

In this issue:

- 1 **Growth of LNG supply and demand underscores market development**
BP says its Energy Outlook provides an opportunity to consider lessons and insights
- 4 **US sees advances in Marcellus and Utica shale helping to underpin surplus for LNG exports**
Latest outlook expects five large liquefaction and export facilities to be on stream by 2021
- 6 **A round-up of latest events, company and industry news**
For the Record
- 16 **While Panama Canal boosts LNG traffic the main chock points remain Suez and Strait of Malacca**
US report gives overview of LNG and oil flows on main sea routes with potential hazard areas
- 18 **Malaysian International Shipping takes delivery of fourth vessel to handle rising volumes for Petronas**
Shipping company improves technology of fleet to match advances by main charterer
- 20 **Woodside plans Australian LNG expansion and cooperation with Kogas in US export project**
Perth-based company moves ahead on all fronts from LNG expansion to exploration offshore Africa
- 22 **World Carrier Fleet: Details of LNG vessels**
- 27 **Tables of import and export LNG terminals and plants worldwide**

Growth of LNG supply and demand underscores market development

BP says its Energy Outlook provides an opportunity to consider lessons and insights

Global LNG supplies will expand rapidly, leading to a more competitive, globally integrated natural gas market as more projects are completed.

"LNG exports are dominated by the US and Qatar, which account for almost half of global LNG exports by 2040, according to the 2018 Energy Outlook published by BP of the UK.

Completions

"Material increases are also projected in Australia, as existing projects are completed, in Russia and in East and West Africa," said BP.

BP Chief Executive Bob Dudley said the US shale revolution meant that the world had gone from scarcity to abundance and the UK energy major now estimates that recoverable resources could meet the world's demand to 2050 – at least twice over.

"It's not that there's more oil and gas – we're just getting better at producing it," said Dudley in presenting BP's report.

"The publication of BP's Energy Outlook provides an opportunity to step back from the here and now and consider some of the lessons and insights the Outlook contains about where energy is heading over the next few decades," said the CEO.

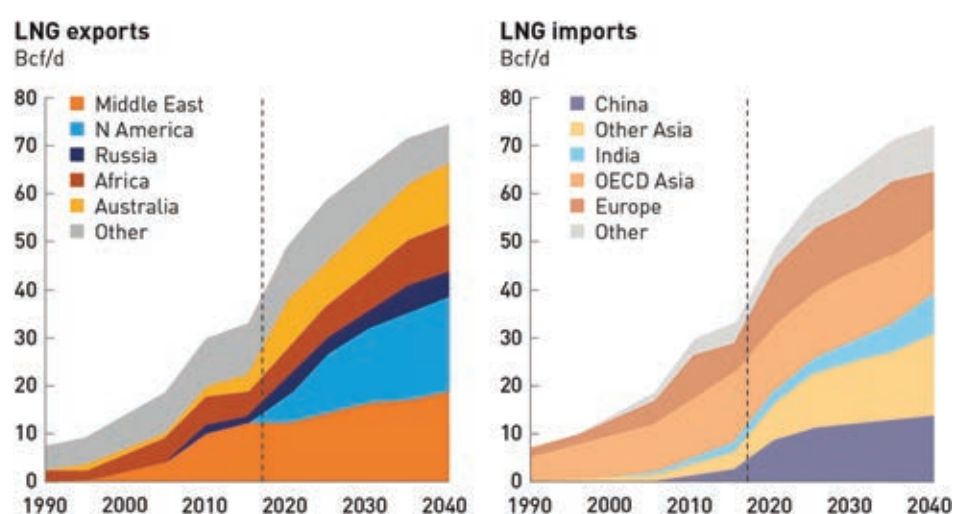
"As we know so well, abundance has an impact on the oil price which in turn has an impact on capital and operational spend.

Dynamics

"And those dynamics are here to stay. They have created a new era of hyper-competitiveness," Dudley stated.

"In the Upstream, the winners are those who can produce their reserves most competitively. And in the Downstream, the winners are those who can manufacture and market their products most competitively.

"Meanwhile, we face another very



LNG supply and demand forecasts of BP through 2040

different challenge in the shape of the transition to a low-carbon economy.

"We've known about it for years, but things are now at a pivot point. Costs of renewable energy are plummeting. Consumer demand is rising. And governments are taking action. Carbon pricing now covers 40 countries and one-eighth of global carbon emissions," said Dudley.

Europe role

In regard to LNG, the report said that the increasing accessibility and competitiveness of gas associated with LNG helps to develop new and expanding markets, led by China together with some smaller Asian countries such as Pakistan and Bangladesh.

Europe remains key, both as a potential "market of last demand" for surplus LNG cargoes and as a key hub of gas-on-gas competition between LNG and pipeline gas.

"The mobility of LNG cargoes and their ability to be diverted in response to price signals causes the gas market to become increasingly integrated, with movements in global gas prices becoming more synchronized," according to BP.

"Asia and Europe together account for the vast majority of LNG demand by 2040 and as such, how these markets develop

will have an important bearing on global LNG trade," it said.

"One question is whether Asia will provide a market for significant volumes of US LNG.

"A comparison of total Asian LNG imports with LNG exports from regions which are closer to Asia than the US and so have lower shipping costs, suggests that, in principle, there may be relatively little need for Asia to import LNG cargoes from the US," said the report.

"However, in practice, both LNG sellers and buyers see value in diversifying their portfolios, and so significant quantities of US LNG are likely to be exported to Asia," according to BP.

"In Europe, domestic gas production is set to roughly halve over the Outlook causing the share of imported gas in total consumption to increase from around half in 2016 to three-quarters by 2040," it said.

'Evolving transition'

In the evolving transition scenario, whereby natural gas use is matched by growing supplies of wind, solar and other power sources, the development of a globally integrated gas market limits European concerns about becoming overly dependent on gas exports from Russia, allowing Russia to broadly maintain its share of European gas imports.

LNG *journal*



The World's Leading LNG publication

Maritime Content Ltd

1st Floor, 30 Warner Street
London EC1R 5EX
United Kingdom
www.LNGjournal.com
+44 (0)20 7253 2700

Publisher

Stuart Fryer

Editor

John McKay
editor@lngjournal.com

Advertising

David Jeffries
Only Media Ltd
Tel: +44 (0) 208 150 5293
djeffries@lngjournal.com

Subscriptions Sales Manager

Elena Fuentes
Tel: + 44 (0) 7017 3416
elena@lngjournal.com

Production

Vivian Chee
Tel: +44 (0) 20 8995 5540
chee@btconnect.com

Subscription

Print & online **£655/€810/US\$1050**

Online only **£595/€795/US\$950**

See website for more details
www.lngjournal.com
elena@lngjournal.com
hotline +44 (0)20 7017 3416

No part of this publication may be reproduced or stored in any form by any mechanical, electronic, photocopying, recording or other means without the prior written consent of the publisher. Whilst the information and articles in LNG journal are published in good faith and every effort is made to check accuracy, readers should verify facts and statements direct with official sources before acting on them as the publisher can accept no responsibility in this respect. Any opinions expressed in this magazine should not be construed as those of the publisher.

Printed by: Rabarbar s.c.,
Polna 44,
41-710 Ruda Śląska,
Poland

“As such, the share of Europe’s total gas consumption met by Russian exports increases from around a third currently to almost half by 2040,” stated BP.

The prospects for gas demand could be adversely affected by either weaker or stronger environmental policies. Weaker policies could dampen the shift away from coal towards natural gas as in the “less gas switching” scenario, whereas stronger policies could encourage greater gains in renewables and energy efficiency.

The “renewables push” scenario assumes that the level of policy support for renewables persist around current levels for the entire outlook, crowding out gas (and coal) from the power sector. Global gas demand also grows in the “renewables push” scenario, similar to the “less gas switching” outcome.

“The growth of gas demand is slower in the ‘faster transition’ and ‘even faster transition’ scenarios, reflecting the more comprehensive climate policies assumed in these scenarios, which lead to significant improvements in energy efficiency, as well as to a lower carbon fuel mix.

“The share of gas in primary energy falls in all of these alternative scenarios, relative to the current level, in contrast to the steady increase projected in the evolving transition (ET) scenario,” it said

Strength

The overall conclusion is that natural gas growth will be strong, supported by broad-based demand, strong increases in low-cost supplies and continuing expansion of supplies of LNG.

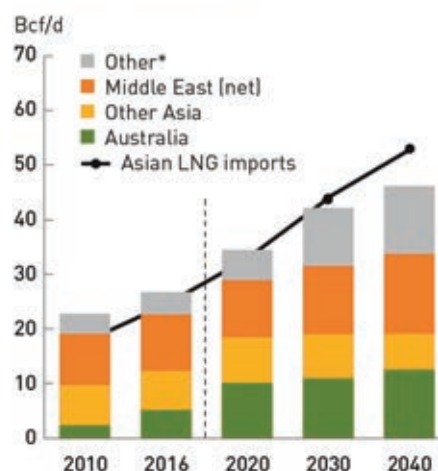
BP explained that in the evolving transition scenario, natural gas growth is supported by a number of factors: increasing levels of industrialization and power demand (particularly in emerging Asia and Africa); continued coal-to-gas switching (especially in China); and the increasing availability of low-cost supplies (in North America and the Middle East).

The US and the Middle East (Qatar and Iran) contribute over half of the incremental production.

By 2040, the US accounts for almost one quarter of global gas production, ahead of both the Middle East and the former Soviet Union states (each accounting for around 20 percent).

“Global LNG supplies more than double over the Outlook, with around 40

Asian LNG imports and LNG exports of regions ‘close’ to Asia



BP view of possible Asian and European natural gas trends

percent of that expansion occurring over the next five years,” said BP.

Availability

The sustained growth in global LNG supplies greatly increases the availability of gas around the world, with LNG volumes overtaking inter-regional pipeline shipments in the early 2020s.

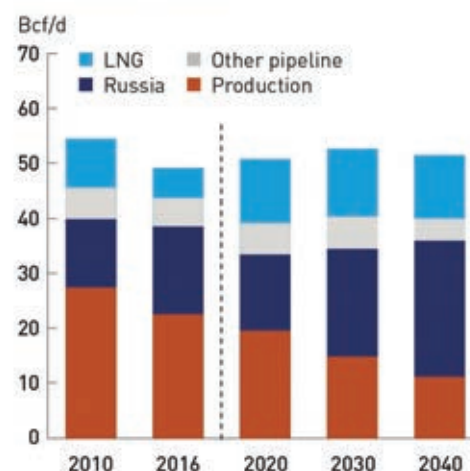
Growth in natural gas demand is led by increases in industry and the power sector.

In the evolving transition scenario, growth in industrial use of gas including use in the non-combusted sector (70 billion cubic feet per day) is supported by both continued industrialization in developing economies, together with gas gaining share as some countries in both the Organization for Economic Cooperation and Development (OECD) and non-OECD nations switch away from coal.

“The increase in gas used by the power sector (59 Bcf/d) is driven by the overall growth in global power demand. The competing trends in renewables and coal demand means the share of gas within the power sector is relatively flat over the Outlook period,” said BP.

“The growth of gas demand within buildings (21 Bcf/d) is less significant, reflecting that almost all of the

Gas Supply to Europe



incremental energy demand within buildings over the Outlook is for electricity to provide space cooling and power electrical appliances,” it added.

“The fastest rate of growth of gas demand is in the transport sector as gas is increasingly used in trucking and marine transport.

Transport

“Although the increase in transport demand is small in absolute amount (11 Bcf/d), the share of gas within transport increases to almost 5 percent by 2040,” said the report.

BP said that for its position as an oil major growing production starts with choosing where to invest.

“We want to work with governments who are eager to build a competitive industry,” said BP

“I think we are finally saying goodbye to the old world where suppliers inflated costs in good times and operators squeezed them in bad.”

CEO Dudley.

“One example in our portfolio is in Egypt, where we just started up the Atoll project seven months ahead of plan and only 33 months after discovery.

“That is part of a ramp-up of

production in Egypt and part of a global programme to add 900,000 barrels of production by 2021," he added.

Projects

"Once the agreements have been signed, the focus is on capital discipline and I believe the key here is to work collaboratively with suppliers and contractors," he said.

"I think we are finally saying goodbye to the old world where suppliers inflated costs in good times and operators squeezed them in bad. If we work together, we'll break that cycle of boom and bust," he said.

"For instance, in Trinidad and Tobago, instead of buying a turbine, as we always have, we are using one on a 'power-by-the-hour' basis and the supplier – Baker Hughes GE in this case – services the kit. That keeps us both focused on performance," he explained.

"Then once the project is built, the spotlight moves to operational efficiency.

"This is where digital technology has come of age at just the right time. Digital sensors to monitor; digital tools to control; digital simulations to optimise; and digital databases to organise" he said.

Diversified mix

The Outlook concludes that the world is on a broad course for the most diversified fuel mix ever.

If current trends continue, by 2040 we estimate that non-fossil fuels are projected to grow to provide around one quarter of the world's energy, with the other three quarters supplied respectively by oil, gas, coal.

"And in a faster transition, consistent with the Paris Agreement, oil and gas still provide

around 40 percent of the world's energy in 2040," it added. Oil will be used with increasing efficiency, and gas has a bright future. In fact, we think gas could

grow three times as fast as oil, as it is used in heating, as fuel for ships and trucks, and in the power sector as the perfect partner for wind and solar power.

"It's great to see renewables grow so fast. But it is also great when gas replaces coal in power and halves the emissions," said the report. ■

Building the Energy Future through LNG

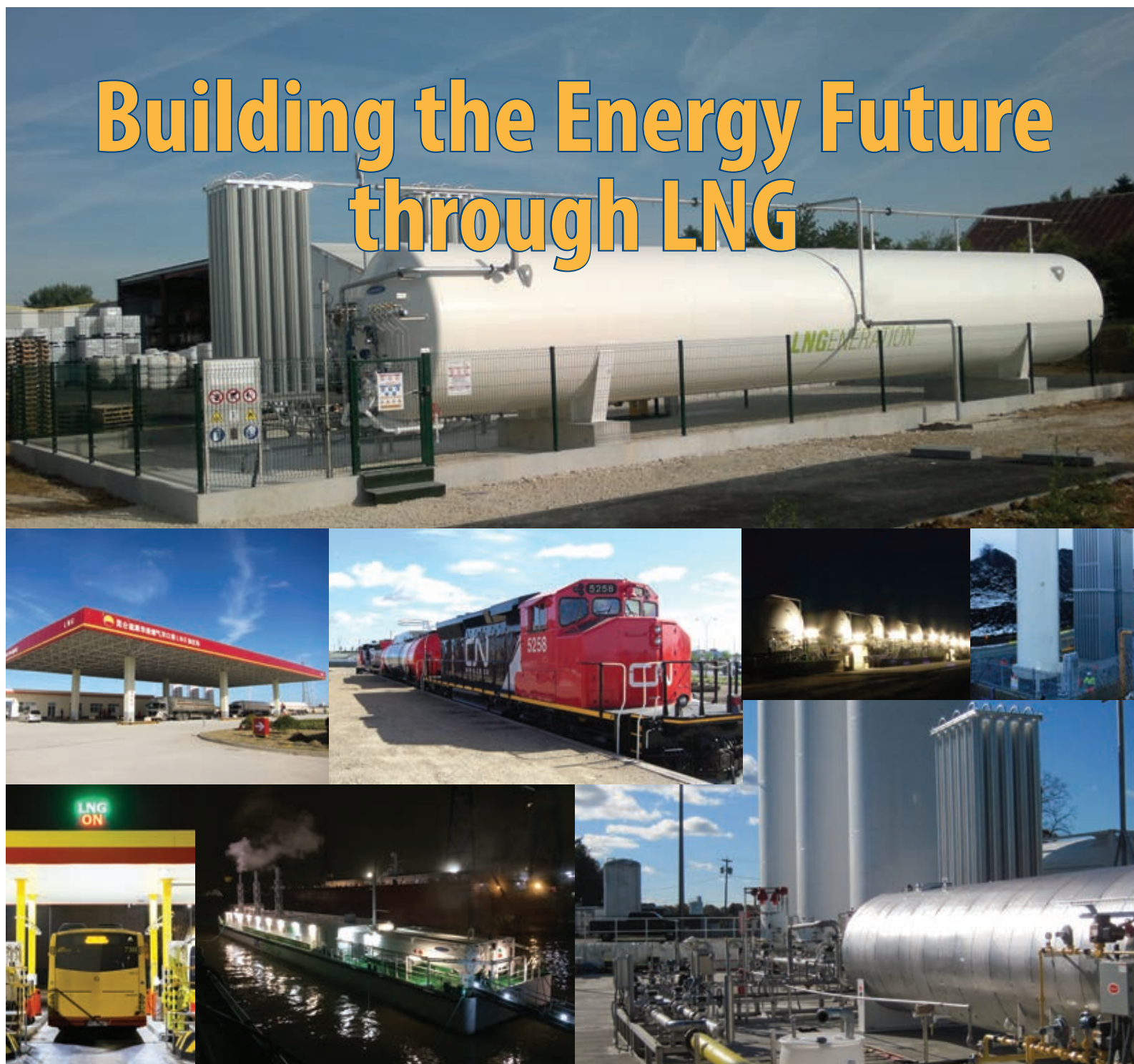


Chart LNG solutions are facilitating the use of natural gas as a safe, economical, clean-burning fuel alternative to diesel and other distillates for energy, transportation and industry.

www.ChartLNG.com
LNG@ChartIndustries.com

CHART
 Innovation. Experience. Performance.®

US sees advances in Marcellus and Utica shale helping to underpin surplus for LNG exports

Latest outlook expects five large liquefaction and export facilities to be on stream by 2021

Natural gas production from shale gas and tight oil plays as a share of total US natural gas production is projected to continue to grow in both share and absolute volume because of the large size of the associated resources, which extend over more than 500,000 square miles.

