model, strong track record of execution led by experienced management and key strategic alliances, Tellurian is the partner of choice in the global LNG market.

Upstream: If you are a producer what percentage of your output is gas today? How has that changed in the past decade and how do you expect it to develop in the years ahead?

Meg Gentle: Acquisition of natural gas producing assets is integral to our business proposition. It provides the foundation for a growing portfolio of assets that we expect can produce LNG for a cost of \$3.00 per million Btu, FOB US Gulf coast, when Driftwood LNG begins operations in 2023. Producing our own gas provides optionality to sourcing low-cost gas.

We are currently producing 4.5 MMcfd net on our 12,000-acre position of 1.4 trillion cubic feet of resource in the Haynesville shale and intend to purchase an additional 15 Tcf there.

We expect our cash cost of drilling, production and transport to markets will be approximately \$2.25 per million Btu, representing a significant savings to natural gas we will purchase at Henry Hub and other regional liquidity points.

Upstream: What are the main challenges that the gas sector faces?

Meg Gentle: The biggest challenge in the gas sector today is need for additional infrastructure. We estimate that approximately \$170 billion of investment is



needed in pipeline and LNG export infrastructure in the US alone, in order to bring new gas production to domestic and foreign markets.

Upstream: How can governments help to further encourage the exploitation of gas?

Meg Gentle: Governments can encourage the development of gas infrastructure by providing efficient regulatory review and permitting schedule certainty so companies can be confident to invest in capital-intensive projects. Tellurian is prepared to invest approximately \$28 billion in pipelines and LNG export terminals as soon as regulatory approvals are completed in early 2019.

Upstream: Can the industry persuade public opinion that gas is part of the solution for the energy transition rather than part of the 'fossil fuel' problem? If so, what more should be done by the industry to try and win that argument?

Meg Gentle: Natural gas is the partner of choice for renewable energy. For the times when the wind does not blow, the rain does not fall, the sun does not shine, the battery does not store, or peak energy demands exceed installed capacity, natural gas fired power generation provides the key to stability and security in energy supplies.

On the Iberian Peninsula in 2017, power from wind and hydroelectric fell short of demand but fortunately LNG import infrastructure and spare capacity in natural gas-fired power generation were able to make up the shortfall and LNG imports increased over 50% year-over-year.

Natural gas fired power generation has 50% lower carbon emissions than coal fired generation and according to the American Gas Association, households with natural gas versus all-electric appliances produce 37% lower GHG emissions.

Natural gas is not simply a transition fuel, but a partner of choice for a stable secure and reliable energy future.

19TH INTERNATIONAL CONFERENCE & EXHIBITION ON LIQUEFIED NATURAL GAS

HOSTED BY



LNG2019

SHANGHAI

1-5 APRIL

SUPPORTED BY

**SHANGHAI MUNICIPAL
PEOPLE'S GOVERNMENT**

PRESENTED BY



**REGISTRATION
OPENS
28 JUNE 2018**

**VISIT US ON
STAND C2**

lng2019.com

REGISTRATION ENQUIRIES

Contact us on +44 20 7978 0006 or at registration@lng2019.com

SPONSORSHIP OR EXHIBITION ENQUIRIES

Contact Jason Berman on +61 2 9556 7991 or at JBerman@etf.com.au

240+
SPEAKERS

11,000+
ATTENDEES

300+
EXHIBITORS

30,000m²
EXHIBITION

80+
COUNTRIES

550+
ORGANISATIONS

OFFICIAL SHOW DAILY



ORGANISERS



EXHIBITIONS
& TRADE FAIRS



FOLLOW US





Hub: the Pazflor FPSO

Subsea 7 wins gig at Zinia

OFFSHORE contractor Subsea 7 has landed a new contract from French giant Total for its Zinia phase two project off the coast of Angola.

The contract covers the engineering, procurement, installation and commissioning of the subsea flowlines and umbilicals for the project which comprises the tie-back development of two reservoirs to the existing Pazflor floating production in Block 17.

Subsea 7 will install some 36 kilometres of flowlines and 21 kilometres of umbilicals for the project, with offshore work scheduled to start in 2020.

Project management and engineering will be delivered from the company's global project centre in France and local offices in Angola, while fabrication will be carried out at Sonamet's yard in Lobito, Angola.

Subsea 7 did not state the value of the contract in Thursday's announcement but it classified it as a "substantial contract", which the company typical defines as being valued at between \$150 million and \$300 million.

Total last month took the final investment decision on the \$1.2 billion Zinia phase two project that will have a production capacity of 40,000 barrels per day and help sustain output at the Pazflor field, which came on stream in 2011.

Sempra to sell assets

SEMPRA Energy of the US plans to sell its entire portfolio of wind and solar assets to focus on other operations, including its liquefied natural gas projects.

The company said it had arrived at the decision to sell following a strategic review of its businesses and asset portfolio over the past year. Its board of directors approved the sales on 25 June.

