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LNG as game changer: from export revolution to import struggle

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In a recent three-part series on LNG, European Energy Review reports extensively on this much acclaimed game changer of the gas markets. First, our UK correspondent Alex Forbes focuses on the large-scale exports of US LNG, making them much more than just another supplier. Second, our Asian contributor Rudolf ten Hoedt digs into the Japanese struggle to bring down LNG prices. More competition and liquidity should do the trick, as you can read in his piece. And third, Gert van Wijland writes that even though the European LNG-imports have plummeted by several tens of percent over the last eighteen months due to a surge in Asian demand, the gas sector and policy makers see a bright future for liquid natural gas in the European Union.

NEW IN OUR FILES

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When large-scale exports of US LNG become reality – before the end of this decade – the US will become much more than just another supplier. Along with the methane molecules, it will be exporting a new way of doing natural gas business. The implications are profound, for buyers everywhere and for new supply projects in other regions. And yet some leading executives of major companies do not seem to fathom the enormity of the US LNG export rush.

| *By Alex Forbes*

The debate about whether the US should or should not become a large-scale LNG exporter is all but over. With the point of no return now past, it is time to consider the various impacts that this new energy revolution is likely to have – not least in the hearts and minds of buyers and sellers. These impacts are already being felt, even though exports from the Lower 48 states will not begin until 2015 or 2016. The US becoming a large-scale LNG exporter raises three crucial questions:

how large an exporter will it become? How will the new commercial models being adopted by the front-runner projects affect how business is done? And what are the likely impacts on proposed LNG supply projects elsewhere?

How large an LNG exporter is the US likely to become?

How much LNG is eventually exported from the US is less important than the amount of capacity likely to be

constructed. The over-exuberance we are seeing among sponsors of potential projects suggests that more capacity will be built than will be fully utilised; export licence applications continue to arrive at the Department of Energy, despite the queue. As of last month the DoE had received 34 applications. As one source drily commented: “There is a propensity for over-investment.”

This may not matter much to the project sponsors if the business model for a project is a tolling contract, as most of them are – so long as they are paid the tolling fee for their liquefaction capacity. Whether gas passes through the facility is more a matter of concern for buyers – as we will see.

The enormity of the US LNG export stampede has yet to sink in – even amongst leading executives of major companies.

In evaluating which projects are likely to proceed, the following factors are key:

- Do they have export approvals from the DoE?
- How far advanced are they in gaining the – costly and time-consuming – siting, construction and operation approvals they need from the Federal Energy Regulatory Commission (FERC)?
- Have they sold their capacity to buyers?
- And will they be able to attract finance?

According to Charif Souki, the CEO of Cheniere – the only company to have so far reached the end of this long road – securing such an approval takes between 18 months and two years, and costs around one hundred million USD. The various debates at last month’s World Energy Congress in South Korea suggest

that the enormity of the US LNG export stampede has yet to sink in – even amongst leading executives of major companies.

Already the DoE has given full export approvals to four projects – Sabine Pass, Freeport LNG, Lake Charles and Dominion Cove Point – each of which is a major undertaking.

The clear leader is Cheniere Energy, which is constructing four liquefaction trains at its Sabine Pass project. These alone will have a nameplate capacity of 18 mtpa, all covered by long-term arrangements, and actual capacity of around 20 mtpa. In September the company made a formal application to the FERC for train five (whose capacity is mostly already contracted) and train six, putting it on track to develop some 30 mtpa. In 2012 only one country produced more LNG than this: Qatar.

Freeport LNG is proceeding with two 4.4 mtpa trains, for which it expects FERC approval next year. All the capacity has been contracted. Moreover, it has recently

sold the capacity in train three and is considering a fourth. Like Cheniere, it expects the capacity of its trains to exceed nameplate, so it could end up with some 20 mtpa.

And so the list goes on. There are plenty other credible projects, not least the Golden Pass venture being pursued by ExxonMobil and Qatar Petroleum: 15 .6 mtpa of capacity for an estimated \$10 billion (compared with Australia’s Gorgon – 15.6 mtpa costing over US\$50 billion).

It is looking a fair bet that the US will overtake Qatar in terms of capacity sometime early in the next decade and it is conceivable that US LNG capacity could exceed 100 mtpa by 2025.

How will the new commercial models affect the way business is done?