Offshore natural gas production in the US is expected to remain nearly flat over the projection period as production from new discoveries generally offsets declines in legacy fields, according to the latest US Energy Information Administration's energy outlook.

Growth path

Production of US coalbed methane gas generally continues to decline through 2050 because of unfavourable economic conditions for producing that resource.

"Continued development of the Marcellus and Utica plays in the East is the main driver of growth in total US shale gas production across most cases and the main source of total US dry natural gas production.

"Production from the Eagle Ford and Haynesville plays in the Gulf Coast region is a secondary source to domestic dry natural gas, with production largely levelling off after 2028," said the EIA report.

"Associated natural gas production from tight oil production in the Permian basin grows strongly through the projection period," it added.

The US government and industry believes that continued technological advancements and improvements in sector practices are expected to lower costs and to increase the volume of oil and natural gas recovery per well.

These technologies and improved methods will have a significant cumulative effect in plays that extend over wide areas and that have large undeveloped resources such as the Marcellus, Utica and Haynesville shale basins.

Pipelines

US natural gas pipeline exports to Mexico and the LNG exports are forecast to increase until 2020 and through 2030 pipeline exports to Mexico will slow and LNG exports will grow rapidly.

Increasing natural gas exports to Mexico are the result of more pipeline infrastructure to and within that country, allowing for increased natural gas-fired power generation.

However, by the mid-2020s, Mexican domestic natural gas production begins to displace US exports.

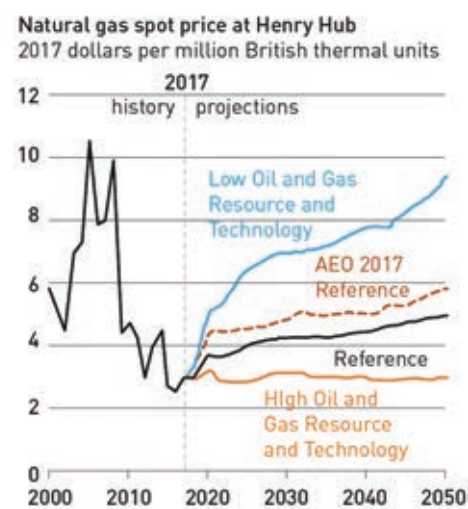
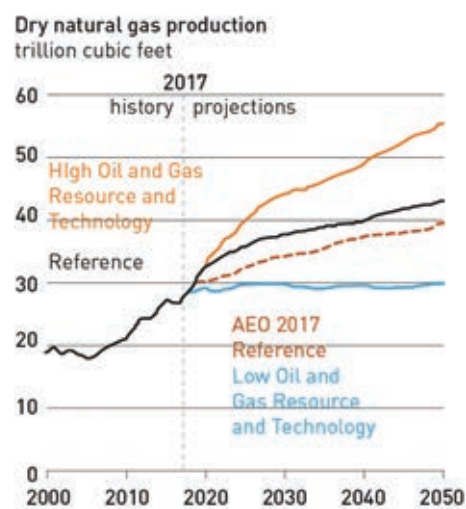
The report noted that one LNG export facility currently operates in the Lower 48 states, at Sabine Pass in Louisiana, with a second facility expected to be in full commercial operations in March at Cove Point in Maryland.

"After the five US LNG export facilities currently under construction are completed by 2021, LNG export capacity is projected to increase as Asian demand grows and US natural gas prices remain competitive," stated the US report.

"As US-sourced LNG becomes less competitive, export volumes remain constant during the later years of the projection," added the EIA.

Canada role

US imports of natural gas from Canada, primarily from its prolific Western region,



US natural gas output and prices under various outcomes

remain relatively stable for the next few years before declining from historically high levels.

"US exports of natural gas to Eastern Canada continue to increase because of Eastern Canada's proximity to US natural gas resources in the Marcellus and Utica Shale plays," said the report.

The report explained that historically, most LNG was traded under long-term, oil price-linked contracts, in part because oil could substitute for natural gas in industry and for power generation.

"However, as the LNG market expands, contracts are expected to change with weaker ties to oil prices," it stated.

"When the oil-to-natural gas price ratio is highest, as in the High Oil Price case, US LNG exports are at their highest levels.

"Demand for LNG increases as consumers move away from petroleum products. US LNG supplies have the advantage of being priced based on relatively low domestic spot prices instead of on oil-linked contracts," added the report.

Competitive

In the High Oil and Gas Resource and Technology case, low US natural gas prices make US LNG exports competitive relative to other suppliers.

Conversely, higher US natural gas prices in the Low Oil and Gas Resource and Technology case result in lower US LNG exports.

"As more natural gas is traded via short-term contracts or traded on the spot market, the link between LNG and oil prices is projected to weaken over time, making US LNG exports less sensitive to the oil-to-natural gas price ratio and

resulting in slower growth in US LNG exports in all cases," the EIA said.

"Natural gas production increases in every case, supporting higher levels of domestic consumption and natural gas exports. However, these projections are sensitive to resource and technology assumptions," cautioned the report.

Growing demand in domestic and export markets leads to increasing natural gas spot prices over the projection period at the US benchmark Henry Hub in the Reference case despite continued technological advances that support increased production.

Shale gas price

Natural gas prices could be lower because of an estimated increase in lower-cost resources, primarily in the Permian and Appalachian basins, which support higher production levels at lower prices over the projection period.

"The industrial sector is the largest consumer of natural gas," said the report.

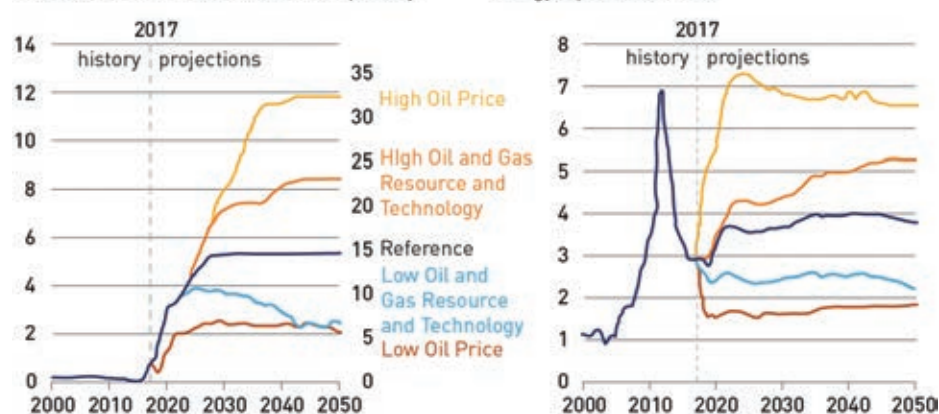
"Major natural gas consumers in this sector include the chemical industry (where natural gas is used as a feedstock in the production of methanol and ammonia), industrial heat and power, and liquefied natural gas export facilities.

"Natural gas used for electric power generation generally increases over the projection period but at a slower rate than in the industrial sector.

"This growth is supported by the scheduled expiration of renewable tax credits in the mid-2020s," said the report.

"Natural gas consumption in the residential and commercial sectors remains largely flat because of efficiency

U.S. liquefied natural gas exports are sensitive to both oil and natural gas prices—
Liquefied natural gas exports trillion cubic feet billion cubic feet per day



Future LNG direction is up under all scenarios put forward

gains and population shifts that counterbalance demand growth.

Domestic demand

“Although natural gas use rises in the transportation sector, particularly for freight and marine shipping, it remains a small share of total natural gas consumption, and natural gas remains a small share of transportation fuel demand,” said the EIA.

Between the two largest sectors of natural gas consumption, industrial and electric power, the power sector is more responsive to prices.

“In the short term, electric generators can react quickly to take advantage of changes in relative fuel costs and generally have more fuel options than the industrial sector.

“In contrast, although energy costs are considered when making long-term decisions about the number, siting, and types of industrial facilities, these costs are only one of many factors,” it said.

Industrial

The industrial sector is projected to be the largest natural gas-consuming sector, accounting for 38 percent of the domestic market in 2050.

However, in the High Oil and Gas Resource and Technology case, the electric power sector is the largest natural gas consumer.

This is because the Henry Hub spot prices remain lower than \$3.50 per million British thermal units (MMBtu) in that case through the entire projection period with natural gas more competitive with renewables and coal.

By 2050, natural gas use in the electric power sector is 41 percent of total US domestic natural gas

consumption in that case. Conversely, in the Low Oil and Gas Resource and Technology case, the electric power sector only accounts for an average 25 percent of

US natural gas use from 2020 to 2050 because of higher natural gas prices – with the Henry Hub price reaching \$6.50/MMBtu by 2025 and more than

\$9.40/MMBtu by 2050. The industrial sector accounts for 42 percent of the domestic natural gas market from 2020–2050 in that case. ■



RINA. Excellence Behind Excellence.

We have changed to respond to new challenges,
to strive for the best and to achieve new goals.
Supporting your excellence through our own.

rina.org

For the Record

ANADARKO Petroleum Corp., one of the main participants in projects to develop liquefied natural gas production in Mozambique, said the project joint venture had made “meaningful progress” in an agreed citizen resettlement process to prepare an onshore location for the construction of the large-scale liquefaction and export plant. The onshore liquefaction plant will be constructed near the port of Pemba in the northeast Cabo Delgado Province and will involve the resettlement of more than 1,500 households. “During the fourth quarter, the company made meaningful progress with its Mozambique LNG project by beginning the resettlement process to prepare the onshore location for the future LNG park,” said Anadarko in its fourth-quarter earnings statement. The US company is the operator of the Area 1 licence in the prolific Rovuma Basin offshore Mozambique where its onshore joint venture is planned and where Italy’s Eni is leading a separate floating production project called South Coral FLNG. Anadarko and its partners are proceeding with the first phase of preparing the Mozambique onshore site where an initial 20 million tonnes per annum of production is planned with potential for 50 MTPA of output. The resettlement has been prepared in close consultation and with the full participation of affected communities and the Government of Mozambique and civil society organizations have played an active role in the development of the plan. “Consultation and engagement with affected and host communities, all levels of Government and civil society will be ongoing throughout resettlement implementation, monitoring and evaluation,” the government has said. “The project resettlement goal is to undertake resettlement in a manner that gives physically and economically displaced households the opportunity to improve or at least restore their livelihoods and standards of living,” according to the Mozambique plan.

The onshore Mozambique LNG joint venture will extract natural gas via subsea wells from the large offshore gas reservoirs of the Rovuma Basin. The collected gas will be transported via sub-

sea pipelines to the onshore facility where it will be processed and exported to global markets. The project has an initial 30-year lifespan but this may be extended depending on future gas reserve development. Near-shore construction of loading jetties, a materials offloading facility (MOF) and flowlines will involve a Marine Exclusion Zone (MEZ) during construction and the establishment of a security zone during operations. The physical and economic displacement has involved people who have dwellings or pursue agricultural or fisheries livelihoods on the Afungi peninsula. The project has acquired 6,253 hectares of land and has selected a further 2,262 hectares as replacement agricultural areas for those displaced. Around 556 households will be physically displaced and will receive new houses, constructed by the project, at a replacement village in Quitunda. A further 952 households will experience loss of use of cultivated land, fallow or bushland and other terrestrial assets. “All displaced households will receive compensation, replacement agricultural land and the opportunity to participate in livelihood programs,” said the government. “The total number of physically and economically displaced households due to terrestrial project activities within is 1,508 households,” it added. Anadarko has a 26.5 percent stake in Mozambique Area 1 and Japanese trading house Mitsui holds 20 percent. Indian companies, including Bharat Petro Resources, ONGC Videsh and Oil India Ltd., hold a further 30 percent. The Mozambican state energy company ENH has 15 percent of the licence and Thailand’s PTT Exploration & Production has an 8.5 percent shareholding.

ANDEAVOR, the Texas-based energy and refining company, has acquired the Alaskan small Kenai liquefaction and export plant that was closed by previous owners ConocoPhillips in 2016 after shipping cargoes to Japan for more than 40 years. “This acquisition further strengthens our integrated value chain by optimizing our operations in Kenai and providing low-cost fuel for our refinery,” the company said. ConocoPhillips said in November 2016 it planned to sell the Kenai facility, which was the first US liquefaction and export plant to come on stream in 1969 and went on to export cargoes to Japan for 46 years. Kenai LNG had been given a short reprieve after shutting down in 2013 and during 2014 and 2015 exported about 10 cargoes to

Japan, mostly on a spot basis to Japanese utilities. LNG from Kenai had previously been shipped under long-term contract to Tokyo Electric Power Co. and Tokyo Gas, though operations were gradually cut back at the ageing plant where the capacity was less than 900,000 tonnes per annum.

The volumes delivered from the two-Train Kenai plant were small compared with the eventual 27 million tonnes per annum for the first US Gulf Coast LNG export plant to come on stream, Sabine Pass in Louisiana. ConocoPhillips will be a gas supplier to the new large-scale Alaska LNG project led by the state body, Alaska Gasline Development Corp., itself is planning to produce an initial 20 MTPA of LNG from its four planned processing Trains using North Slope gas field resources. The original investors in the Kenai plant were Marathon Oil and the predecessor company of ConocoPhillips. Its start-up in 1969 came four years after the first full-scale LNG export plant began commercial operations at Arzew in Algeria. Andeavor, based in San Antonio, is likely to receive gas via the plant for its nearby 63,000 barrel-per-day refinery in Kenai. The future Alaska LNG project’s liquefaction facility’s liquefaction plant is expected to be constructed near Kenai and fed by a pipeline of more than 800 miles from the North Slope fields around Prudhoe Bay in northern Alaska.

APA GROUP, Australia’s leading natural gas pipeline company, has overhauled its pipeline services available on its East Coast and Central Region transmission assets to provide customers with more options and additional flexibility amid competition from LNG and concern over prices. APA said it was aiming to make it simpler for their commercial customers to better manage their gas portfolios. The company has released details of its pricing methodology and other information in relation to pipeline services and tariffs for the pipelines, consistent with the requirements of Australia’s National Gas Rules. The company provides a range of gas transportation, storage and other services to a broad group of long-term customers across the East Coast Grid. “APA’s new offerings provide more options for shorter term capacity reservation which will assist customers in the increasingly dynamic Australian gas market,” it explained. “Customers can choose from a range of simpler and more flexible service offerings so that APA can

tailor its services to better meet individual customer needs. Gas and pipeline capacity can be traded with access to services which APA has been offering well ahead of government mandated markets,” it added.

APA said it was hoping through these new measures to encourage better market pricing and more natural gas supply security. “APA remains committed to working closely with customers - both existing and new entrants - to meet their commercial needs and to encourage growing the gas market and increasing its liquidity for the benefit of all Australians,” said Rob Wheals, APA’s Group Executive for Transmission. “We recognise that customers’ needs across Australia are varied and therefore require transparent and consistent information. Our refreshed services provide additional clarity and ease of access for customers to APA’s infrastructure which will help promote gas market liquidity,” he added. The company noted it had executed 15 gas transportation agreements with customers on its East Coast and Central Region pipelines that are now subject to the new information and a commercial arbitration regime. “We see the development of Australia’s gas reserves as critical to the delivery of reliable and affordable energy as Australia transitions to a lower carbon economy whilst supporting economic growth,” stated Wheals.

AUSTRALIA is heading towards becoming the world’s largest liquefied natural gas exporter and its policies have been described as “impressive” by the International Energy Agency as it ensures energy security while moving ahead with reforms for the domestic market. “Along with the United States, Australia is leading the next wave of growth in LNG,” said the France-based IEA in a report about Australia’s energy position. “As a major exporter of coal, Australia is also a strong supporter of carbon capture, utilization and storage technologies,” said the report. “The report commends Australia’s efforts which can be critical globally to meeting long-term climate goals,” added the IEA. Australia is positioned to overtake Qatar in 2019 as the world’s No. 1 LNG exporter with 88 million tonnes per annum of capacity as several more production projects come on stream. Its LNG shipments are delivered to Asian nations, including China where natural gas is being used as the key fuel

for a cleaner energy future. At the same time, energy companies have cooperated with the government in ensuring stable domestic supplies of natural gas, particularly on the East Coast where three new coal-seam-gas-to-LNG plants have come on stream in the past three years.

The IEA's review points out that the sustainable development of new gas resources is critical for natural gas to play a growing role in the energy transition. "The government's efforts to ensure energy security and move ahead with market reforms have been impressive," said Fatih Birol, the IEA's Executive Director. "Australia can develop its vast renewable resources and remain a cornerstone of global energy markets as a leading supplier of coal, uranium and LNG, securing the energy for growing Asian markets," added Birol. The IEA added that a comprehensive national energy and climate strategy was needed for Australia to have a cleaner and more secure energy future. "The National Energy Guarantee is a promising opportunity for Australia to

integrate climate and energy policy," it added.

The report calls on Australia to continue efforts to improve transparency of gas pricing, boost market integration and facilitate access to transportation capacity. Australia should rely on long-term policy and energy market responses to strengthen energy security, foster competition, and make the power sector more resilient, according to the IEA review. In line with global trends, Australia's energy system is undergoing a profound transformation, putting its energy markets under pressure. "Concerns about affordable and secure energy supplies have grown in recent years, following several power outages, a tightening gas market in the east coast and rising energy prices," the report noted. Besides assessing progress since the IEA review of 2012, the Australian government requested the IEA to focus on how Australia can use global best practices in transitioning to a lower-carbon energy system. "This question points to safeguarding electricity supply when ageing coal capacity retires,

increased variable renewable energy comes on line and natural gas markets are tight," it said.