Sempra also plans to sell its Mississippi Hub natural gas storage facility in Mississippi, which has 22 billion cubic feet capacity. It also hopes to offload its 90.9% stake in the 20 Bcf Bay Gas Storage operation in Alabama.

"This is just the first phase of our portfolio optimisation, which we expect to continue in the coming months," Sempra chief executive Jeffrey Martin said.

MEXICO



Progress: CNH president commissioner Juan Carlos Zepeda Molina
Photo: REUTERS/SCANPIX

Mexico signs contracts for Round 3.1 selection

Winners of 16 out of the 35 shallow-water blocks handed out confirm award

KATHRINE SCHMIDT
Washington, DC

MEXICAN regulators and operators have formalised contracts for the 16 of 35 areas awarded in the country's Round 3.1 for shallow-water oil and gas blocks.

The contracts signed in the round conducted by Mexico's National Hydrocarbons Commission (CNH) include four in Mexico's northern Burgos basin, four in the Tampico-Misantla basin and eight in the Southeast basin.

A range of winners included global majors such as Spain's Repsol, Total of France, Italy's Eni and Anglo-Dutch supermajor Shell as well as smaller players including Dea, Pan American Energy and Premier Oil.

CNH president commissioner Juan Carlos Zepeda Molina said that the highest priority for the commission is transparency and accountability. "Attending to its obligations as a regulator, the CNH will verify the compliance with activities that are developed according to the applicable regulatory framework to the exploration and development of hydrocarbons."

If exploration is successful, the blocks could represent investments of some \$8.6 billion over the life of the contracts.

The signing comes just days before Sunday's election to decide Mexico's next president, for which the leading candidate, Andres Manuel Lopez Obrador, has expressed deep scepticism about Mexico opening its oil and gas sector. He has said he would review the signed contracts for corruption.

Mexico's outgoing energy secretary Pedro Joaquin Coldwell noted that transparency has been a priority for the administration of Enrique Pena Nieto and in four years it successfully completed nine bid rounds and awarded 107 oil contracts.

Due to this, "the hydrocarbons bidding system of Mexico enjoys great international prestige", said Coldwell.

Alberto de La Fuente, country manager for Shell, was on hand both to sign his company's con-

MEXICO ROUND 3.1

Area 5 and 12:	Repsol
Area 11 and 13:	Premier
Area 15:	Capricorn, Citla
Area 16 and 17:	Dea, Pemex, Cepsa
Area 18:	Pemex, Cepsa
Area 28:	Eni, Lukoil
Area 29:	Pemex
Area 30:	Dea, Premier, Sapura
Area 31:	Pan American
Area 32:	Total, Pemex
Area 33:	Total, Pemex
Area 34:	Total, BP, Pan American
Area 35:	Shell, Pemex

tract for Block 35, which it won bidding alongside state oil company Pemex, as well as to represent the operator trade group of the Asociacion Mexicana de Hidrocarburos. The Mexican

energy model has "substantially modified the future perspectives of the sector, increasing estimated production and reserves that the country will need for the future", he was quoted as saying.

He added that the participation of public and private companies in the bid process is the result of predictability, judicial certainty and institutional transparency that derives from the energy reform.

The newly awarded contracts run for 30 years, with two possible five-year extensions. The operators have 180 days to submit their exploration plans.

The CNH has a handful of additional rounds scheduled before the new president takes office in December.

Companies will have the opportunity to bid for onshore acreage and areas prospective for unconventional resources in Rounds 2.2 and 2.3 on 27 September. Also Pemex on 31 October will also conduct a bid process to farm down its stake in seven onshore fields.

“An investment in knowledge always pays the best interest”

Benjamin Franklin



Over 80% of our subscribers say that “Upstream has helped them or their company identify leads or business opportunities”. For these oil and gas professionals, Upstream is an investment.

To stay fully abreast of the latest energy news from around the world, you could try subscribing to multiple publications or spend hours trawling the web. Alternatively, you could get it all from one high-quality and reliable source – Upstream.

In addition to the acclaimed weekly edition, subscribers are given full access to UpstreamOnline.com, offering unlimited access to our live 24-hour news service. You can also choose to receive daily news bulletins containing a quick summary of the must-read news from the last 24 hours and access the complete archive of all stories ever published in Upstream. Altogether, a wise investment in knowledge that saves you time and helps your business.

Why waste time and money on scores of magazines, newsletters and overpriced reports when your energy information needs can be met through one single subscription to Upstream? For your free two-week trial, please go to:

www.upstreamonline.com

upstream
THE GLOBAL OIL & GAS NEWS SOURCE

Vopak to add LNG weight

NETHERLANDS tank and terminal player Royal Vopak, which is keen to expand its footprint in the liquefied natural gas business, is set to acquire a stake in Elengy's (Engro) floating storage and regasification unit at Port Qasim, Pakistan's first LNG import project, writes Amanda Battersby.