The US front-runner projects are a major departure from the traditional way of developing such projects. They are mostly conversions of regasification projects and so already have storage tanks and ship-

handling facilities in place. Generally, this makes them highly competitive with green-field projects in capital expenditure. They will take gas from the pipeline network rather than dedicated fields.

Most significant of all, the business model being adopted by most projects is a tolling arrangement, so customers contract for liquefaction capacity rather than LNG. Sabine Pass, the first project is an exception, but its sales and purchase agreements are so structured that the net effect is very similar. Buyers will pay 115 percent of the Henry Hub (HH) price for their gas, but do not have to take it if they feel the price is too high – though they still have to pay the liquefaction fee of \$3-3.5/MMBtu.

This helps to explain why Asian buyers, most of whose imports are under long-term oil-linked contracts, are so enthusiastic about buying US LNG, with price indexed to HH.

The attraction is only partly to do with price level. At current oil and HH prices,

US shale gas would be some 30 percent cheaper than oil-linked LNG by the time it reaches, say, Japan, even allowing for the cost of liquefaction, shipping and regasification: around \$10-11/MMBtu rather than \$15-16/MMBtu. However, Asian buyers are aware that oil prices could go down while HH prices could rise – which could lead to oil-linked LNG being cheaper than HH-linked LNG.

A further attraction therefore is optionality. US LNG bought under tolling arrangements is free of destination restrictions, allowing buyers to trade the gas however they wish. Buyers can also choose not to use the capacity they are paying for. They would not then have to pay for molecules, transportation or regasification.

In the words of Shigeru Muraki, vice-president at Tokyo Gas: “In the new dynamics of the Asian LNG market, the key word is diversification . . . Contractual conditions will be diversified in terms of pricing. New price indices such as HH and NBP will emerge . . . A portfolio of long-term, short-term and spot contracts, as

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well as destination flexibility, will lead to increasing liquidity.”

As for buyers in Europe, the more LNG is exported from the US, the less will be the price pressures that buyers here have to face as Asian demand pulls flexible supply away from Europe.

What are the likely impacts on LNG supply projects elsewhere?

The chorus of comments from Asian buyers echoing Muraki must be impacting the thinking of proposed LNG supply projects that have not yet reached final investment decision – in Alaska, Canada, Russia, East Africa, the Mediterranean and Australia.

Chevron has just indicated it will be re-considering train four at Gorgon. Woodside has abandoned planned onshore

liquefaction for Browse and is considering floating LNG to reduce costs.

Much will depend on the progress that US projects are seen to be making. Most of the proposed projects in other regions do not have the capex advantages of the regas conversions and some will need expensive pipelines and other infrastructure. High-cost projects are likely to want to underpin their investments with traditional oil-linked long-term contracts.

Once again, the LNG industry finds itself in the throes of transformation – with the future looking hard to predict. ■

MARKET DYNAMICS AND TRADE

More competition and liquidity should do the trick

Japan's struggle to bring down LNG prices



Japan, still the world's biggest LNG importing country, is on the hunt for lower LNG prices. Finally, you may say. Along with some other Asian nations, Japan pays a hefty premium for its supplies. LNG procurement costs on the spot market can be five times the Henry Hub price for natural gas and with a ticket of around \$16/mBtu, Japan and other Asian countries are also paying far more for LNG than Europe.

| *By Rudolf ten Hoedt*

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In September, the second LNG Producer-Consumer Conference in the Shinagawa business district along Tokyo Bay attracted a record number of one thousand experts from all over the world. In front of this audience, the Japanese minister of Economy, Trade and Industry issued a heartfelt complaint about the current situation. "Avoiding high LNG costs and securing a stable supply of more reasonably priced LNG are a priority to us", HE Toshimitsu Motegi declared.

As a result of a record LNG import volume, Japan registered a serious trade deficit in 2012 for the first time in 31 years. It started to buy up to twenty percent of its LNG consumption on the expensive spot market, after the shameful meltdown of its nuclear

Japan, China, Korea, Singapore and Thailand will increasingly depend on LNG imports in order to cover the 3.9 percent annual growth of gas demand in the region.

energy sector in 2011. Japanese utilities and gas companies still secure the bulk of their supplies through long-term contracts with big foreign oil companies and powerful Japanese and other trading houses. These long-term contracts are financially depressing as well. The prices are oil-linked. Because of rising domestic energy bills, the competitive force of companies in Japan is suffering.