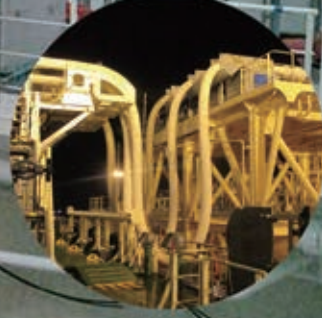
CANADA and its LNG debate has seen the intervention of the Canadian Haisla First Nation of native North Americans in the province of British Columbia. They said they rejected the flawed environmental policies of activist groups such as the Sierra Club and back the liquefied natural gas export project called LNG Canada, proposed by Royal Dutch Shell and its joint venture partners to ship clean fuel to Asia. The Haisla First Nation sees the policies from the federal capital Ottawa and the provincial capital Victoria, as well as environmental activists, keeping its people in poverty while blocking their efforts to be shareholders and joint developers of export and liquefaction plants on their own land. A leader of the Haisla First Nation has condemned anti-LNG project statements from the Sierra Club of BC and its environmental agenda which neglects to address any of the issues faced by First Nations in northern BC "where

unemployment is rampant, and the tourism industry offers little promise of that changing." Shell's LNG Canada project is proposed for a brownfield site near the town of Kitimat and is still on its agenda. Shell's partners in the LNG Canada venture are three of the largest Asian companies involved in LNG, Korea Gas Corp., Chinese energy group PetroChina and Japanese trading house Mitsubishi Corp. The Haisla First Nation statement came from Crystal Smith, chief councillor of the Haisla Nation Council after the Sierra Club told the First Nation citizens to stop supporting LNG. "This government campaigned on promises to apply stringent conditions to any LNG development and to take seriously the need to do more in response to the climate crisis. Promoting LNG in Asia is doing neither," said the Sierra Club environmental group. "No premier wants to market the burned landscapes and disaster tourism that would inevitably be the result of continued fracked-gas exports," it said "Step No. 1 is to stop promoting LNG. Then let's support resilient communities, build a clean-

DOLPHINFLEX

Dolphinflex LNG STS hose For LNG ship to ship transfer & LNG bunkering






SANGBONG CORPORATION
 Tel.) +82 31 683 1405
 Fax.) +82 31 683 1409
 E-mail) sales@dolphinflex.net
 Web) www.dolphinflex.com

energy economy that employs British Columbians with good green jobs,” it said.

The Haisla in response rejected the Sierra Club claims. “Before the Sierra Club BC writes any more about LNG, I invite them to spend time with the many First Nations that support LNG development,” said Smith. “The Haisla have worked closely with LNG Canada, a proposed LNG-export project that would be located in our traditional territory. We have spent a significant amount of time participating in an environmental assessment review process to ensure our concerns about the land we live on and the waters that surround our village would be protected,” explained the Haisla spokeswoman. “We are satisfied that LNG Canada has designed its project to address our concerns and to operate with the lowest greenhouse-gas emissions of any large-scale LNG project in the world today. “We see significant employment for our members, access to educational opportunities and a way forward for a truly independent nation,” she added. “Environmental groups should remember to take into account Aboriginal rights and title, the relationship we have to the land and water resources and our interest in building a future for our people,” stated Smith “We know exactly what we need - the ability to govern ourselves, take care of our families, and ensure our young people have opportunities that allow them to remain in our community and become self-supporting. “What we need are well-paying jobs and economic development opportunities. LNG development has offered that path for the Haisla Nation,” said Smith. Shell said recently that it was interested in pushing ahead with LNG Canada on the basis of reduced costs and higher returns on the project. “This project continues to be actively progressed by Shell and the joint venture participants as an opportunity to bring Canadian gas resources to the growing global gas markets,” said Shell Canada in its most recent statement in December 2017. The LNG Canada venture had postponed its final investment decision indefinitely because of the oil price slump and the anti-hydrocarbon policies at the Canadian federal government in Ottawa. Canada's National Energy Board in January 2016 had awarded its first 40-year LNG export licence to the Shell-led venture.

CROWLEY Maritime Corp., the US shipping group with operations from Florida to the Caribbean, said one of its

subsidiaries signed another multi-year supply contract with Pivotal LNG of the US to support a major pharmaceutical company's energy needs in the US territory of Puerto Rico. The contract, executed through Crowley subsidiary Carib Energy (USA), calls for Crowley to transport LNG from Pivotal facilities on the US mainland to the island manufacturer. “We are very pleased to enhance our relationship by continuing to grow our LNG services and volumes with this critical customer in Puerto Rico,” said Crowley's Greg Buffington, vice president, LNG business development. “Crowley will continue to provide an uninterrupted supply chain of natural gas to the customer's site, just as we have done since 2014, helping them utilize a safe, reliable and environmentally friendly fuel for their operations,” added Buffington.

With Crowley's supply chain solution, LNG is loaded into Crowley's 10,000-gallon International Standardization Organization (ISO) containers at one of Pivotal's LNG supply plants in the southeast US. These ISO containers are then transported via truck and loaded onto Crowley vessels in the port of Jacksonville in Florida. Crowley then provides ocean transportation and delivers the LNG to various customers in Puerto Rico.

“Pivotal and Crowley continue to work together to expand the delivery of LNG to companies in Puerto Rico,” said Tim Delay, vice president of Pivotal LNG. “LNG is a clean, domestically produced alternative fuel that is being used by multiple industries to reduce emissions and energy costs,” he added. Pivotal expects to soon source these LNG volumes under the contract from the JAX LNG plant that is being jointly developed with Pivotal's partner, Northstar Midstream, in Jacksonville. JAX LNG is a new facility that will be North America's first coastal LNG facility with marine and truck-loading capabilities. Pivotal and Southern Company Gas operate a network of LNG production facilities with the capacity to produce over 554,000 gallons per day and the ability to store more than 96 million gallons.

ENERGY WORLD Corp., the developer of the mechanically complete first LNG import terminal in the Philippines at Pagbilao, is constructing a second storage tank at the facility that will operate as a tolling Hub with access for third-party clients. “The strategically important asset for the Philippines’

nascent gas industry has 130,000 cubic metres of storage and foundations for a second tank have been laid,” said Chairman and Chief Executive Stewart Elliott in a presentation to investors. Elliott, who has built more than 6,500 megawatts of electricity generating capacity in Asia was previously with the Hopewell Group. The EWC business is based in Hong Kong, though it is listed on the Australian Securities Exchange. “The Pagbilao LNG terminal is capable of handling 3 million tonne per annum of LNG with the first tank, which can support 3,000MW of gas-fired power generation,” said EWC. “This will support our adjacent 650MW combined-cycle, gas-fired power plant and provide expansion options for both EWC and third-party clients,” it added. “The LNG terminal at Pagbilao will act as a Hub and LNG can be imported to the terminal and then distributed in smaller cargoes to users around the Philippines,” explained EWC.

CEO Elliott said there were multiple options for the distribution including pipelines, shipping and land transport solutions. “Once available in the Philippines, we foresee significant demand for LNG,” said Elliott. “We are being approached by a number of provinces and islands wishing to secure LNG supplies. We are having initial discussions with industry players on their LNG needs,” added the CEO. EWC also has a subsidiary with the LNG carrier “Ocean Quest” at its disposal. The Hong Kong company is additionally developing the small-scale Sengkang LNG liquefaction plant in Indonesia. It has a design capacity of 2 MTPA, consisting of four modular Trains each with 500,000 tonnes per annum of capacity. “Construction is 80 percent complete and gas will be purchased from our Sengkang gas field, where an allocation agreement has already been concluded, ensuring supply of gas until 2022,” said EWC. Gas is expected to be sold to the Indonesian state-owned electricity company Perusahaan Listrik Negara under an offtake agreement for domestic use. “We also have a license to export LNG, subject to meeting domestic gas obligations, and this could be used to supply our Philippines Hub Terminal,” said EWC. “It is our intention to complete construction of 500,000 tonnes of capacity initially, and then roll out another module each three months until all four modules are in commercial operation,” it added.

GAS NATURAL Fenosa, one of the leading European and South American utilities and liquefied natural gas sector participants with LNG volumes from the leading plants in the US and Russia, has revamped its senior management, reflecting more control by global investment funds. The company has elected Francisco Reynes Massanet as Chief Executive and Chairman and accepted the resignations of two leading executives and directors, Isidro Faine Casas and Rafael Villaseca Marco, as new investors from equity funds assumed more power. The arrival of Reynes as CEO coincided with the end of the mandate of Villaseca as CEO because his contract has expired. While Villaseca is leaving the global gas company, he will remain linked to the group as President of the GNF Foundation. Faine is also leaving his post as a director, though will remain in the gas group as honorary president.

The objective of the GNF overhaul is to guarantee “continuity in the management values of the company at these times in which it faces important challenges,” the Spanish group said in a statement.

The main task of Reynes as GNF's CEO is to promote the group's strategic plan, leading “a new stage of transformation and growth” of the company. GNF, whose LNG cargo suppliers include the US Sabine Pass export plant in Louisiana and the Yamal project in Russia, handles global shipments from worldwide sources and has import terminal capacity in Europe. GNF is a huge and wide spread business combining electricity, power and natural gas distribution and generation in Europe with a growing gas business in Latin America and South America covering regulated gas distribution in Argentina, Brazil, Chile, Colombia, Mexico and Peru. GNF also owns almost 15 percent of Medgaz, the company that operates the Algeria-Europe subsea gas pipeline connecting Beni Saf in Algeria with the Almería coast of Spain and with capacity of 8 billion cubic metres per annum. In addition to being a main player in LNG, GNF is a natural gas supplier in Europe, with a presence in France, Belgium, Ireland, Luxembourg, Portugal, the Netherlands and Germany. The replacement of Faine by Reynes is expected to herald a more focused strategy with non-core assets being sold. “It will bring strategic consequences for Gas Natural, where the protagonists will be the big investment funds,” said analysts. The protective mantle of

Spanish financial group La Caixa as the leading investor has recently been removed. La Caixa had been the first main shareholder of GNF and still retains 24 percent stake. However, the huge American Global Infrastructure Partners (GIP) fund has been a GNF shareholder since September 2016 when it purchased two 10 percent share parcels from La Caixa and Spanish oil and gas company Repsol. Since then, GNF has sold assets worth more than \$3 billion. Subsequently Repsol has completed the sale of its remaining 20 percent in GNF to the CVC Capital Partners global fund manager.

HOEGH LNG, the Norwegian LNG project developer and fleet operator, said its floating storage and regasification unit (FSRU), the 170,050 cubic metres capacity “Hoegh Giant”, commenced a charter contract with Spanish operator and utility Gas Natural Fenosa. “The initial term of the contract is three years, and it includes the option for Gas Natural Fenosa to utilize the unit as an FSRU at a pre-defined day rate and for a pre-defined term,” said Hoegh. “Until FSRU employment is established, the unit will trade in Gas Natural Fenosa’s fleet, earning an LNG carrier spot-market-linked day rate,” the Norwegian company explained. The “Hoegh Giant” will transit the Panama Canal destined for Sabine Pass in the United States, where it will load its first cargo under a GNF supply contract, giving flexibility and full trading capabilities. “For the additional six FSRUs and two LNGCs in the operating fleet, Hoegh LNG is pleased to confirm that all units continue to operate in accordance

with their long-term contracts,” it said.

GNF is one of the six companies that have signed 20-year agreements with Cheniere Energy for US cargoes from the

Sabine Pass facility. Cheniere is also the developer of the Corpus Christi export project on the US Gulf Coast of Texas and GNF is among Cheniere’s list of buyers of

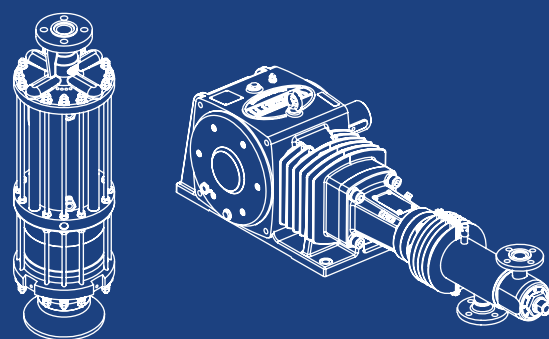
Corpus Christi cargoes, along with two other Spanish utilities, Iberdrola and Endesa. In addition to being one of the buyers of US LNG, GNF is a main



WIDENING THE HORIZONS OF LNG SUSTAINABILITY



SUBMERGED AND RECIPROCATING CRYOGENIC PUMPS FOR LNG MARINE APPLICATIONS



- LNG CARRIERS
- LNG RO-RO FERRY SHIPS
- LNG CONTAINER SHIPS
- LNG CAR CARRIER VESSELS
- SEMI-SUBMERSIBLE CRANE VESSELS (SSCV)
- FLOATING STORAGE UNITS (FSU)
- FLOATING STORAGE REGASIFICATION UNITS (FSRU)
- LNG BUNKER VESSELS
- LNG FUELLED SHIPS
- LNG CATAMARAN FERRIES

OVER 30 YEARS OF PASSION FOR INNOVATION

Established in 1984, Vanzetti Engineering is the only Italian company active in the design and construction of cryogenic equipment for liquid natural gas (LNG). Innovative technologies and continuous research are the main pillars that distinguish the **submerged pumps Artika Series** and **reciprocating pumps VT-3 Series** developed for low and high pressure marine engine fuel gas systems, stripping and spray applications, booster, ship to ship bunkering, cargo and more.

WWW.VANZETTIENGINEERING.COM

contract holder for cargoes from the Yamal LNG plant started up in late 2017 in Siberia by Russian natural gas company Novatek. GNF signed a 25-year contract with Yamal LNG back in 2013 which would see it receiving regular LNG supplies from the liquefaction plant amounting to 2.5 million tonnes per annum. GNF's diverse LNG supply portfolio includes shipments from Algeria, Qatar and Nigeria. The company also has a small fleet of LNG vessels. It has additional interests and capacity in regasification and import terminals such as Sagunto and Mugardos in Spain, Montoir-de-Bretagne in France and the Puerto Rico LNG importer Ecoelectrica.

KOSMOS Energy, developer of floating liquefied natural gas projects offshore Senegal and Mauritania in West Africa with BP, said it completed drilling at another exploration well located in Senegal's Saint Louis Deep Offshore block in an effort to add to the gross resources already discovered amounting to 40 trillion cubic feet. Kosmos said the Requin Tigre-1 exploration well was drilled to a total depth of 5,200 metres and was designed to evaluate reservoirs in a structural-stratigraphic trap. "The prospect was fully tested but did not encounter hydrocarbons," said Kosmos. "Post-well analysis is currently ongoing to determine the reasons it was unsuccessful," it added. The Requin Tigre (Tiger Shark) prospect is about 150 kilometres offshore and 60 kilometres west of the previous Tortue discoveries and 80 kilometres north of the Yakaar gas find. Andrew G. Inglis, Chairman and Chief Executive of Kosmos, based in Dallas, Texas, and listed in London and New York said with each exploration well drilled, the company and partners deepen their understanding of this newly emerging basin. "Requin Tigre was the last well in our second phase of exploration of the deepwater Cretaceous petroleum systems offshore Mauritania and Senegal targeting large basin floor fan structures," said Inglis.

"We have delivered one success (Yakaar) in four wells in this second phase program, following three successes in three wells (Tortue, Marsouin, Teranga) in the first phase program targeting inboard structures on the slope. Overall, we have discovered gross resource of 40 trillion cubic feet, at a net cost of \$0.20 per barrel of oil equivalent benefiting from the partner carry and have created the potential for two world-

scale LNG hubs," stated Inglis. "We will rigorously evaluate our large inventory of prospects across Mauritania and Senegal ahead of the next phase of exploration offshore the two countries," added the CEO. The Kosmos-BP LNG plans for the Tortue discoveries are to deploy two FLNG production hulls. The first gas from the Kosmos-BP FLNG Train 1 is scheduled for 2021 and the start of the second FLNG Train is set for 2023. However, Kosmos is continuing with its drilling campaign in the already prolific area of the Atlantic Margins. Kosmos was fully carried on the cost of the Requin Tigre well. The drillship will proceed as planned to test two oil prospects offshore Suriname commencing in the early part of the second quarter of 2018. Kosmos holds an effective 30 percent participating interest in the Saint Louis Offshore Profond license. BP holds a 60 percent participating interest. The national oil company of Senegal, Société des Pétroles du Sénégal (Petrosen), holds 10 percent.

LEBANON will now be the focus of offshore energy exploration by France's Total and two partners, Italian company Eni and Russian natural gas and LNG player Novatek. They have signed two exploration and production agreements covering offshore Lebanon in the East Mediterranean. Total said its activities would be in Blocks 4 and 9 where it had agreed with the Lebanese government to drill at least one well per block in the next three years. Eni has already made a natural gas discovery announced in February 2018 in waters offshore the island of Cyprus with Total as its partner. Their Cypriot Calypso 1 well was drilled in 2,074 metres of water depth, reaching a final total depth of 3,827 metres, and encountered an extended gas column. The Calypso 1 find was described by Eni as a promising gas discovery and confirmed the extension of the "Zohr like" play in the Cyprus Exclusive Economic Zone (EEZ). Eni was referring to the Egyptian Zohr field discovery offshore Egypt in 2015, which is already on stream after undergoing fast-track development. Eni's partners in Zohr are BP of the UK and Russian oil company Rosneft.

Total and Eni are hoping for a similar find offshore Lebanon where no E&P activity has taken place for years. "An established player in Lebanon's marketing sector, Total is delighted to expand its presence in the country to the exploration & production segment," the

French company said. "These agreements are part of the group's exploration strategy in the Mediterranean region," explained Stephane Michel, Senior Vice President in the region for E&P activities. He said the Lebanese consortium's priority will be to drill a first exploration well on Block 4 in 2019. Lebanon has been so far absent from the East Med energy rush as huge natural gas discoveries such as the Leviathan and Tamar fields have been made offshore Israel and Greek-speaking Cyprus has also celebrated its Aphrodite gas find in East Med waters. Lebanon, bordered by Syria to the north and Israel to the south, is attempting to reassure oil and gas exploration companies whose impressions of Lebanon and the region are of chaos and high risk. As for Block 9, Total and its partners said they were fully aware of the Israeli-Lebanese border dispute in the southern part of the block that covers only a very limited area, amounting to less than 8 percent of the block's surface. "Given that, the main prospects are located more than 25km from the disputed area, the consortium confirms that the exploration well on Block 9 will have no interference at all with any fields or prospects located south of the border area," explained Total. The Lebanese blocks were awarded to Total as operator with 40 percent. Eni will hold 40 percent and Novatek will own 20 percent.