"We will hopefully shortly acquire an important stake in the import terminal in Pakistan, the first import terminal in Pakistan, that's currently owned by Engro," Vopak LNG president Kees van Seventer, told the World Gas Conference 2018.

Vopak is no stranger to Pakistan, having worked "for a couple of decades" with Engro at the adjacent chemical terminal.

The companies have agreed to now join forces on the LNG FSRU project, which came into operation in 2015, and see whether they can together further develop this market.

"This is a very important market," he said of Pakistan.

Engro has already unveiled plans for a second FSRU in Karachi, Pakistan's commercial capital, which could be up and running as early as 2019.

Van Seventer added that, whilst its tie-up with Engro was still "an intention" at this moment time, "we are confident it's going to happen".

Meanwhile, Vopak also has its sights on a novel LNG receiving and regasification facility on the Yangtze River in Shanghai.

"We have set up a joint venture up the Yangtze River, not far from Shanghai, on one of our existing chemical terminals.

"We are developing a 200,000-cubic metre (capacity) land-based import terminal. Full capacity has been sold out already and will go into the city gas grid."

The Yangtze LNG import project is targeting operational start-up in 2023 although Vopak has yet to take the final investment decision.

"We have not yet taken a final investment decision," said van Seventer. "But we're about to."

Vopak is pursuing four strategic priorities in its aim of positioning the company as the world's most successful LNG infrastructure company.

EUROPE

Norway plaintiffs lose gas pipeline tariff case

Four investment groups lose claim against Norwegian state over changes imposed on **transportation rates**

BEATE SCHJOLBERG
Washington, DC

FOUR owners of Norway's gas pipeline system, backed by some of the world's largest pension funds, have lost a lawsuit for compensation from the Norwegian state after the government cut their income by changing future gas-transport tariffs in 2013.

Norway's supreme court this week upheld rulings from two lower courts and handed down an unanimous verdict in favour of the state.

Solveig Gas, Silex Gas, Infragas and Njord Gas Infrastructure were among investors that acquired a total 44% stake in Norway's gas trunkline network for about Nkr32 billion (\$3.9 billion at current values) from oil companies including Statoil, Shell, ExxonMobil, Total and Eni in 2011 and 2012.

The buyers regarded Gassled as a safe investment with predictable returns, but in 2013 the government decided to reduce the tariffs on new gas-transport contracts from 2016 to make sure new developments were not shelved because of transport costs.

The investors feared the cut would result in lost earnings of around \$6.6 billion over a 20-year period, and claimed the change breached a number of laws including Norway's Petroleum Act and the European Convention on Human Rights.

Like the two lower courts, the supreme court found that the ministry had the right to make changes to the tariffs based on the Petroleum Act.

It also pointed out that the tariff reduction stemmed from a well-known Norwegian political principle dating back to the 1980s of making sure that the bulk of the profits from oil and gas production should be generated by the fields, and not by the transport system.

Neither did the reduced tariffs constitute "an excessive burden" on the owners under the protection of property clause in the



Piped in: the Norwegian government has imposed a cut in tariffs for gas transportation from offshore fields

Photo: MARIE VON KROGH

European Convention on Human Rights, the court said.

"It is of central importance that the plaintiffs, when they acquired their stakes in Gassled in 2010-2011, were aware that the tariffs were return-based and that there was a regulatory risk tied to this, including how the principle of return regulation would play out in practice," the court said.

In addition, the 2013 changes did not hit the owners particularly hard because most of the capacity until the end of the concession period in 2028 was already booked, and was therefore not affected by the tariff change, the

court said. Solveig Gas holds a 25.553% stake in Gassled and is backed by the Abu Dhabi Investment Authority, the Canadian Pension Plan Investment Board and German insurance firm Allianz. Silex Gas, a subsidiary of Allianz, holds 6.428% and Infragas, owned by Canadian fund manager PSP Investments, has 5.006%.

Domestic oil and gas player CapeOmega, backed by Norwegian fund HitecVision, now owns 11.316% after acquiring Njord Gas from Swiss bank UBS and French-owned CDC Infrastructure last year.

"We are very disappointed that

the supreme court has now ruled in favour of the state," Solveig Gas said. "We will continue to act a prudent owner in Gassled and will focus on making sure Gassled stays a very efficient transportation system that offers low cost, high regularity and best possible HSE results for the benefit of gas producers and the Norwegian society."

The four plaintiffs were ordered to pay the state's legal costs totalling Nkr5.32 million (\$650,000) by 12 July.

State-owned Petoro is the largest owner of Gassled with a 46.697% stake, while Equinor (formerly Statoil) owns 5%.

14 LNG TRAINS

82 TERMINALS

70 LNG VESSELS

29 COUNTRIES

111 CUSTOMERS

77 MTPA



قطر غاز
QATARGAS