Some say that Japan only has itself to blame. It lacks competition and pipelines. Partly as a result of laborious relations with neighbouring countries, partly as a consequence of the conservative business

model of its energy sector. Japan has an uncompetitive energy market, dominated by an oligopoly of local monopolies who until recently were allowed to pass higher gas prices to final consumers and thus lacked incentives to look for lower procurement costs.

In this regard, Jonathan Stern, Chairman of the Natural Gas Research Program at the Oxford Institute of Energy Studies, did not withhold harsh criticism of the Japanese during his latest mission to Japan in March this year. “I’ve been visiting Japan for thirty years to exchange opinions and so on. During this period, Japan’s electric and gas utilities have been strongly resistant to the idea of a gas grid. It would have been possible to import pipeline gas from Russia, but nobody wanted to do it. This lack of pipelines is not some kind of natural phenomenon: it is the result of a choice made by Japan.”

So what will the Japanese do about it? Teaming up with and learning from the European Union that has done a lot to increase competition among its suppliers

and has gas coming through tankers and pipelines is one strategy. At this point, some Japanese stakeholders in Tokyo smartly drew EER’s attention to the fact that European companies are currently re-exporting redundant LNG supplies to Asia and thus benefit from the Asian premium on LNG as well. But these stakeholders should bear in mind that the Europeans can do this thanks to a liberalized and far more flexible energy market that the Japanese have in part denied themselves.

Things are, however, changing rapidly. Japan’s government seems to embrace the notion that more competition is the best way to bring Japan’s excessive LNG prices down. Since the Great East Earthquake and the painful nuclear disaster at Fukushima, the government is opening up the domestic power market. Utilities are no longer allowed to pass higher procurement costs and market inefficiencies on to the consumer without a hitch. The hefty losses utilities are suffering are undeniable proof, with the biggest local monopoly TEPCO almost bankrupt and under state control.

Japan is manoeuvring towards a position where it can try to benefit from the wave of LNG that is expected to roll into Asia when the US starts to export its shale gas and a large number of new projects will be completed in Canada, Australia and East Africa. New players are allowed on the domestic energy markets. Together with Japanese utilities, these new faces are diversifying supply, trying to get on the US shale gas train and seeking ways to separate Japanese LNG prices from crude oil market prices.

In September last year, Kansai Electric marked a major milestone when it signed a deal with BP Singapore for the yearly import of LNG from South America at Henry Hub linked prices, thirty percent cheaper than oil-linked LNG from the Middle East. In January this year, Japanese utility Chubu Electric announced it struck a deal with ENI to procure LNG from East Africa and elsewhere against ‘competitive prices’. Chubu and other Japanese companies such as trading houses Mitsui and Mitsubishi have also secured deals in North America that are linked to Henry Hub prices.

The volumes involved are still low as a percentage of total imports, but it looks like Japan has reached a turning point.

A novel way to do the job would be the introduction of an LNG futures contract on the Tokyo Commodities Exchange and possibly elsewhere in Asia. This idea is being fuelled by the growing global demand and supply of LNG that will probably add liquidity to the LNG spot market. According to the Institute of Energy Economics Japan (IEEJ), “the supply-demand balance of (global) LNG is likely to ease considerably towards 2020, even if demand grows.”

A big chunk of additional demand will fall in Asia. According to the latest Energy Outlook of the Asian Development Bank, Japan, China, Korea, Singapore and Thailand will increasingly depend on LNG imports in order to cover the 3.9 percent annual growth of gas demand in the region. China is building LNG import terminals fast and is expected to surpass Japan as the biggest LNG importer in 2020. The Chinese are aiming to launch Shanghai as a future gas hub for domestic supplies. Simultaneously,

Singapore is securing its place as a regional LNG hub. The city-state is taking advantage of its strategic geographic location and a growing LNG demand in South East Asia. The region is expected to import 40 mtpa by 2025, from virtually nothing three years ago.

In Japan, the idea for an LNG futures contract started to flow last year. It was prominently pushed back into the spotlights during the LNG conference last September. The new contract should be listed by March 2015, would allow parties to hedge against price swings, increase transparency in price formation and challenge the LNG-link to oil. The idea provoked sceptical reactions. The industry has warned on several occasions not to bank on lower LNG prices in any case because they may lead to the delay of new LNG projects that are facing a considerable cost increase.