LNG CANADA, the export project proposed for British Columbia by Royal Dutch Shell and partners PetroChina, Japan's Mitsubishi Corp and Korea Gas Corp, said it had short-listed two engineering, procurement and construction contractors as it tries to keep the venture on track in the midst of regulatory challenges. LNG Canada named the two consortiums to submit plans and costings as TechnipFMC and KBR of the US and Japanese engineer JGC Corp partnering with Fluor Corp. of the US. Shell's project is proposed for a brownfield site near the town of Kitimat and is backed by the Haisla First Nation native North Americans whose traditional lands surround the area. "LNG Canada used the period following the delay of FID in 2016 to return to market to determine interest and availability of Engineering, Procurement and Construction (EPC) contractors to build the LNG Canada project," the company said. "We prequalified four EPC proposers and after more than a year of working closely with them, and

thoroughly reviewing the proposals they submitted, LNG Canada has shortlisted to two," it added. Shell said that while pushing back its final investment decision for the first time in 2016 it was still viewed as a promising opportunity by the company at some time in the future. "I think the fact that we are at this short-listing is an indication we are serious about doing this thing," said Susannah Pierce, LNG Canada's director of external relations. The announcement came after BC provincial Premier John Horgan returned from a trade mission to Asia, where he met with a number of the companies involved in the LNG Canada joint venture. Pierce said LNG Canada Chief Executive Andy Calitz also was in on some of those meetings in South Korea, Japan and China. "In 2016, LNG Canada delayed a final investment decision it had been expected to make that year, and its lead contractor cancelled the bidding process for prefabricated LNG modules," the company explained.

"I think the fact that we went back to market was really because we believe that there needed to be, and there could be, significant reductions in the overall cost of constructing this project," Pierce said. Analysts said that one of the things that must change in Canada is the regulatory complexity that adds to soaring costs. The liquefaction plant, infrastructure and feed-gas pipelines from northeast BC to the coast are likely to cost more than \$US30 billion. However, one favourable aspect of LNG Canada is solid support from the First Nation communities around the port of Kitimat. The government of Canadian federal Prime Minister Justin Trudeau with its anti-hydrocarbons policies had led many international oil and gas companies to reassess their investments. While BC province itself formerly had 20 LNG export ventures on the table, there are now only two others moving forward, the small-scale Woodfibre LNG venture at Squamish in BC and the Steelhead LNG venture on Vancouver Island. The Canadian federal government had given conditional approval to the large-scale Pacific NorthWest LNG project proposed by Malaysian energy company Petronas. Petronas cancelled the project because of some opposition from local First Nation tribes and the high costs of implementing 190 mitigation measures, including for the first time the imposition of a maximum cap on greenhouse gas emissions.

LNG SHIPPING companies are hoping for higher multi-year charter rates to be influenced by the headline spot rates for the most modern vessels reported by UK brokers Clarksons as reaching a peak of \$82,000 per day through the end of the fourth quarter, a rise of about 80 percent from the year-ago period. That's according to GasLog LNG Partners, the New York Stock Exchange-listed partnership affiliate of Monaco-based Gaslog Ltd. whose fleet numbers 27 LNG carriers. GasLog Partners gave its shipping market overview as it posted a 2 percent decline in fourth-quarter revenues to \$77.34 million compared \$78.62M in the same three months a year ago. "It was a significant year for GasLog Partners on several measures," said Chief Executive Andrew Orekar. "We completed three LNG carrier acquisitions from our general partner sponsor, GasLog, raised \$281.1M in net equity proceeds and retired \$153.8M in total debt," said Orekar. The CEO said that while LNG shipping spot rates continued to be volatile, the recent improvement in

headline rates to "above mid-cycle levels gives us confidence in a continuing recovery" in the market. "This improvement in rates, combined with only 10 newbuild orders last year, gives us confidence in the sustainability of the recovery," he added. "While we expect there to be seasonality in both LNG prices and LNG shipping spot rates during 2018, the longer-term outlook for LNG shipping day rates remains positive," said the CEO.

The company noted that it could take time before the strength in the spot market recovery feeds on to the multi-year charter sector. "However, we are observing increasing levels of tendering activity for charters ranging from multi-month to multi-year, an encouraging development as we look to fix our open days for GasLog Partners' three vessels whose current charters end in 2018. "In addition, some off-takers for LNG projects scheduled to begin production over the next two years have yet to secure their shipping requirements. "We expect a number of vessels for these projects to be sourced from vessels currently

operating in the short-term market, but also expect the coming increase in LNG supply to require additional LNG carriers beyond those currently on the water and in the order book," stated GasLog Partners.

NORDLAKS, the fish-farming and processing business based in Stokmarknes in Northern Norway, has ordered the industry's first LNG-powered vessel to carry live salmon and seatrout in tanks. NSK Ship Design, whose headquarters are in Harstad, Norway, is leading the project for Nordlaks and has chosen a Turkish shipyard. "We are contracting a new boat with forward-looking technology for increased transport capacity and even safer operations," said Kurt Werner Nilsen, who runs the maritime fish transport operations for Nordlaks.

Maritime and shipping businesses in Emission Control Areas of Northwest Europe are adapting their operations to meet stricter anti-pollution regulations and LNG is seen as a clean-fuel solution. NSK Ship Design said the new vessel,

called a well-boat, will be constructed at the Tersan Shipyard in Turkey. The boat with fish tanks on board will be 84 metres in length and 19 metres wide. It will be equipped with new technology for handling fish and water quality and will have the capacity to carry over 600 tonnes of live salmon.

"NSK Ship Design has been working to develop well-boats with LNG propulsion since 2010 and has always had strong faith in the fact that this is the right way to go for the industry," said Thomas Myhre, Sales Manager at NSK. "This propulsion system will reduce the operating and maintenance costs for the boats and provide a significant environmental gain," added Myhre. The LNG-fueled well-boat is also designed to operate at aquaculture facilities in more exposed waters planned in the future by Nordlaks. "We see a great potential for LNG and battery packs. Next-generation well-boats have a number of power-intensive processes on board, and the logistics and operating patterns make LNG and batteries suitable as power sources," added Myhre.

FUTURE-PROOF BALLAST WATER TECHNOLOGY

Coldharbour GLD™ BWTS: designed and optimised for large tankers, bulk carriers and LNG vessels

- ✓ The only in-tank, in-voyage BWT system for large ships
- ✓ Ships arrive treated - no risk of re-growth
- ✓ No disruption to port and terminal operations
- ✓ No risk of damage to the ballast tank coating

Accepted by the USCG under the AMS Program
Full USCG Type Approval in progress

COLDHARBOUR



+44 (0) 1629 888 386
sales@coldharbourmarine.com
www.coldharbourmarine.com

ORIGIN Energy, the stakeholder in the Australia Pacific LNG plant with ConocoPhillips and China's Sinopec, warned it was taking a A\$533 million (US\$420M) after-tax charge for the first half of its 2018 fiscal year when results are released on February 15. Origin said it would take A\$360M charge for the Ironbark coal-seam gas field in Queensland after accounting for a downgrade in Ironbark reserves and a revised development plan. The Ironbark CSG field is located on the western flank of the Walloon sub-basin in Queensland.

The Ironbark project could produce CSG from 800 new gas wells in the next 30 years in addition to the nearly 10,000 wells Origin is drilling with ConocoPhillips as feed-gas supply for the APLNG coal-seam-gas-to-LNG plant. "The reserves revision follows a detailed assessment of the Ironbark gas field applying updated assumptions consistent with the technical review of Australia Pacific LNG's reserves carried out in June 2017," explained Origin. "The carrying value of the Ironbark gas field development post the impairment is expected to be A\$279 million," it added.

The Ironbark development is expected to enter front-end engineering and design with a revised multi-stage field development plan initially targeting a sweet spot known as the Undulla Nose in the North West sector of the field. Origin, which in 2017 overhauled its operations and spun-off non-core assets, said first gas from the Ironbark venture was expected by 2021. "Successful testing of low permeability drilling techniques at Australia Pacific LNG, which could be applied to Ironbark, provides the potential for development of additional resources, said the Origin statement. Origin is considering various options to bring the Ironbark gas to market and the FEED process is expected to inform an optimum path for development of the resource in the future," it added.

Origin confirmed that it was completing the A\$1.58 billion sale of its spin-off unit, Lattice Energy, to Australia's Beach Energy and expected to record a non-cash, post-tax charge of A\$173M linked to its earnings. Beach Energy in buying Lattice acquired gas assets spanning the Otway, Cooper, Bass, Perth and Bonaparte basins of Australia, as well as interests in New Zealand's Kupe gas project and Canterbury Basin. Origin, which is also a utility operator, retains a 37.5 percent stake in APLNG and other gas assets including the

Beetaloo shale prospect in Australia's Northern Territory.

QATAR Petroleum, the largest LNG exporter and the main stakeholder in the US Golden Pass LNG export project on the Gulf Coast, has won exploration rights for five offshore blocks in the Gulf of Mexico in the Mexican government's bidding round. The winning bids for mainly oil exploration were announced by the National Hydrocarbon Commission of Mexico at the conclusion of a public bidding session in Mexico City. Qatar Petroleum, whose Ras Laffan plant in the Middle East produces around 77 million tonnes per annum of LNG for its subsidiary Qatargas and partners, said it won the exploration rights for blocks 3, 4, 6, and 7 in the Perdido basin as part of a consortium comprising Royal Dutch Shell, the operator with a 60 percent stake to Qatar Petroleum's 40 percent interests. Qatar Petroleum also won the exploration rights for block 24 in the Campeche basin as part of a consortium with Italian energy company Eni as operator. The Qatari company's President and Chief Executive Saad Sherida Al-Kaabi said the winning bids continued the important role Qatar Petroleum plays in the global oil and gas industry. "Winning these offshore exploration blocks in Mexico, which contain some of the most promising hydrocarbon prospects in the world, is an important achievement," said Al-Kaabi. "It represents another step in implementing our strategy to expand our international footprint and to pursue Latin America as an important core area for Qatar Petroleum," he added. "I would like to take this opportunity to thank the Mexican authorities for the transparent and efficient process, and our partners Shell and ENI for their excellent collaboration on this opportunity," stated Al-Kaabi.

Qatar already has a solid stake on the American side of the Gulf of Mexico through the Golden Pass LNG export project. The US Department of Energy has granted the Golden Pass LNG joint venture in Texas a permit to export cargoes to all countries. Golden Pass LNG already exists as an import terminal and will add three liquefaction Trains with a total production capacity of 15.6 million tonnes per annum, with each Train producing 5.2 MTPA. The export project, located on the Sabine-Neches Waterway in Texas, is 70 percent-owned by Qatar Petroleum while US majors ExxonMobil and ConocoPhillips share the remaining

30 percent stake. Mexico auctioned a total of 29 deepwater blocks and among the winners were other LNG players such as Petronas of Malaysia and Ophir Energy of the UK. While the Mexican sale included nine blocks in the Perdido Fold in the north of the Gulf of Mexico, the government also auctioned 10 each in the Cordilleras Mexicanas and Salina Basins. Pre-qualified companies included all the oil majors. Three Perdido blocks were not awarded. Of the remainder, Petroleos Mexicanos (Pemex), Mexico's national oil company, took one on its own and the other in partnership with Shell. Spain's Repsol, Malaysia's Petronas, and London Stock Exchange-listed Ophir, a stakeholder in the Equatorial Guinea floating LNG project offshore West Africa, were among the winners in the tenders of the 10 Cordilleras blocks. The three companies won one block together, another was won by the Petronas subsidiary Carigali, Ophir and Thailand's PTTEP and a third by Spain's Repsol and Petronas together. The remaining blocks were not awarded.

SHELL'S annual LNG sales jumped 16 percent to more than 66 million tonnes as Australian production increased along with global prices, boosting annual earnings along with cash generated from assets sales to almost \$16 billion. The Anglo-Dutch company said LNG sales in 2017 were 66.04MT compared with 57.11MT in 2016. Shell's LNG sales were up 12 percent in the fourth quarter to 17.15MT compared with 15.34MT in the same three months of 2016. In the Integrated Gas division, including LNG, the fourth quarter saw Shell complete the sale of its shares in Australian LNG producer Woodside Petroleum for \$2.63Bln.

Shell also completed the sale of its 16.8 percent interest in Brazil's Companhia de Gas de Sao Paulo (Comgás) to Cosan Ltd for \$363 million, including shares and cash. Shell's overall earnings for the fourth quarter more than doubled to \$4.3 billion compared with \$1.79Bln. Its earnings for the full year were \$15.8Bln versus \$7.18Bln in 2016, up 119 percent and reflecting increased contributions from all businesses.

"Full-year earnings benefited mainly from higher realised oil, gas and LNG prices, improved refining performance and higher production from new fields, which offset the impact of field declines and divestments," said Shell. "Compared with the fourth quarter 2016, Integrated

Gas earnings, excluding identified items, benefited from higher realised oil, gas and LNG prices, as well as lower taxation and depreciation, partly offset by lower contributions from trading," said Shell. "LNG liquefaction volumes were lower due to higher maintenance, partly offset by increased liquefaction volumes from Gorgon (Australia). LNG sales volumes increased, compared with the fourth quarter 2016, reflecting increased sales of third-party volumes," the company added. "Despite higher earnings, cash flow from operating activities decreased compared with 2016, reflecting negative working capital movements of \$2.14Bln," the company said. Chief Executive Officer Ben van Beurden described 2017 as a year of strong financial performance and transformation. "Our relentless focus on value, performance and competitiveness meant we were able to deliver \$39 billion of cash flow from operations, excluding working capital movements, from our upgraded portfolio," said Van Beurden. He also pointed to a strengthened financial framework through an \$8Bln reduction in the company's net debt.

SWEDEN has chosen the Port of Gothenburg to start construction of a liquefied natural gas fueling facility to serve LNG-powered vessels within months as part of the expansion of infrastructure in Northwest Europe's Emission Control Area covering the North Sea and the Baltic Sea. The first LNG bunkering took place in Gothenburg in 2016 and since then operating regulations and routines have been developed and efficiency has been improved, resulting in a steady rise in the number of LNG bunkering operations. Nordic LNG supplier Skangas is offering vessels fuel with a ship-to-ship bunkering system and has now been joined by Swedegas, which owns and runs the Swedish gas transmission network. "Swedegas will expand the number of LNG options at the port with the construction of a facility that will ensure safe, rapid and effective landside LNG bunkering whilst vessels are loading and discharging at the Port," the port authorities said. "With both Skangas and Swedegas operating at the Port of Gothenburg, we have two companies that complement each other with different offerings. Shipping lines now have a further incentive to consider switching to LNG," the statement added.

The facility will be scalable and will

adapt to the needs of the customers. Gas purchasers will also be able to choose their supplier. “LNG will arrive at the facility by trailer or in containers and will be distributed via a 450-metre vacuum-insulated cryogenic pipeline to the quayside,” the companies said. “The facility marks the first step in the construction of a broader solution for the gas infrastructure at the Port, with the potential to connect to the gas transmission network. “In time, Swedish industry and land transport could also make use of the facility,” they said.

TOTAL, the French energy company, said one of its subsidiaries and Japanese shipping operator Mitsui OSK Lines (MOL) have signed a long-term charter contract for a large LNG bunkering vessel to operate in Northwest European ports. Total Marine Fuels Global Solutions (TMFGS) and MOL have signed the charter for the vessel of 18,600 cubic metres capacity from 2020. This ship will be built by Hudong-Zhonghua Shipbuilding in China and fitted with the Mark III membrane LNG containment system provided by the French storage technology company GTT. “She will operate in Northern Europe and will be the first ever capable of supplying large quantities of LNG in one single bunkering operation,” said Total and MOL in a statement.

The Total unit intends to serve the emerging marine LNG market for the container shipping sector, including those sailing on the Europe-Asia trade routes and seeking cleaner fuel. The bunkering ship will be used in particular to supply French shipping CMA CGM with fuel for its newbuild LNG-powered large container ships. This follows a 10-year bunkering contract signed in December 2017 between CMA CGM and Total for LNG amounting to 300,000 tonnes per annum. Total said the vessel would be about 135 metres in length and able to operate safely in varied harbours and terminals. “She will meet the highest environmental standards through the use of LNG as fuel and a complete reliquefaction of the boil-off gas,” said Total of the new vessel. The newbuild will be managed by MOL (Europe Africa) Ltd, a UK-based subsidiary of MOL.

TOTAL, the French energy major, said its annual liquefied natural gas sales rose by 2 percent to 11.23 million tonnes and events during the latter part of 2017 had improved its position in the global LNG

hierarchy. Total noted that it had acquired French utility Engie’s upstream LNG business for \$1.49 billion. It also signed a strategic agreement with French container shipping line CMA CGM to provide 300,000 tonnes per annum of LNG for newbuild vessels to boost France’s position in the LNG maritime fuel market. Total is a shareholder in the Yamal LNG project in Russia, one of the largest liquefaction projects in the world with maximum capacity of 16.5 million tonnes per annum, though the start-up at the end of 2017 had little impact on fourth-quarter earnings. For the French Group, overall adjusted net income was \$2.87 billion in the last three months of the year, an increase of 19 percent compared with the fourth quarter of 2016. Full-year earnings were \$10.57Bln, a rise of 28 percent. “The increase was the result of a much higher contribution from exploration and production and the continued decrease in the Group’s breakeven,” said Total.

Hydrocarbon production was 2,613 thousand barrels of oil equivalent per day (kboe/d) in the fourth quarter, an increase of close to 6 percent compared with 2016 due to several projects, including Yamal LNG and Angola LNG in southwest Africa. For the full-year, oil and gas production was 2,566 kboe/d, an increase of more than 5 percent. “Brent rose to \$54/b on average in 2017 from \$44/b in 2016 while remaining volatile,” said Chairman and Chief Executive Patrick Pouyanné. “The Group demonstrated its ability to capture the benefit of higher prices by reporting adjusted net income of \$10.6Bln, a 28 percent increase (compared to a 24 percent increase in Brent) from 2016, and a return on equity above 10 percent, the highest among the majors,” said the Total CEO.

UK LNG technology company Gasconsult is making progress with its government-backed programme to develop floating processing modules to spread production capability in Asia and elsewhere. Gasconsult said further patents have also been awarded for the company’s ZR-LNG liquefaction process in South Korea and Australia. Patent protection is already effective in the UK, China, Japan and Mexico and further patent applications are in hand. The company said work was proceeding well on the design, under the UK Government-funded Innovate Programme, of FLNG production modules with 1.4 million

tonnes per annum and 1 MTPA of output. “The bulk of the technical work will be completed around the end of February 2018,” added Gasconsult. The UK company noted that evaluations by recognised process design experts confirmed ZR-LNG was a very efficient process with power demand equal or better than Single Mixed Refrigerant (SMR) configurations and substantially reduced complexity relative to Double Mixed Refrigerant (DMR) schemes.

Depending on location, fabricator capability or the need for procurement flexibility the system can be built either as a single unit or as two separate modules. “We are very pleased with our progress over the past six months,” said Bill Howe, Chief Executive of Gasconsult. “Our Innovate work is providing us substantial detail engineering data which provides support to our marketing efforts,” added Howe. The CEO explained that his company had substantially reduced the equipment count, eliminated all makeup refrigerants and chemicals, eliminated all aqueous waste streams, regenerative processes and required-heat sources, producing a fully continuous process successfully piloted in the

Netherlands. “We believe we have now driven the economics of ZR-LNG to a point where LNG production will be economically viable even at the low capacities typical of biogas schemes,” said Howe. “We are actively seeking business opportunities for small-scale plants,” he added.

US energy exploration and production company Murphy Oil Corp. said it was progressing with plans to invest in a floating liquefaction project offshore Malaysia led by state-run Petronas and set to come on stream in 2020. Murphy, based in the town of El Dorado in the southern US state of Arkansas, gave more details of its Malaysian FLNG plans as it recorded a net loss from continuing operations of \$311 million in its full-year earnings. The company is investing in the FLNG venture with Petronas, which successfully started up the world’s first production hull, the “PFLNG Satu”. The vessel is deployed over the stranded Kanowit gas field offshore Sarawak. Murphy is involved in the second Malaysian FLNG venture for the deepwater Rotan gas field, about 80 miles offshore of Sabah, the Malaysian state



DEHONIT® / PERMALI SUPPORTS

- Floating LNK storage tank
- **LNG fuel tank support**
- Prismatic LNG and LPG tanks (up to 250,000 m³ and more)
- Bilobe, SPB, Prismatic, Cylinder, LNG, LPG, Ethylene, Chemical tanks

DEHONIT® / PERMALI MATERIAL IS APPROVED

- GL Germanischer Lloyd
- BV Bureau Veritas
- DNV Det Norske Veritas
- LR Lloyd's Register
- GTT Gaztransport, Technigaz
- DIN ISO 9001 : 2008
- ABS American Bureau of Shipping

FEATURES OF DEHONIT® / PERMALI

- Low specific weight
- High compressive strength
- Water resistant
- Low thermal conductivity
- Low coefficient of friction
- Temperature stability
- Low coefficient of linear expansion

WWW.DEHO.DE **WWW.PERMALIDEHO.CO.UK**

occupying the northern part of the island of Borneo. The Rotan gas well was discovered by Murphy in 2007 in the Block H licence in Malaysian waters of the South China Sea. The FLNG vessel will be designed to produce 1.5 million tonnes per annum. Murphy Chief Executive Roger W. Jenkins said the company had a long-term relationship with Petronas and had been doing business in Malaysia since 1999. Murphy also provides gas to the Malaysia LNG complex at Bintulu via gas sales contracts with Petronas for volumes up to 250 million cubic feet per day. In its fourth-quarter earnings statement, Murphy said it had allocated \$260M of capital to its global offshore assets. The capital is primarily related to three major offshore field development projects, including a subsea gas lift project for the Kikeh field in Malaysia, and the capital required in preparation to deliver gas into the second Petronas FLNG hull to be deployed over the Rotan field.

“In addition, investment is required for subsea equipment and drilling over the next two years in conjunction with the Petronas floating LNG project which remains on track to produce in 2020,” said Murphy’s CEO Jenkins. “Our 2018 capital program supports our strategy of investing in our growing onshore assets while supporting our long-lived, free cash flow providing offshore assets,” said Jenkins. “Our increase in capital in 2018 is related to investments in subsea projects along with our Block H FLNG project in Malaysia. Our investment program is based on our strong desire to spend within our means and provide free cash flow in addition to our current dividend level. Our program is also strongly supported by our diversified portfolio that provides high netback prices,” commented Jenkins “Over the course of the year, we stabilized our production. We achieved higher fourth quarter 2017 production year-over-year, which was primarily driven by a 16 percent increase from our onshore business, when adjusted for asset sales,”

stated the CEO. “Our constant focus on cost reductions, consistent cash balance, premium price-advantaged portfolio, and the ongoing financial strategy of spending within cash flow places our company in an excellent position moving forward,” he said. Murphy said its Malaysian natural gas production in the quarter in Sarawak averaged over 99 million cubic feet per day. The company’s ownership of the Kakap Gumusut field, operated by Shell, was slightly lowered due to a recent unitization agreement between the countries of Malaysia and Brunei that has impacted various production sharing contracts across both borders. Murphy’s other main assets are in the US Eagle Ford Shale, where the company will spend \$330M in 2018 which includes 38 operated wells being brought online along with investments for continued field development. The company has allocated \$300M toward onshore Canadian assets in the Kaybob Duvernay, Placid Montney and Tupper Montney fields. In the Tupper Montney field in northeast British Columbia, production is expected to be approximately 230 MMcf per day, which is the volume required to keep the third-party operated natural gas processing plant at full capacity.

US LNG cargo liftings at the Cheniere Energy Sabine Pass export plant in Louisiana increased in the past week with five carriers departing and two others loading through January 31 as two LNG cargoes were recently imported to the new Cove Point export facility in Maryland to help with local peak demand and with the commissioning process. The surge in Sabine Pass exports to seven in one week followed the unexpected shutdown of several of the four Trains at the plant in mid-January because of reported water supply problems, according to the weekly natural gas report from the Energy Information Administration. “The natural gas feedstock to the (Sabine Pass) terminal averaged 3.2 billion cubic feet per day during the report week, after

decreasing to 2.0 Bcf/d (weekly average) in the prior week,” said the EIA. Two LNG cargoes from Nigeria and Trinidad were imported to the Cove Point LNG facility in Maryland in December and January to help with the cool-down process in commissioning the export plant.

“The first cargo was reportedly sold into the local Mid-Atlantic market during a period of peak winter demand, while the second cargo will likely be used as a cool down cargo in the liquefaction commissioning process to test the terminal’s systems,” said the EIA. “Cove Point, the only liquefaction facility located on the East Coast of the United States, announced on January 31 that it has begun producing LNG, with the first LNG exports expected in early March,” the EIA noted. US natural gas spot prices fell at most locations during the past week through January 31. The Henry Hub spot price fell from \$3.56 per million British thermal units to \$3.21 per MMBtu. In the futures market, the New York Mercantile Exchange (Nymex) February 2018 contract expired at \$3.631 per MMBtu. The Nymex March 2018 natural gas contract price was last at \$2.995 per MMBtu. Following the recent colder than average winter weather during the previous month, there were record withdrawals from US storage, though the recent figures showed a slowdown in the recent high level of demand. “Net withdrawals from working gas totaled 99 billion cubic feet (Bcf) for the week ending January 26. Working natural gas stocks are 2,197 Bcf, which is 19 percent less than the year-ago level and 16 percent lower than the five-year (2013-2017) average for this week,” said the EIA. Shale-gas remained the lowest priced in the US market even with increases in the past week. The Tennessee Zone 4 Marcellus spot price increased 26 cents from \$2.55 per MMBtu to \$2.81 per MMBtu. Prices at Dominion South in northwest Pennsylvania rose 17 cents from \$2.78 per MMBtu to \$2.95/MMBtu.

US and Mexican natural gas asset owners will benefit from a new US-Mexican pipeline project to compete with US LNG liquefaction and export plants on the Gulf Coast for feed-gas. The venture has launched a 30-day open season for a proposed international link from the Permian Basin via the Waha Hub in Texas to under-served markets in Central and Western Mexico. The Permian Basin is one of the largest US oil and gas areas spanning West Texas and the southeast of the US state of New Mexico. Launching the open-season is the Paso Norte Pipeline Group (PNP) and the consultation with market players will last until 5 March 2018. “Paso Norte Pipeline Group is seeking shipper interest for its planned 32-inch pipeline from Luna County, New Mexico, in the US to the Mexican Border in the State of Chihuahua,” said a statement. “This pipeline will link US natural gas production from the prolific Permian Basin, via WaHa, to underserved markets in Central, Western Mexico, terminating at the El Encino hub in Chihuahua, Mexico,” the company explained.

“The 33-mile US Paso Norte Pipeline is considered a greenfield lateral pipeline project by federal regulators and will interconnect with a corresponding 32-inch pipeline at the Mexican Border. It is Paso Norte’s intension to match US shippers with corresponding natural gas marketers in Mexico,” it stated. Paso Norte Pipeline will originate and interconnect with Kinder Morgan’s El Paso Natural Gas Southern Pipeline System (WaHa to California) at Florida Station in New Mexico. It will be a dedicated pipeline to the Mexican Border near the Columbus-Palomas, Chihuahua International Crossing. “With the new and evolving Mexican Energy Laws in mind, the PNP pipeline will interconnect with a corresponding 32-inch Paso Norte Pipeline. The Mexican pipeline will be an open access pipeline to accommodate the growing needs of natural gas in Western Chihuahua as well as addressing the El Encino Hub,” it added. The first stage of the Paso Norte project is scheduled to be at an advanced stage by 2019. The second stage of the pipeline will be from Apache Power Park to the Encino Hub in Chihuahua City. The estimated length with laterals is 272 miles. In the Encino Hub the pipeline can serve as an interconnect with other pipelines that supply Chihuahua City, the Encino-Topolobampo pipeline and Encino-Guadalajara pipeline. ■

Diary of events

May
Flame Gas and LNG conference
14-17 May 2018
Hotel Okura, Amsterdam
The Netherlands
<https://energy.knect365.com/flame>

June
27th World Gas Conference
25-29 June 2018
Washington Convention Center
801 Mount Vernon Place Northwest
Washington, DC 20001, USA
<http://wgc2018.com>

September
Gastech
17-20 September, 2018
Fira Gran Via Conference Centre
Barcelona, Spain
www.gastechevent.com

Solutions for ALL your Natural Gas needs.

Factory built, fast delivered
1,200 m³ LNG Tanks.



On-site/Factory Built Storage Tanks for LNG, Ethane, etc., Intermodal ISO Tank-Containers, & more.

Corban Energy Group (CEG) has been creating highly engineered products required by the natural gas supply chain, from upstream to downstream. CEG has established natural gas terminals throughout the world, provided quality LNG/CNG equipment for the American market, and built storage tanks as large as 200,000 CM in capacity, with its worldwide network of engineering & manufacturing partners.

Call or e-mail us to find out how your company can benefit from our comprehensive natural gas products and services today.

www.CorbanEnergyGroup.com

CORBAN ENERGY GROUP
Your Solution for LNG/LPG



T. 201.509.8555 info@corbanenergygroup.com
418 Falmouth Avenue, Elmwood Park, NJ 07407, USA

While Panama Canal boosts LNG traffic the main chock points remain Suez and Strait of Malacca

US report gives overview of LNG and oil flows on main sea routes with potential hazard areas

As the Panama Canal prepares for more traffic from LNG carriers from US liquefaction plants heading for the Pacific Basin, the importance of this Central American waterway is emphasized by the continued concerns about potential choke points elsewhere on key energy routes.

The most important choke point for LNG is through the Suez Canal in both directions where around 1.2 trillion cubic feet passes through, accounting for 9 percent of LNG transported worldwide.

North-South

“Southbound LNG transit mostly originates in Nigeria, France (as re-exports), and Trinidad and Tobago, mostly destined for Egypt, Jordan, and Japan, which combined account for more than 65 percent of the total southbound LNG imports through the Canal,” said a US government report, recently updated.

“Nearly all of the northbound transit (99 percent) is from Qatar and is mainly destined for European markets. The rapid growth in LNG flows through the Suez Canal after 2008 represents the expansion of LNG exports from Qatar,” explained the report.

However, LNG flows through Suez in both directions have declined from their peak of almost 2.1 Tcf in 2011. The decrease mostly reflects the fall in northbound LNG flows and is consistent

with LNG import data for Europe and to a lesser extent the US.

US LNG imports from Qatar fell from 91 billion cubic feet in 2011 to zero in 2014 as the nation turned to building export capacity from the shale-gas boom.

The changes reflect growing domestic natural gas production in the US, a decrease in LNG demand in some European countries and strong competition for LNG in the global market.

“As a result, Suez LNG flows as a share of total LNG traded worldwide fell to 9 percent in 2016, compared with 18 percent in 2011,” added the report.

The Strait of Malacca, linking the Indian Ocean and the Pacific Ocean, is the shortest sea route between the Middle East and growing Asian markets and flows through the Strait rose to 16 million barrels per day, retaining its position as the second busiest transit chokepoint.

Malacca, located between Indonesia, Malaysia, and Singapore, links the Indian Ocean to the South China Sea and to the Pacific Ocean.

Short route

The Strait is the shortest sea route between Persian Gulf suppliers and the Asian markets - notably China, Japan, South Korea, and the Pacific Rim.

“The Strait of Malacca is also an

millions barrels per day	2011	2012	2013	2014	2015	2016
Total oil flows through the Strait of Malacca	14.5	15.1	15.4	15.5	15.5	16.0
crude oil	12.8	13.2	13.3	13.3	13.9	14.6
refined products	1.7	1.9	2.1	2.2	1.6	1.4
LNG (Tcf per year)	2.8	3.5	3.9	4.1	3.6	3.2

Notes: Tcf = Trillion cubic feet

LNG and oil shipments through the Strait of Malacca on annual basis

important transit route for LNG from Persian Gulf and African suppliers, particularly Qatar, to East Asian countries with growing LNG demand,” said the US report.

“The biggest importers of LNG in the region are Japan, China and South Korea,” it added.

Growth

Oil shipments through the Strait of Malacca supply China and Indonesia, two of the world's fastest-growing economies.

This Strait is the primary chokepoint in Asia, with an estimated 16.0 million b/d flow, compared with 14.5 million b/d in 2011.

Crude oil generally makes up between 85 percent and 90 percent of total oil flows per year, and petroleum products account for the remainder.

“At its narrowest point in the Phillips Channel of the Singapore Strait, the Strait of Malacca is only about 1.7 miles wide, creating a natural bottleneck with the potential for collisions, grounding, or oil spills.” The report noted.

According to the International Maritime Bureau's Piracy Reporting Centre, piracy, including attempted theft and hijackings, is a threat to tankers in the Strait of Malacca, and the industry has seen an increase.

Blockages

“If the Strait of Malacca were blocked, nearly half of the world's fleet would be required to reroute around the Indonesian archipelago, such as through the Lombok Strait between the Indonesian islands of Bali and Lombok, or through the Sunda Strait between Java and Sumatra,” explained the report.

“Rerouting would tie up global

shipping capacity, add to shipping costs, and potentially affect energy prices,” it added.

Several proposals have been made to build bypass options and reduce tanker traffic through the Strait of Malacca.

“In particular, China and Myanmar (Burma) commissioned the Myanmar-China natural gas pipeline in 2013 that stretches from Myanmar's ports in the Bay of Bengal to the Yunnan province of China” said the report.

“The pipeline has a capacity of 424 billion cubic feet per year. The oil portion of the pipeline was completed in August 2014 and it is now operational at full capacity since the 260,000 b/d refinery in Yunnan, China, began operating in June 2017,” it added.

The Myanmar-China oil line transports Middle Eastern oil, allowing it to bypass the Strait of Malacca.

Optimism

Meanwhile, the Panama Canal Authority said it expected LNG carrier traffic to increase by around 50 percent by the fourth quarter of 2018 as more US cargo export capacity comes on stream.

The Authority said in a statement that the upgrading of the waterway in 2016 with additional locks to handle larger vessels traversing from the Atlantic and Pacific Basins had gradually made it more popular.

Shipping and energy companies have been more prepared to use the Canal as LNG prices and charter rates have risen in the past year.

It said that the Canal was already close to reaching the point where at least one LNG carrier per day was crossing East-West or vice versa.

Around 60 LNG carriers traversed the Canal in the final three months of 2017,

millions barrels per day	2011	2012	2013	2014	2015	2016
Total oil flows via the Suez Canal and SUMED pipeline	3.8	4.5	4.6	5.2	5.4	5.5
Suez Canal total flows						
crude oil	0.7	1.4	1.5	1.8	1.6	1.8
refined products	1.4	1.6	1.7	2.0	2.2	2.0
total oil	2.2	2.9	3.2	3.7	3.8	3.9
LNG (Tcf per year)	2.1	1.5	1.2	1.2	1.3	1.2
Suez northbound flows						
crude oil	0.5	0.9	1.1	1.4	1.2	1.4
refined products	0.9	0.8	0.7	0.8	0.8	1.0
total oil	1.4	1.7	1.9	2.1	2.1	2.4
LNG (Tcf per year)	1.8	1.2	1	0.9	1.1	0.8
Suez southbound flows						
crude oil	0.2	0.5	0.4	0.4	0.4	0.4
refined products	0.6	0.8	1	1.2	1.4	1.1
total oil	0.8	1.3	1.3	1.6	1.7	1.5
LNG (Tcf per year)	0.2	0.3	0.2	0.3	0.3	0.3

Suez Canal and Egyptian (SUMED) oil pipeline and LNG shipping flows

an increase of 39 percent on the 43 vessels that used the route in the same quarter of 2016.