And it is not sure whether a futures contract will bring prices down at all. “I think that it will take at least ten years to have any effect” one gas analyst said. “In the near future there is no possibility for prices to come down. In the first place because the LNG

“In the near future there is no possibility for prices to come down. The LNG spot market will be relatively tight in the next five years. And there is no interest in the market.”

spot market will be relatively tight in the next five years. And secondly because there is no interest in the market. Most sellers are oil companies who are not interested in efforts of the Japanese government to bring prices down. And big Japanese buyers are not interested in a futures market either. The Tokyo commodities exchange has listed an oil futures contract for more than ten years without any effect on prices.”

Hiroshi Mashimoto, senior gas analyst at the Institute of Energy Economics (IEEJ) in Tokyo is cautiously optimistic. “We do not know whether it will have a downward

effect on prices. The establishment of an LNG futures exchange is a positive development. But that is only part of the solution. The main issue is to bring down prices in long-term contracts.” And that will remain the bottleneck. According to the Asian Development Bank in its latest Energy Outlook, “LNG will continue to be traded under long-term contracts. That makes it hard for LNG buyers and will involve arduous contract negotiations to bring the current premium Asia is paying for LNG deliveries down.”

New players are allowed on the Japanese energy markets, although access is still very tricky. “Japan remains a difficult market”, one stakeholder told EER. Gas trader Tokyo Gas is expanding by means of vertical integration and is becoming a competitor on the electricity market. KPMG and PWC have increased the number of consultants in Tokyo that sell services to new market entrants. ■

LNG as game changer for EU geopolitics

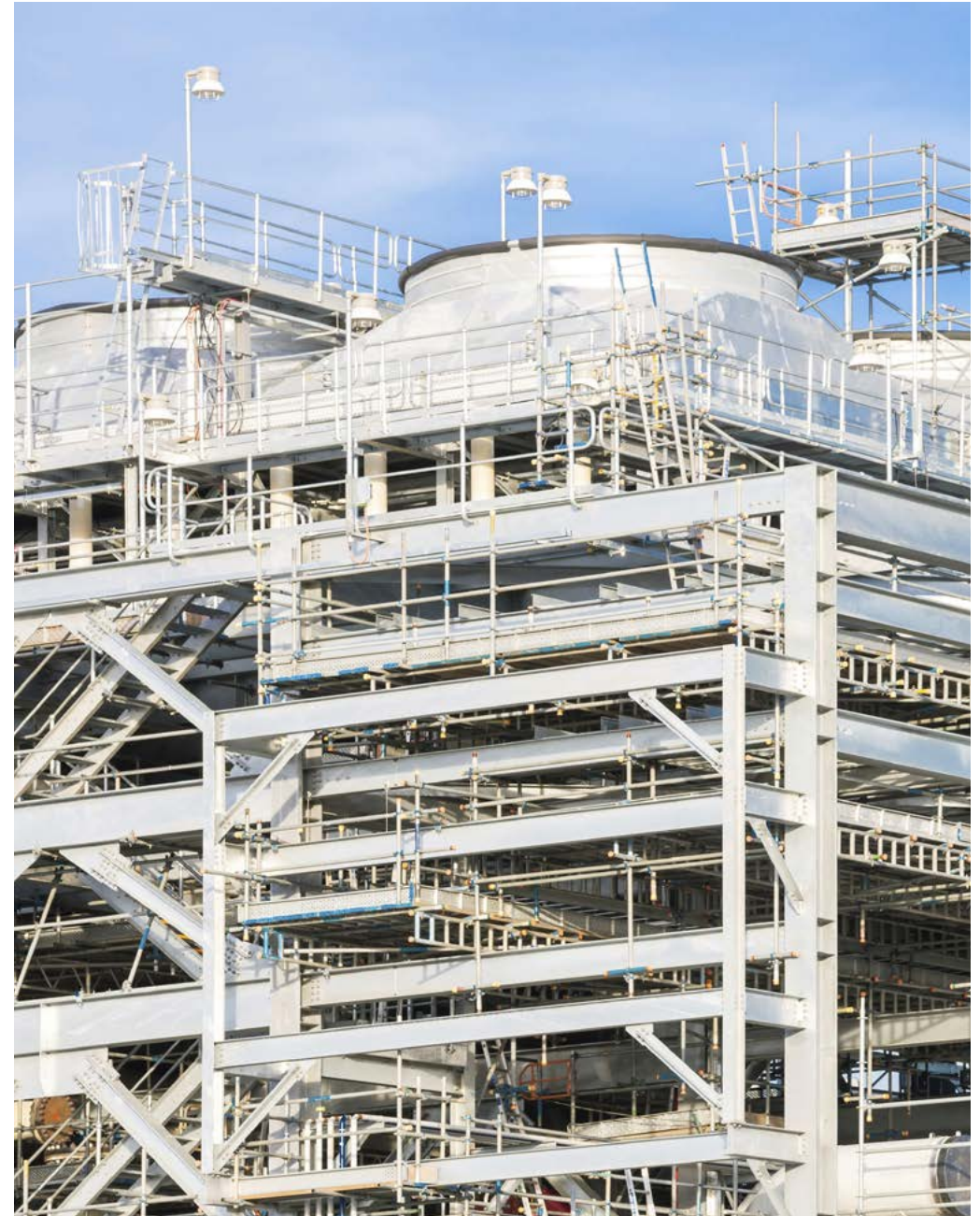
European imports of LNG have plummeted by several tens of percent over the last eighteen months due to a surge in Asian demand. Even so the gas sector and policy makers see a bright future for liquid natural gas in the European Union: it's relatively clean, competitively priced and it reduces EU dependence on its traditional gas suppliers. 'An ideal transition fuel'.