Deliveries

Most carriers are loaded in the US for delivery to Asia or the Pacific Coast of Mexico, where the Manzanillo import terminal is a recipient of shipments from the Sabine Pass export plant in Louisiana, operated by Cheniere Energy.

US LNG exports are also pointed at the large import terminal networks of Japan and China.

However, several new US export plants will start commercial operations in 2018 and 2019, adding to the current 18 million tonnes per annum produced at Sabine Pass.

The Cove Point plant in Maryland shipped its first cargo on 2 March 2018 and will soon start regular deliveries to customers in Asia.

This will be followed by the start-up of at least six of the 10 small-scale modular processing Trains being constructed at the Elba Island facility in Georgia.

US volumes

The first liquefaction Train at Freeport LNG on Quintana Island, Texas, is also scheduled to begin production by years-end or early 2019.

Two Trains at the second Cheniere plant in Corpus Christi, Texas, and three Trains at Semptra Energy's Cameron LNG in Louisiana are expected to enter service in 2019.

The Canal expansion work cost \$5 billion and included two new lock complexes with a total of 16 gates, eight on the Pacific side and eight on the Atlantic side.

A new transit tariff system for the Canal also

came into force in 2016, boosting revenues from the larger ships.

Under the Canal tariff system, LNG carriers of around the optimum 172,000

cubic metres capacity for using the waterway will pay just over \$680,000 for round-trip transits.

The use of the expanded Canal by LNG

carriers, rather than taking the longer voyage routes, cuts cargo carriage to Asia from the US Gulf Coast by more than 7,500 nautical miles. ■

There is new energy in the heart of the Mediterranean

OLT Offshore LNG Toscana, which shares are divided among two important operators in the energy sector, Uniper Global Commodities (formerly E.ON Global Commodities) and Iren, is the company which manages the floating storage and regasification unit "FSRU Toscana". The Terminal is technologically innovative and well-advanced. It guarantees the maximum standards in terms of environmental sustainability and safety. "FSRU Toscana" is permanently moored off the Italian coast - between Livorno and Pisa - in the heart of the Mediterranean Sea. The Terminal has a regasification capacity of 3.75 billion cubic meters per year and an LNG storage capacity of 137.500 cubic meters. The operational flexibility and the design of the Terminal allow future LNG bunkering activities.

oltoffshore.it



Malaysian International Shipping takes delivery of fourth vessel to handle rising volumes for Petronas

Shipping company improves technology of fleet to match advances by main charterer

Malaysian International Shipping Corp., whose LNG fleet comprises 27 vessels, has taken delivery of an additional ship and newbuild, the “Seri Camar”, the fourth in a series of five vessels with covered Moss-type storage tanks as the company makes advances in revenues and assets in cooperation with state energy firm Petronas.

The 150,200 cubic metres capacity carrier was built at Hyundai Heavy Industries in South Korea and benefits from an Integrated Hull Structure (IHS) with four spherical tanks shielded by a continuous cover, fortifying the vessel to allow for operation in even the harshest marine environments.

Charter

Owned by MISC and chartered to state energy company Petronas, the Malaysian-flagged vessel was delivered at a naming ceremony attended by executive teams at the HHI yard in the Korean port of Ulsan.

“We’re proud to celebrate our 50th anniversary this year, growing from strength to strength to become one of the leading global providers of energy related maritime solutions and services,” said MISC President and Chief Executive Yee Yang Chien.

The ceremony was also attended by the President and CEO of HHI Hwan-Goo Kang and Petronas Executive Vice President and CEO of the Upstream business, Anuar Taib.

“The ‘Seri Camar’ demonstrates Petronas’s commitment to advancing its integrated LNG value chain with



The 150,200 cubic metres capacity carrier ‘Seri Camar’ was built at Hyundai and has covered Moss tanks

shipping solutions and innovative vessels,” said Taib.

“Together with its sister vessels, we look forward to maintaining our record in the safe and reliable delivery of LNG cargoes,” he added.

The MOSS-type newbuilds are part of MISC’s long-term fleet expansion programme and have been designed for worldwide trading capability to enable them to call at over 80 LNG receiving terminals and more than 26 liquefaction terminals in operation worldwide.

Robust

The shipping company said its robust and superior cargo containment system allows a higher degree of flexibility for MISC to accommodate cargo-loading operations at

a floating LNG production unit (FLNG) unit such as Petronas operates offshore Sarawak.

The company said this positions MISC as the first shipowner in the world to have operational experience with an FLNG hull in commercial production.

“The naming and delivery of ‘Seri Camar’ is a major milestone for MISC, not only being part of our fleet modernisation programme but most importantly in our advocacy of sustainable LNG transportation that will further enhance our leading position in the global LNG shipping business,” added MISC’s Yee.

“Thus, we are confident that our efforts will enable MISC to meet the evolving needs of our growing customer base, as well as to help them to operate

sustainably in an environmentally responsible manner as we strive in moving energy to build a better world,” he added.

Along with the unique integrated hull design, the MOSS-Type vessels have been designed to minimise hull resistance, increase propulsion efficiency, reduce power requirements, and reduce CO2 emissions.

Technology

“Energy-saving devices include pre-swirl duct and propeller boss cap fins, providing around 4 percent energy savings at design draft, along with an X-twister rudder for improved manoeuvring performance,” said MISC.

“The vessels have been awarded the Green Passport Notification and with an extended low-load gas mode meaning that they can operate entirely on LNG for full compliance with existing and impending Sulphur Emissions Control Area (SECA) regulations,” it explained.

MISC said in its mid-February 2018 earnings that the LNG shipping sector faced ongoing tonnage oversupply and a difficult market in 2018 as it posted higher revenues and lower profits before tax in its annual earnings.

“Lack of short-term positive indicators suggests another challenging year,” said MISC.

“The Group continues to rely on its present portfolio of long-term time



Executives and associates from MISC, Petronas and HHI at the ceremony in the South Korean port of Ulsan

charters to provide it with the stability of profits and cashflow during the year.

“On a positive note, two additional new LNG carriers will join the fleet in 2018, providing a source of income growth for the segment,” it added.

Fixed

The MISC fleet is largely employed by the company’s strategy of fixing most of its tonnage on long-term charters to state energy company Petronas.

Petronas is a large-scale exporter to Asian LNG markets from its Bintulu plant consisting of seven liquefaction Trains in Sarawak, as well as a floating LNG production hull over the Kanowit gas field offshore Sarawak.

MISC’s overall fleet consists of more than 120 owned and in-charter LNG, crude oil and products vessels as well as 14 floating facilities.

The Malaysian company said group revenue for the year was 10.03 billion Malaysian ringgit (US\$2.54Bln), 4.6 percent higher than the previous year when it was 9.58Bln ringgit.

MISC said that two new LNG carriers

contributed to the increase in revenue.

More deliveries

The company has been increasing its LNG fleet because of more delivery demands from the Petronas stake in the Gladstone export plant in Queensland, Australia.

MISC added that group profit before tax in 2017 was 28.8 percent lower at 2.00Bln ringgit (US\$509 million) versus 2.81Bln ringgit the previous year, mainly due to impairment losses on ships, property, plant and equipment and other investment of RM687.5 million (US\$155M).

“It was a challenging year for the shipping and offshore sectors as growth opportunities were scarce while revenue was under constant pressure from weak freight rates and contract renegotiation risks,” said MISC’s Yee.

“However, with a steady rise in oil price over the past two years, we are looking forward to better days and a healthier level of activities for the oil and gas markets in anticipation of a potential revival in investment spending for the

global energy sector,” added Yee. “During 2018 we mark our 50th year of operations and as the results of the many initiatives undertaken as well as the strong foundation we have laid for transformation, we are poised for a sustained and robust growth.

“As the market continue to change, our businesses will evolve in order for us to seize the opportunities and address the challenges that lie ahead,” stated the CEO.

Petronas earnings

Petronas for its part issued its earnings on March 2 and reported a jump in profit for the 2017 fiscal year and the fourth quarter of the year.

The company’s profit after tax for the year rose 91 percent to 45.5 billion ringgit (\$11.5 billion), from 23.8Bln ringgit reported in 2016.

The increase came on the back of higher revenue, lower net impairment on assets, the company said, adding that the revenue rose 15 percent to 223.6Bln ringgit for the year.

“The upward trend of key benchmark

prices boosted Petronas’ fourth-quarter results,” the company said. Revenue rose 14 percent to 61.8Bln ringgit due to higher average realized prices recorded for major products and higher sales volume mainly from LNG.

Positioned

In presenting the results, Petronas President and Group CEO Wan Zulkiflee Wan Ariffin, said they placed the company in a good position to begin its pursuit of a growth agenda.

He added that the company’s gas business increased markedly during the year.

Petronas shipped 443 LNG cargoes in the year, the highest in the company’s history.

The floating LNG production hull “PFLNG Satu” delivered a total of five LNG cargoes during the period.

Petronas stated that it planned to expand its core oil and gas business and would venture into new business areas such as “geographically strategic regions like ASEAN, the Indian sub-continent, the Middle East and the Americas.” ■

Choose industry-leading solutions for your LNG carrier fleet

Steam★
DFDE★
XDF★
ME-GI★
Regasification★
Reliquefaction★

innovation • technology • integrity



Woodside plans Australian LNG expansion and cooperation with Kogas in US export project

Perth-based company moves ahead on all fronts from LNG expansion to exploration offshore Africa

Woodside Chief Executive Peter Coleman said Australian LNG expansion was planned and he would still cooperate with Korea Gas Corp. on the Port Arthur LNG project in Texas despite a payments dispute with the Korean company.

Coleman was speaking at a briefing after the release of the Perth-based company's annual earnings.

Prospects

Statements from Coleman and other executives put some beef on the quiet development being undertaken by the company that once attracted the attentions of Royal Dutch Shell as an unsuccessful suitor.

The CEO confirmed that the purchase of the Scarborough gas field stake from ExxonMobil would help lead to a total of 6 million tonnes per annum of output from Pluto LNG.

Woodside and its partners last year decided not to proceed with a separate LNG project for their Browse Basin reserves and to process the gas through the North West Shelf plant at Karratha.

"Browse production through the North West Shelf plant will be about 10 million tonnes plus 1.4 million tonnes of domestic gas coming through," said Coleman.

"Browse has probably gotten a little larger than the last time we spoke and of course you're seeing costs now that are lower," he added.

Pipeline

The CEO confirmed that a pipeline would join the NWS plant with the Pluto LNG facility.

"We expect that line to be built and ready for use by early 2021, so we'll go to FEED on that this year and a final investment decision next year.

"It's a relatively low-cost line. The commercial arrangements then will be around the treatment of the gas at North West Shelf and whether it goes into domestic gas or goes into LNG.

"We'll underpin it by accelerating the development of our Pyxis discovery which comes in through Pluto. We only assume that that line will be in operation until Browse (reserves) come into the NWS plant," said Coleman.

On the Kogas issue, the Woodside CEO said the supply contract with Kogas ended in 2016 and the current dispute going to arbitration in London was just about prices.

"Every contract has this in it, that you renegotiate prices. It appears that we don't have ongoing contracts with Kogas at the North West Shelf. Now they've decided to dispute this one, but we believe we have a very strong argument.

"You've got to believe the North West Shelf joint venture has six partners. This is not just Woodside's view, this is a North West Shelf joint venture dispute with Kogas," explained Coleman.

Issue

"So please don't isolate this as being a Woodside-only issue. Of course, we've got very sophisticated sellers in the North West Shelf so it's just a buyer has taken a view that we think we fundamentally disagree with to be honest with you, and it is inconsistent with the way other buyers have treated these price discussions," said Coleman.

Asked whether the arbitration case would affect longer term relations with Kogas, one of the world's largest LNG buyers, Coleman said it should not.

"You try and keep these things at a commercial level. There's obviously a lot of things going on in Korea with changing the leadership at Kogas, changes in leadership in government, the approvals required for any of these changes to go through.

"So, it's a torturous path to make some of these changes on the other side, but the reality is Kogas has just signed an MOU with a partnership that Woodside is part of in the US around the development of our Port Arthur LNG project (Texas) with ourselves and Semptra.

Relationships

"So, no, the relationship with Kogas is still a good one, it's just unfortunate this came out, and arbitration is just the final natural completion point for this, that's all," stated Coleman.

Woodside also in February launched a fully underwritten share offer to raise around A\$2.5 billion (US\$1.96Bln) to buy



Pluto LNG in Western Australia is focus of attention over expansion plan

the Scarborough feed-gas stake and to proceed with a West Africa exploration and production programme off Senegal.

"The funding will provide for the acquisition of up to an additional 50 percent interest in the Scarborough gas field," said Woodside.

CEO Coleman said that the share offer was an important component of Woodside's strategy.

"The acquisition of the additional interest in Scarborough provides greater alignment, control and certainty over a low-cost, high value opportunity ahead of a global LNG supply gap," said Coleman.

That's as Woodside recorded a full-year net profit after tax of US\$1.02 billion with production of 84.4 million barrels of oil equivalent and sales revenue of US\$3.62Bln.

Asian LNG

Woodside said in its earnings presentation that there was a ready market in Asia for more LNG volumes, with a compound annual growth rate of 7 percent in demand from China through to 2025.

"Economic growth and public policy changes are underpinning Asian LNG demand growth," the Australian company said.

Coleman said that 2017 had been a good year for the company, with strong financial results and progress on projects and activities.

"Our net profit after tax has increased by 18 percent year-on-year, driven by higher prices for our products and sustained low production costs," he said.

"The safe start-up of Wheatstone LNG Train 1 was a significant milestone for the company and we look forward to the delivery of LNG Train 2 and the domestic gas facility this year while supporting the operator (Chevron) to optimise lifting costs and maximise production rates," he added.

Burrup Hub

Coleman said the company's Burrup Hub concept for an expansion of Woodside's Pluto LNG plant in Western Australia was advanced by the increased stake in the Scarborough gas field.

"The development concept involves maximising existing infrastructure at the Pluto LNG plant to meet a market gap we expect will emerge from the early 2020s," explained Coleman.

"We concluded feasibility studies on Pluto LNG expansion and made considerable progress on commercial discussions between the North West Shelf and Browse joint ventures for processing Browse gas through the Karratha Gas Plant," the CEO stated.

In Senegal, Coleman said Woodside achieved a concept selection for the first phase of the SNE Development, located in the Rufisque, Sangomar and Sangomar deepwater blocks.

He added that Woodside would be the operator in 2018 and aims to enter the front-end engineering and design phase for the SNE project targeting oil.

Coleman also noted that Woodside made a third gas discovery in Myanmar and added acreage offshore the Asian country as well as offshore Gabon in West Africa. ■

86 YEARS OF BRINGING THE
GAS INDUSTRY TOGETHER



27th WORLD GAS
CONFERENCE
WASHINGTON DC

JUNE 25-29
2018



27th WORLD GAS CONFERENCE

JUNE 25-29, 2018 | WASHINGTON DC, USA

FOR MORE WORLD-CLASS CONFIRMED SPEAKERS VISIT: WGC2018.COM



Rick Perry
Secretary of Energy
United States Department
of Energy



H.E. Dharmendra Pradhan
Minister of Petroleum
& Natural Gas
India



**Senior Level
Representative**
National Energy
Administration of China



H.E. Ignasius Jonan
Minister of Energy
& Mineral Resources
Republic of Indonesia



Fatih Birol
Executive Director
International Energy
Agency



Darren Woods
Chairman & CEO
ExxonMobil



Michael K. Wirth
Chairman & CEO
Chevron Corporation



H.E. Yury P. Sentyurin
Secretary General
Gas Exporting Countries
Forum



Seung-Il Cheong
President & CEO
Korea Gas Corporation



Bob Dudley
Group Chief Executive
BP



Isabelle Kocher
CEO
ENGIE



Omar Mithá
Chairman & CEO
ENH



Eldar Sætre
President & CEO
Statoil



Patrick Pouyanné
Chairman & CEO
Total



Kimberly J. Harris
Chair of the Board of Directors
American Gas Association
President & CEO
Puget Sound Energy



Saad Sherida Al-Kaabi
President & CEO
Qatar Petroleum
Chairman
Qatargas



Peter Coleman
CEO &
Managing Director
Woodside



Maroš Šefčovič
Vice President,
Energy Union
European Commission



Rachel Kyte
CEO & Special Representative
of the UN Secretary-General
SEforALL



Luis Alberto Moreno
President
Inter-American
Development Bank

REGISTER AS A DELEGATE AT WGC2018.COM



600
SPEAKERS



12,000
ATTENDEES



600
ORGANIZATIONS



100
COUNTRIES



100+
SESSIONS



350
EXHIBITORS

HOST ASSOCIATION

AGA
American Gas Association

PROUDLY SUPPORTED BY

ENBRIDGE **gti**

WGC2018.COM

REGISTRATION INQUIRIES

Email registration@wgc2018.com or call +44 20 7978 0006

SPONSORSHIP OR EXHIBITION INQUIRIES

Email sponsorship@wgc2018.com or call +61 2 9556 7996

HOST PARTNERS



ExxonMobil

PRINCIPAL SPONSORS

CHENIERE

TELLURIAN



World LNG Carrier Fleet

LNG carrier	Capacity m ³	Owned or Ordered by	Builder	Delivery Date	Flag	Power Plant	Cargo System	No. of tanks	Ship built for Export plant
Aamira	266,000	QGTC	Samsung	Dec-10	Liberia	DRL	TZ Mk. III	5	Qatargas IV
Abadi	135,000	Brunei Gas Carriers	Mitsubishi Nagasaki	Jun-02	Brunei	S	Moss	5	Brunei LNG
Abalamabie	174,900	Bonny Gas	Samsung	June-16	Bermuda	DFDE	TZ Mk III	4	Nigeria LNG
Adam LNG	162,000	Oman LNG	Hyundai	Dec-14	Marshall Is.	DFDE	TZ Mk. III	4	Oman LNG
Al Aamriya	210,100	J5 Consortium	Daewoo	Feb-08	Marshall Is.	DRL	GT NO 96	4	Qatargas
Al Areesh	151,700	Teekay LNG	Daewoo	Jan-07	Qatar	S	GT NO 96	4	Ras Gas II
Al Bahiya	266,000	QGTC	Samsung	Oct-09	Liberia	DRL	TZ Mk. III	5	Qatar-Atlantic
Al Biddah	135,275	J4 Consortium	Kawasaki Sakaide	Nov-99	Japan	S	Moss	5	Qatargas
Al Daayen	151,700	Teekay LNG	Daewoo	Apr-07	Qatar	S	GT NO 96	4	RasGas II
Al Dafna	266,000	QGTC	Samsung	Oct-09	Marshall Is.	LR DRL	GT NO 96	4	Qatar-Atlantic
Al Deebel	145,000	Peninsular LNG	Samsung	Dec-05	Bahamas	S	TZ Mk. III	4	Qatargas
Al Gattara	216,200	OSG/Nakilat	Hyundai	Oct-07	Marshall Is.	DRL	TZ Mk. III	4	Qatargas II
Al Ghariya	210,100	ProNav	Daewoo	Feb-08	Bahamas	DRL	GT No. 96	4	Qatargas
Al Gharaffa	216,200	OSG/Nakilat	Hyundai	Jan-08	Marshall Is.	DRL	TZ Mk. III	4	Various
Al Ghashamiya	216,000	QGTC	Samsung	Mar-09	Liberia	DRL	TZ Mk. III	4	Qatar-Atlantic Basin
Al Ghuwairiya	261,700	QGTC	Daewoo	Aug-08	Marshall Is.	DRL	GT NO. 96	5	Qatar-Atl'c Basin
Al Hamla	216,000	OSG	Samsung	Feb-08	Marshall Is.	DRL	TZ Mk. III	4	QatarGas
Al Hamra	137,000	National Gas Shipping	Kvaerner-Masa	Jan-97	Liberia	S	Moss	4	ADGAS
Al Huwaila	217,000	Teekay	Samsung	May-08	Bahamas	DRL	TZ Mk. III	4	RasGas III
Al Jasra	137,100	J4 Consortium	Mitsubishi Nagasaki	Jul-00	Japan	S	Moss	5	Qatargas
Al Jassasiya	145,700	Maran-Nakilat	Daewoo	May-07	Greece	S	GT No 96	4	RasGas
Al Kharaitiyat	216,200	QGTC	Hyundai	May-09	Liberia	DRL	TZ Mk. III	4	Qatargas III
Al Kharaana	210,000	QGTC	Daewoo	Oct-09	Marshall Is.	DRL	GT NO 96	4	Qatargas IV
Al Kharsaah	217,000	Teekay	Samsung	May-08	Bahamas	DRL	TZ Mk. III	4	RasGas III
Al Khattiya	210,000	QGTC	DSME	Oct-09	Marshall Is.	DRL	GT No. 96	4	Qatargas IV
Al Khaznah	135,500	National Gas Shipping	Mitsui Chiba	Jun-94	Liberia	S	Moss	5	ADGAS
Al Khor	137,350	J4 Consortium	Mitsubishi Nagasaki	Dec-96	Japan	S	Moss	5	Qatargas
Al Khuwair	217,000	Teekay LNG	Samsung	Jul-08	Korea	DRL	TZ Mk. III	4	RasGas
Al Mafyar	266,000	OSG/Nakilat	Hyundai	Oct-07	Marshall Is.	DRL	TZ Mk. III	4	Qatargas II
Al Marrouna	151,700	Teekay	Daewoo	Nov-07	Bahamas	S	GT NO 96		Ras Gas I
Al Mayeda	266,000	QGTC	Samsung	Jan-09	Liberia	DRL	TZ Mk. III	5	Qatar-US/Var.
Al Nuaman	210,000	QGTC	DSME	Dec-09	Marshall Is.	DRL	GT No. 96	4	Qatargas IV
Al Oraiq	210,000	J5 Consortium	Daewoo	Apr-08	Marshall Is.	DRL	GT No. 96	4	Various
Al Rayyan	135,360	J4 Consortium	Kawasaki Sakaide	Mar-97	Japan	S	Moss	5	Qatargas
Al Rekayyat	216,200	QGTC	Hyundai	Jun-09	Bahamas	DRL	TZ Mk.III	4	Qatar-Atlantic
Al Ruwais	210,100	ProNav	Daewoo	Nov-07	Germany	DRL	GT NO 96	4	Qatargas II
Al Sadd	210,100	QGTC	Daewoo	Mar-09	Liberia	DRL	GT NO 96	4	Qatar-Atlantic Basin
Al Safliya	210,100	ProNav	Daewoo	Dec-07	Bahamas	DRL	GT NO 96	4	Qatargas II
Al Sahla	216,200	J5	Hyundai	Jun-08	Japan	DRL	TZ Mk. III	4	Ras Gas III
Al Samriya	261,700	QGTC	Daewoo	Sep-08	Marshall Is.	DRL	GT NO. 96	5	Qatargas II
Al Sheehaniya	210,100	QGTC	Daewoo	Feb-09	Liberia	DRL	GT NO 96	4	Qatar-Atlantic Basin
Al Shamal	217,000	Teekay LNG	Samsung	Jun-08	Qatar	DRL	TZ Mk. III	4	RasGas
Al Thakhira	145,000	Peninsular LNG	Samsung	Sep-05	Bahamas	S	TZ Mk. III	4	Qatargas
Al Thumama	216,000	J5 Consortium	Hyundai	Apr-08	Japan	DRL	TZ Mk. III	4	Rasgas
Al Utouriya	215,000	J5	Hyundai	Sep-08	Panama	DRL	TZ Mk. III	4	RasGas
Al Utourma	215,000	J5	Hyundai	Sep-08	Panama	DRL	TZ Mk. III	4	Ras Gas III
Al Wajbah	137,350	J4 Consortium	Mitsubishi Nagasaki	Jun-97	Japan	S	Moss	5	Qatargas
Al Wakrah	135,360	J4 Consortium	Kawasaki Sakaide	Dec-98	Japan	S	Moss	5	Qatargas
Al Zhubarah	137,570	J4 Consortium	Mitsui Chiba	Dec-96	Japan	S	Moss	5	Qatargas
Alto Acrux	147,000	LNG Marine Transport	Mitsubishi	Mar-08	Bahamas	S	Moss	4	Various
Amali	148,000	Brunei-Shell	DSME	Jul-11	Brunei	DFDE	GT No. 96	4	Brunei LNG
Amanl	154,800	Brunei-Shell	Hyundai	Nov-14	Brunei	DFDE	TZ Mk. III	4	Brunei LNG
Aman Bintulu	18,928	Perbadanan / NYK Line	NKK Tsu	Oct-93	Malaysia	S	TZ Mk. III	3	Petronas
Aman Hakata	18,800	Perbadanan / NYK Line	NKK Tsu	Nov-98	Malaysia	S	TZ Mk. III	3	Petronas
Aman Sendai	18,928	Perbadanan / NYK Line	NKK Tsu	May-97	Malaysia	S	TZ Mk. III	3	Petronas
Arctic Aurora	160,000	Dynagas	Hyundai	Jul-13	Marshall Is.	DFDE	TZ Mk. III	4	Various
Arctic Discoverer	140,000	K Line	Mitsui Chiba	Jan-06	Bahamas	S	Moss	4	Various
Arctic Lady	147,200	MOL/Hoegh LNG	Mitsubishi Nagasaki	Apr-86	Norway	S	Moss	4	Various
Arctic Princess	147,200	MOL/Hoegh LNG	Mitsubishi Nagasaki	Jan-06	Norway	S	Moss	4	Various
Arctic Sun	89,880	Arctic LNG Shipping	IHI Chita	Dec-93	Liberia	S	IHI SPB	4	ConocoPhillips/Marathon
Arctic Voyager	140,000	K Line	Kawasaki	Jul-06	Bahamas	S	Moss	4	Statoil
Arkat	148,000	Brunei-Shell	DSME	Feb-11	Brunei	DFDE	GT. No. 96	4	Brunei LNG
Arwa Spirit	165,000	Teekay LNG	Samsung	Sep-08	Marshall Is.	DFDE	TZ Mk. III	4	Various
Aseem	154,850	K Line-Petronet	Samsung	Nov-09	Malta	S	GT No 96	4	Qatar-India
Asia Endeavour	160,000	Chevron	Samsung	Dec-14	Bahamas	DFDE	TZ Mk. III	4	Various
Asia Energy	160,000	Chevron	Samsung	Sept-14	Bahamas	DFDE	TZ Mk. III	4	Various
Asia Excellence	160,000	Chevron	Samsung	Sept-13	Bahamas	DFDE	TZ Mk. III	4	Various
Asia Venture	160,000	Chevron	Samsung	Sept-17	Bahamas	DFDE	TZ Mk. III	4	Various
Asia Vision	160,000	Chevron	Samsung	June-14	Bahamas	DFDE	TZ Mk. III	4	Various
Barcelona Knutsen	173,400	Knutsen	Daewoo	May-10	N.I.S.	DFDE	GT NO 96	4	Various
Bebatic	75,060	Brunei Shell Tankers	Atlantique	Oct-72	Brunei	S	TZ Mk. I	6	Brunei LNG
Beidou Star	172,000	MOL	Hudong	Oct-15	Hong Kong	DRL	GT NO. 96	4	Various
Berge Arzew	138,088	BW Gas	Daewoo	Jul-04	Norway	S	GT NO 96	4	Sonatrach
BW GDF-Suez Boston	138,059	BW Gas	Daewoo	Jan-03	Norway	S	GT NO 96	4	Suez LN
BW GDF Suez Everett	138,028	BW Gas	Daewoo	Jun-03	Norway	S	GT NO 96	4	Suez LNG
BW Integrity	170,000	BW Gas	Samsung	May-17	Singapore	DFDE	TZ Mk. III	4	FSRU
BW Pavilion Leeara	161,880	BW Gas	Hyundai	Feb-15	Singapore	DFDE	TZ Mk. III	4	Various
BW Pavilion Vanda	161,880	BW Gas	Hyundai	Feb-15	Singapore	DFDE	TZ Mk. III	4	Various
BW Singapore	170 000	BW Gas	Samsung	May-15	Singapore	DFDE	TZ Mk. III	4	FSRU
BW Suez Paris	162,400	BW Gas	Daewoo	May-09	N.I.S.	DFDE	GT NO 96	4	Yemen-Atlantic
Bilbao Knutsen	138,000	Knutsen / Marpetrol	IZAR Sestao	Jan-04	Spain	S	GT NO 96	4	Atlantic LNG
Bilis	77,730	Brunei Shell Tankers	La Seyne	Mar-75	Brunei	S	GT NO 82	5	Brunei LNG
Bishu Maru	162,000	K Line-Transpacific	Kawasaki Sakaide	Dec-15	Panama	S	Moss	4	Australia-Japan
British Diamond	155,000	BP Shipping	Hyundai	Sep-08	IOM	DFDE	TZ Mk. II	4	Indonesia-Various
British Emerald	155,000	BP Shipping	Hyundai	Jun-07	UK	DFDE	TZ Mk. III	4	Tangguh LNG
British Innovator	138,200	BP Shipping	Samsung	Jul-03	Isle of Man	S	TZ Mk. III	4	Various
British Merchant	138,000	BP Shipping	Samsung	Apr-03	Isle of Man	S	TZ Mk. III	4	Various