| *By Gert van Wijland*

The European Commission is a firm believer in LNG as an essential component of the European Union's energy mix in the medium term. For shipping and heavy road transport in particular, policy makers see major advantages in replacing diesel with cleaner liquid natural gas. Not without reason subsidies totalling 78 million euro were awarded last July to boost landing capacity and expand the logistics infrastructure along the Rhine and Danube rivers. The money is part of the 'Clean Power for Transport Package' implemented early this year. As part of the package the EU sets binding targets for

key ports to create capacity for the landing and transshipment of LNG. A specially created Commission of Experts was set up last month to monitor progress.

Together with Gothenburg in Sweden, Rotterdam Port is one of the biggest recipients of EU funds. Both ports will use the 34 million euro to build a break-bulk bunker facility. Apart from the money itself, Rotterdam is particularly pleased with the commitment the European Union has shown by extending the subsidy. "The allocation shows that the Commission has every confidence in LNG as a fuel for the



future,” the port authority said in a press release.

These days investments in landing, storage and processing of LNG are far from being self-evident. Compared with 2010, when 75 percent of European terminal capacity was being utilized (CEER report, March 2013) capacity utilization has since dwindled to just over 20 percent. The latter estimate comes from Wim Groenendijk, president of Gas LNG Europe, the lobby association of European LNG terminal operators. Figures from CEER indicate that in 2011 LNG accounted for almost a third of the total volume of processed gas. “But,” says Groenendijk, “imports have fallen by 27 percent in two years, while the decline in the first eight months of this year was again 26 percent.”

Even so, Groenendijk is not too worried just yet. The terminals are generally paid on the basis of long-term contracts for the capacity they make available and as such do not suffer immediate financial hardship as a result of the lower capacity utilisation. Another noteworthy factor

is that the decline is not primarily due to falling demand in Europe, but results from the surge in Asian demand which has reached record levels. Economic growth, coupled with the nuclear disaster in Japan, has boosted Asian LNG prices there to such an extent that LNG traders in the first instance export available LNG to the East. This has become the premium market, and only once demand there has been met does the remaining LNG go to Europe.

LNG gaining momentum in EU

Without wishing to seem politically incorrect, Groenendijk says that European gas prices are effectively too low to attract LNG. “Certainly now that gas demand in Europe has declined due to the economic crisis, there are regions elsewhere in the world where LNG can be sold with higher margins. But in the long run, with the development of increased supply, prices will even out.”

LNG fuelling station operator Antwan van Echtelt of LNG-24 agrees. LNG-24 operates a single LNG tanker lorry, which

“Certainly now Europe is targeting LNG filling stations every 400 kilometres on major routes, the debate has outgrown the chicken-and-egg stage.”

refuels filling stations in the Dutch city of Zwolle and elsewhere. In addition some of the flower transport sector in the western Netherlands is powered by liquid natural gas supplied by LNG-24. Capacity utilization of Van Echtelt’s tanker lorry currently runs at around 20 percent. But he too is optimistic: “It’s still a young market which isn’t working efficiently yet,” he says. “Infrastructure is still in the throes of being built and LNG trucks at the factory gate are still relatively expensive. But even so we’re already in a position to compete with the price of diesel. Just think what will happen once the flywheel gathers momentum.”

For LNG is set to take off, of that Van Echtelt and many others in the gas and transport sector are convinced. “Certainly now Europe is targeting LNG filling stations

every 400 kilometres on major routes, the debate has outgrown the chicken-and-egg stage”, he says. Partly due to increasingly strict emission regulations forwarders will increasingly be inclined to opt for LNG.”

Advantages abound

The advantages of large-scale LNG deployment go beyond the environmental benefits, according to a report published by PwC in May on the economic impact for countries such as the Netherlands. “Small-scale LNG can lead to 2.7 billion euro additional economic growth and 8,000 additional job years in the period up to 2030. These results are based on a scenario which assumes current policies and current fuel prices (“Current policies”). In a future scenario which assumes tougher emission regulations and positive price developments (“Clean growth”) the

“Because LNG interlinks the US, Asian and European gas markets, world gas prices will converge, eventually creating a single huge world market in which pipelines lose their exclusivity as a means of transport.”

economic impact could increase to 3.4 billion euro and 11,000 job years.’

Not only the Netherlands, but also other EU countries are set to benefit, says PwC. ‘To get an impression of the economic impact in other north-west European countries, we looked at Germany.

Based on analyses of the size of the German transport sector, we conclude that the impact in Germany will be largely comparable to the impact in the Netherlands (relative to the size of the Dutch economy). The above relates to the first three economic effects that we identified (investments in ships and trucks, investment in infrastructure and investments in bio-LNG). Possibly the effect on the German economy will be

smaller as Germany has fewer trucks and inland shipping barges as well as a smaller shipbuilding sector. But it accommodates a large truck-building industry. Also the health effects will be lower as Germany has a lower population density.’

Everything points to an increase in demand for LNG as a fuel. PwC estimates annual demand of between 0.5 and 2.5 million tonnes in 2030. That amounts to around ‘four to 22 million barrels of oil, implying 2 to 6 percent of total fuel use by ships and trucks.’ To meet the burgeoning demand, world LNG production will be ramped up over the coming years, with Australia set to catch up with Qatar as the world’s leading exporter, experts believe. In addition the United States is also expected to become an LNG exporter.

One world gas market

Currently the US government is still very restrained in issuing export permits, fearful that domestic gas prices will rise sharply through excessive gas exports. ‘They’re afraid that they could lose the competitive advantage that the US shale gas revolution has generated for heavy industry and the chemicals sectors,’ says Groenendijk. His comment touches on another key characteristic of LNG: because it interlinks the US, Asian and European gas markets, world gas prices will converge, eventually creating a single huge world market in which pipelines lose their exclusivity as a means of transport. Over distances of more than 3,000 kilometres LNG can already be transported more profitably than regular gas through a pipeline.’

A key consideration for the European Union is that LNG is a potential game-changer in terms of geopolitical relations, reducing dependence on the world’s traditional gas suppliers such as Russia and Norway. As such LNG is also an attractive fuel option for traders, says Groenendijk.

In addition LNG will of course continue to be inserted into the European gas network via regasification. Over the coming years existing terminal capacity is expected to be further expanded from around 191 billion cubic metres now to more than 280 billion cubic metres in the run-up to 2020.

Sharp capacity utilization rise

Groenendijk is unwilling to venture a prediction about the volumes Europe will process twenty years from now, but does expect that the use of LNG as fuel will have become commonplace by then with infrastructure capacity utilization sharply higher. ‘All the lights are on green: LNG is seen by many countries as an ideal transition fuel. It may be a fossil fuel, but it’s many times cleaner than traditional fuels in the transport sector. And above all, it’s affordable. And that’s important, because to be ecologically sustainable, it first and foremost has to be economically affordable.’ ■

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