British Ruby	155,000	BP Shipping	Hyundai	Jan-08	U.K.	DFDE	TZ Mk. III	4	Various
British Sapphire	155,000	BP Shipping	Hyundai	Sep-08	IOM	DFDE	TZ Mk. III	4	Tangguh
British Trader	138,000	BP Shipping	Samsung	Dec-02	Isle of Man	S	TZ Mk. III	4	Engas
Broog	135,466	J4 Consortium	Mitsui Chiba	May-98	Japan	S	Moss	5	Qatargas
Bu Samara	266,000	QGTC	Samsung	Dec-08	Qatar	DRL	TZ Mk. III	5	Qatargas
BW Suez Paris	162,400	BW Gas	Daewoo	May-09	N.I.S.	DFDE	GT NO 96	4	Yemen-Atlantic
BW Suez Brussels	162,400	BW Gas	Daewoo	May-09	N.I.S.	DFDE	GT NO 96	4	Yemen-Atlantic
Cadiz Knutsen	138,826	Knutsen / Marpetrol	IZAR Puerto Real	Jun-04	Spain	S	GT NO 96	4	Engas
Castillo de Santisteban	173,600	Elcano	STX	Aug-10	Malta	S	GT NO. 96		Various
Castillo de Villalba	138,000	Elcano	IZAR	Nov-03	Spain	S	GT NO 96	4	Sonatrach
Catalunya Spirit	138,000	Teekay LNG Partners	IZAR Sestao	Mar-03	Liberia	S	GT NO 96	4	Atlantic LNG
Celestine River	145,000	KLNG	Kawasaki	Dec-07	Bahamas	S	Moss		Various
Cesi Beihai	174,100	MOL-China LNG	Hudong	June-17	Hong Kong	S	GT No 96	4	Australia-China
Cesi Gladstone	174,100	MOL-China LNG	Hudong	Oct-16	Hong Kong	S	GT No 96	4	Australia-China
Cesi Qingdao	174,100	MOL-China LNG	Hudong	Nov-16	Hong Kong	S	GT No 96	4	Australia-China
Cesi Tianjin	174,100	MOL-China LNG	Hudong	Sept-17	Hong Kong	S	GT No 96	4	Australia-China
Cheikh Bouamama	75,500	Skikda LNG Transport	USC	Jul-08	Bahamas	S	TZ Mk. III	4	Sonatrach
Cheikh El Mokrani	75,500	Med LNG Corp	USC	Jun-07	Bahamas	S	TZ Mk. III	4	Sonatrach
Christophe de Margerie	172,600	SCF	Daewoo	Nov-16	Cyprus	DFDE	GT NO 96	4	Various
Clean Energy	150,000	Dynagas	Hyundai	Mar-07	Marshall Is.	S	TZ Mk. III	4	Various
Clean Force	150,000	Dynagas	Hyundai	Jan-08	Marshall Is.	S	TZ Mk. III	4	Various
Clean Ocean	155,900	Dynagas	Hyundai	Mar-14	Marshall Is.	DFDE	TZ Mk. III	4	Various
Clean Planet	155,900	Dynagas	Hyundai	Mar-14	Marshall Is.	DFDE	TZ Mk. III	4	Various
Clean Vision	160,000	Dynagas	Hyundai	Jun-15	Marshall Is.	DFDE	TZ Mk. III	4	Various
Cool Explorer	160,000	Thenamaris	Samsung	Oct-13	Bermuda	DFDE	TZ Mk. III	4	Various
Cool Runner	160,000	Thenamaris	Samsung	May-14	Bermuda	DFDE	TZ Mk. III	4	Various
Cool Voyager	160,000	Thenamaris	Samsung	Oct-13	Bermuda	DFDE	TZ Mk. III	4	Various
Corcovado LNG	160,106	TMSC Gas	Daewoo	Jun-14	Malta	TFDE	GT No 96	4	Various
Creole Spirit	174,000	Teekay	Daewoo	Jan-16	Bahamas	MEGI-DF	NO. 96 GW	4	Cheniere
Cubal	160,400	Mitsui/NYK/Teekay	Samsung	Jan-12	Bahamas	DFDE	TZ Mk. III	4	Various
Cygnus Passage	145,400	Cygnus LNG	Mitsubishi	Feb-09	Panama	S	Moss	4	Various
Dapeng Moon	147,000	China Ships	Hudong	Jul-09	China	S	GT NO 96	4	Various
Dapeng Star	147,000	China Ships	Hudong	Nov-09	China	S	GT NO 96	4	Various
Dapeng Sun	147,000	China Ships	Hudong	Jul-07	China	S	GT NO 96	4	Woodside Energy
Disha	136,000	Petronet LNG Ltd.	Daewoo	Jan-04	Malta	S	GT NO 96	4	Qatargas
Doha	137,350	J4 Consortium	Mitsubishi Nagasaki	Jun-99	Japan	S	Moss	5	Qatargas
Duhail	210,100	ProNav	Daewoo	Jan-08	Germany	DRL	GT NO 96	4	Various
Dukhan	135,000	J4 Consortium	Mitsui Chiba	Oct-04	Japan	S	Moss	4	Qatargas
Dwiputra	127,385	Humpuss Consortium	Mitsubishi Nagasaki	Mar-94	Bahamas	S	Moss	4	Pertamina
Ebisu	147,547	Golar LNG	Kawasaki	Sep-08	Bahamas	S	Moss	4	Various
Ejnan	145,000	4J	Samsung	Jan-07	Bahamas	S	TZ Mk. III		RasGas
Ekaputra	136,400	Humpuss Consortium	Mitsubishi Nagasaki	Jan-90	Liberia	S	Moss	5	Pertamina
Energy Advance	145,000	Tokyo LNG Tankers	Kawasaki Sakaide	Mar-05	Japan	S	Moss	4	Darwin
Energy Atlantic	159,924	Alpha	STX Jinhae	Sep-15	Malta	DFDE	No. 96	4	Various
Energy Confidence	155,000	Tokyo LNG Tankers	Kawasaki	Apr-09	Panama	S	Moss	4	Various
Energy Frontier	147,600	Tokyo LNG Tankers	Kawasaki Sakaide	Sep-03	Japan	S	Moss	4	Darwin
Energy Horizon	177,000	Tokyo LNG Tankers	Kawasaki	Jul-11	Japan	S	Moss	4	Pluto LNG
Energy Navigator	147,000	Tokyo LNG Tankers	Kawasaki Sakaide	May-08	Japan	S	Moss	4	Various
Energy Progress	145,000	MOL	Kawasaki	Nov-06	Japan	S	Moss	4	Bayu Undan LNG
Esshu Maru	162,000	K Line-Transpacific	Kawasaki Sakaide	Dec-14	Panama	S	Moss	4	Australia-Japan
Excalibur	138,200	Exmar/ Excelerate	Daewoo	Oct-02	Belgium	S	GT NO 96	4	Various
Excel	138,106	Exmar/ MOL	Daewoo	Sep-03	Belgium	S	GT NO 96	4	Various
Excelerate	138,000	Exmar/Excelerate	Daewoo	Oct-06	Belgium	S	GT NO 96	4	Various
Excellence	138,000	GKFF Ltd.	Daewoo	May-05	Belgium	S	GT NO 96	4	Excelerate Energy
Excelsior	138,000	Exmar	Daewoo	Jan-05	Belgium	S	GT NO 96	4	Various
Exemplar	150,900	Excelerate	Daewoo	Jun-10	Belgium	S	GT NO 96	4	Various
Expedient	151,000	Excelerate	Daewoo	Nov-09	Belgium	S	GT NO 96	4	Various
Experience RV	174,000	Exmar/Excelerate	Daewoo	Jul-14	Marshall Is.	DFDE	GT NO 96		Various
Explorer	150,900	Exmar/Excelerate	Daewoo	Mar-08	Belgium	S	GT NO 96	4	Excelerate
Express	151,000	Exmar/Excelerate	Daewoo	May-09	Belgium	S	GT NO 96	4	Various
Exquisite	150,900	Excelerate	Daewoo	Sep-09	Belgium	S	GT NO 96	4	Various
Flex Endeavour	173,400	Flex LNG	Daewoo	Jan-18	Marshall Is.	MEGI-DF	NO. 96 GW	4	Various
Flex Enterprise	173,400	Flex LNG	Daewoo	Jan-18	Marshall Is.	MEGI-DF	NO. 96 GW	4	Various
Fraiha	210,100	J5 Consortium	Daewoo	Sep-08	Marshall Is.	DRL	GT NO 96	4	Qatargas
FSRU Independence	170,000	Hoegh	Hyundai	Feb-14	NIS	DFDE	TZ Mk. III	4	Various
FSRU Lampung	170,000	Hoegh	Hyundai	May-14	Indonesia	DFDE	TZ Mk. III	4	Various
Fuji LNG	147,895	TMSC Gas	Kawasaki	Jun-04	Malta	S	Moss	4	Various
Fuwairit	138,000	Peninsular LNG	Samsung	Jan-04	Bahamas	S	TZ Mk. III	4	RasGas II
Galea	134,425	Shell Shipping	Mitsubishi Nagasaki	Oct-02	Singapore	S	Moss	5	Shell
Galia Spirit	140,620	Teekay LNG Partners	Daewoo	Jul-04	Liberia	S	GT NO 96	4	Engas
Gaselys	153,500	GdF/NYK	Atlantique	Mar-07	France	DFDE	CS 1	4	Engas
Gallina	134,425	Shell Shipping	Mitsubishi Nagasaki	Oct-02	Singapore	S	Moss	5	Shell
GasLog Chelsea	153,000	GasLog	Hanjin Korea	Dec-09	Panama	TFDE	TZ Mk. III	4	Various
Gaslog Geneva	174,000	GasLog	Samsung	Sept-16	Bermuda	TFDE	TZ Mk. III	4	Shell charter
Gaslog Gibraltar	174,000	GasLog	Samsung	Oct-16	Bermuda	TFDE	TZ Mk. III	4	Shell charter
Gaslog Glasgow	174,000	GasLog	Samsung	Jun-16	Bermuda	TFDE	TZ Mk. III	4	Shell charter
Gaslog Greece	174,000	GasLog	Samsung	Mar-16	Bermuda	TFDE	TZ Mk. III	4	Shell charter
GasLog Salem	165,000	GasLog	Samsung	Apr-15	Liberia	TFDE	TZ Mk. III	4	various
GasLog Santiago	155,000	GasLog	Samsung	Mar-13	Liberia	TFDE	TZ Mk. III	4	Various
GasLog Saratoga	155,000	GasLog	Samsung	Dec-14	Bermuda	TFDE	TZ Mk. III	4	Various
Gaslog Savannah	155,000	GasLog	Samsung	May-10	Bermuda	DFDE	TZ Mk. III	4	Various
GasLog Seattle	155,000	GasLog	Samsung	Oct-13	Bermuda	TFDE	TZ Mk. III	4	Various
GasLog Shanghai	155,000	GasLog	Samsung	Jan-13	Liberia	TFDE	TZ Mk. III	4	Various
Gaslog Singapore	155,000	GasLog	Samsung	Jul-10	Bermuda	DFDE	TZ Mk. III	4	Various
Gaslog Skagen	155,000	GasLog	Samsung	Oct-13	Bermuda	DFDE	TZ Mk. III	4	Various
Gaslog Sydney	155,000	GasLog	Samsung	May-13	Bermuda	DFDE	TZ Mk. III	4	Various
GDF-Suez Global Energy	74,000	Gaz de France	Chantiers	Dec-06	France	DFDE	CS1	4	Sonatrach
GDF-Suez Cape Ann	145,000	Hoegh LNG/MOL	Samsung	May-10	Liberia	DFDE	TZ Mk. III	4	Various
GDF-Suez Neptune	145,000	Hoegh LNG/MOL	Samsung	Dec-09	Liberia	DFDE	TZ Mk. III	4	Various
GDF-Suez Point Fortin	154,200	LNG Japan	Imabari/Koyo	Feb-10	Panama	DFDE	TZ Mk. III	4	Various
Gemmata	138,100	Shell Shipping	Mitsubishi Nagasaki	Mar-04	Singapore	S	Moss	5	Shell
Ghasha	137,510	National Gas Shipping	Mitsui	Jun-95	Liberia	S	Moss	5	ADGAS

CARRIER FLEET



Your Partner in
SHIP PERFORMANCE MONITORING AND ANALYSIS
www.kyma.no



Gigira Laitebo	177,000	MOL-Itochu	Hyundai	Feb-09	Panama	DFDE	TZ Mk. III	4	Various
Golar Arctic	140,645	Golar LNG	Daewoo	Dec-03	Marshall Is.	S	GT NO 96	4	Shell Spot
Golar Bear	160,000	Golar	Samsung	Mar-14	Bermuda	DFDE	TZ Mk. III	4	Various
Golar Celsius	160,000	Golar LNG	Samsung	Sep-13	Bermuda	DFDE	TZ Mk. III	4	Various
Golar Crystal	160,000	Golar LNG	Samsung	Oct-13	Bermuda	DFDE	TZ Mk. III	4	Various
Golar Eskimo (FSRU)	160,000	Golar LNG	Samsung	Jan-15	Bermuda	DFDE	TZ Mk. III	4	Various
Golar Freeze	125,850	Golar LNG	HDW	Feb-77	UK	S	Moss	5	Various
Golar Glacier	162,000	Golar LNG	Hyundai	Sep-14	Marshall Is.	DFDE	TZ Mk. III	4	Various
Golar Grand	145,880	Golar LNG	Daewoo	2006	IoM		GT NO 96	4	Various
Golar Ice	160,000	Golar LNG	Samsung	Feb-15	Bermuda	DFDE	TZ Mk. III	4	Various
Golar Igloo (FSRU)	160,000	Golar LNG	Samsung	Oct-13	Bermuda	DFDE	TZ Mk. III	4	Various
Golar Kelvin	160,000	Golar LNG	Samsung	Jan-15	Bermuda	DFDE	TZ Mk. III	4	Various
Golar Maria	145,950	Golar LNG	Daewoo	2006	Marshall Is.		GT NO 96	4	Various
Golar Mazo	135,225	Golar LNG/CPP	Mitsubishi	Jan-00	Liberia	S	Moss	5	Pertamina
Golar Penguin	160,000	Golar LNG	Samsung	Mar-14	Marshall Is.	DFDE	TZ Mk. III	4	Various
Golar Seal	160,000	Golar LNG	Samsung	Aug-13	Bermuda	DFDE	TZ Mk. III	4	Various
Golar Singapore (FSRU)	160,000	Golar LNG	Samsung	June-15	Bermuda	DFDE	TZ Mk. III	4	Various
Golar Snow	160,000	Golar LNG	Samsung	Jan-15	Bermuda	DFDE	TZ Mk. III	4	various
Golar Tundra (FSRU)	160,000	Golar LNG	Samsung	Dec-15	Bermuda	DFDE	TZ Mk. III	4	Various
Golar Viking	140,000	Golar LNG	Hyundai	Jan-05	Marshall Is.	S	Moss	4	Various
Golar Winter	138,250	Golar LNG	Daewoo	Apr-04	Marshall Is.	S	GT NO 96	4	Petrobras
Grace Acacia	150,000	Algaet Shipping	Hyundai	Jan-07	Japan	S	TK MK III	4	Various
Grace Barleria	150,000	Swallowtail Ship	Hyundai	Oct-07	Japan	S	TZ Mk. III	4	Various
Grace Cosmos	150,000	AGH Shipping	Hyundai	Mar-08	Japan	S	TZ Mk. III	4	Various
Grace Dahlia	177,000	Tokyo Gas	Kawasaki	Oct-13	Japan	S	Moss	4	Various
Gracilis	138,830	Golar LNG	Hyundai	Jan-05	Marshall Is.	S	TZ Mk. III	4	Shell BG
Granatina	140,645	Shell Shipping	Daewoo	Dec-03	Singapore	S	GT NO 96	4	Shell
Grand Aniva	147,200	Sovcomflot/NYK	Mitsubishi	Jan-08	Japan	S	Moss	4	Various
Grand Elena	147,200	Sovcomflot/NYK	Mitsubishi	Oct-07	Japan	S	Moss	4	Various
Grand Mereya	147,200	Primorsk/MOL/K Line	Chiba	May-08	Japan	S	Moss	4	Sakhalin II
Hanjin Muscat	138,200	Hanjin Shipping	Hanjin	Jul-99	Panama	S	GT NO 96	4	Oman Gas
Hanjin Pyeong Taek	130,600	Hanjin Shipping	Hanjin	Sep-95	Panama	S	GT NO 96	4	Pertamina
Hanjin Ras Laffan	138,214	Hanjin Shipping	Hanjin	Jul-00	Panama	S	GT NO 96	4	QatarGas
Hanjin Sur	138,333	Hanjin Shipping	Hanjin	Jan-00	Panama	S	GT NO 96	4	Oman Gas
Hispania Spirit	140,500	Teekay LNG Partners	Daewoo	Sep-02	Spain	S	GT NO 96	4	Atlantic LNG
Hoegh Gallant FSRU	170,050	Hoegh LNG	Hyundai	May-14	Marshall Is.	DFDE	TZ Mk. III	4	chartered
Hoegh Giant FSRU	170,050	Hoegh LNG	Hyundai	Jan-18	Marshall Is.	DFDE	TZ Mk. III	4	various
Hoegh Grace FSRU	170,050	Hoegh LNG	Hyundai	May-15	Marshall Is.	DFDE	TZ Mk. III	4	various
Hyundai Aquapia	135,000	Hyundai MM	Hyundai	Mar-00	Panama	S	Moss	4	Oman Gas
Hyundai	135,000	Hyundai MM	Hyundai	Jan-00	Panama	S	Moss	4	RasGas
Hyundai Ecopia	145,000	Hyundai	Hyundai	Nov-08	Panama	S	TZ Mk. III	4	Various
Hyundai Greenpia	125,000	Hyundai MM	Hyundai	Nov-96	Panama	S	Moss	4	Pertamina
Hyundai Oceanpia	135,000	Hyundai MM	Hyundai	Jul-00	Panama	S	Moss	4	Oman Gas
Hyundai Technopia	135,000	Hyundai MM	Hyundai	Jul-00	Panama	S	Moss	4	RasGas
Hyundai Utopia	125,182	Hyundai MM	Hyundai	Jun-94	Panama	S	Moss	4	Pertamina
Iberica Knutsen	138,000	Knutsen OAS	Daewoo	Aug-06	Norway	S	GT 96	4	Gas Natural
Ibra LNG	147,100	Oman Gas	Samsung	Jun-06	Panama	S	TK Mk. III	4	Oman LNG
Ibri LNG	145,000	Oman Gas	Mitsubishi	Jul-06	Panama	S	TK Mk. III	4	Oman LNG
Ish	137,540	National Gas Shipping	Mitsubishi Nagasaki	Nov-95	Liberia	S	Moss	5	ADGAS
K Acacia	138,017	Korea Line	Daewoo	Jan-00	Panama	S	GT NO 96	4	Oman Gas
K Freesia	135,256	Korea Line	Daewoo	Jun-00	Panama	S	GT NO 96	4	RasGas
K Jasmine	145,700	Korea Line	Daewoo	Mar-08	Panama	S	GT NO 96	4	Kogas offtake
K Mugungwha	152,000	K Line	Daewoo	Nov-08	Panama	S	GT NO 96	4	Various
Kita LNG	160,106	TMSC Gas	Daewoo	Jun-14	Malta	TFDE	GT No 96	4	Various
Kotawaka Maru	125,200	J3 Consortium	Kawasaki Sakaide	Jan-84	Japan	S	Moss	5	Darwin
Kumul	172,000	MOL	Hudong	May-16	Hong Kong	DRL	GT NO. 96	4	PNG-Asia
Lala Fatma N'Soumer	145,000	Algeria Nippon Gas	Kawasaki Sakaide	Dec-04	Japan	S	Moss	4	Sonatrach
Larbi Ben M'Hidi	129,750	SNTM-Hyproc	La Seyne	Jun-77	Algeria	S	GT NO 85	5	Sonatrach
Lijmilya	261,700	QGTG	Daewoo	Sep-08	Marshall Is.	DRL	GT NO. 96	5	Various
LNG Abalamabie	174 900	Bonny Gas	Samsung	Nov-16	Bermuda	DFDE	TZ Mk III	4	Nigeria LNG
LNG Abuja	126,530	Bonny Gas Transport	GD Quincy	Sep-80	Bahamas	S	Moss	5	Nigeria LNG
LNG Abuja II	174 900	Bonny Gas	Samsung	Oct 16	Bermuda	DFDE	TZ Mk III	4	Nigeria LNG
LNG Adamawa	141,000	Bonny Gas Transport	Hyundai	Jun-05	Bermuda	S	Moss	4	Various
LNG Akwa Ibom	141,000	Bonny Gas Transport	Hyundai	Nov-04	Bermuda	S	Moss	4	Various
LNG Aquarius	126,300	MOL/LNG Japan	GD Quincy	Jun-77	Marshall Is.	S	Moss	5	Various
LNG Barka	153,000	NYK	Kawasaki	Jan-09	Bahamas	S	Moss	4	Various
LNG Bayelsa	137,500	Bonny Gas Transport	Hyundai	Feb-03	Bermuda	S	Moss	4	Nigeria LNG
LNG Benue	145,700	BW Gas	Daewoo	Mar-06	Bermuda	S	GT NO 96	4	Nigeria LNG
LNG Bonny	177,000	Bonny Gas Transport	Hyundai	Oct-15	Bermuda	DFDE	TZ Mk III	4	Nigeria LNG
LNG Borno	149,600	NYK Line	Samsung	Aug-07	Japan	S	TZ Mk. III	4	Nigeria LNG
LNG Capricorn	126,300	MOL/LNG Japan	GD Quincy	Jun-78	Marshall Is.	S	Moss	5	Pertamina
LNG Cross River	141,000	Bonny Gas Transport	Hyundai	Sep-05	Bermuda	S	Moss	4	Various
LNG Dream	145,000	Osaka Gas	Kawasaki	Sep-06	Japan	S	Moss	4	Woodside Energy
LNG Ebisu	147,500	MOL	Kawasaki	Sep-08	Bahamas	S	Moss	4	Various
LNG Edo	126,530	Bonny Gas Transport	GD Quincy	May-80	Bahamas	S	Moss	5	Nigeria LNG
LNG Enugu	145,000	BW Gas	Daewoo	Oct-05	Bermuda	S	GT NO 96	4	Nigeria LNG
LNG Firina	175,000	Bonny Gas Transport	Samsung	Oct-15	Bermuda	DFDE	TZ Mk III	4	Nigeria LNG
LNG Flora	127,700	J3 Consortium	Kawasaki Sakaide	Mar-93	Japan	S	Moss	4	Pertamina
LNG Fukurokuju	165,000	MOL	Kawasaki	June-15	Japan	S	Moss	4	Various
LNG Gemini	126,300	MOL/LNG Japan	GD Quincy	Sep-78	Marshall Is.	S	Moss	5	Pertamina
LNG Imo	148,300	BW Gas	Daewoo	Jun-08	Bermuda	S	GT NO 96	4	Nigeria LNG
LNG Jamal	135,330	Osaka Gas/J3 Consortium	Mitsubishi Nagasaki	Oct-00	Japan	S	Moss	5	Oman Gas
LNG Jupiter	145,000	NYK Line	Kawasaki	Jul-09	Bahamas	S	Moss	4	Various
LNG Jurojin	155,300	MOL	MHI Nagasaki	Nov-15	Japan	S	KM	4	Various
LNG Kano	148,471	BW Gas	Daewoo	Jan-07	Bermuda	S	GT No. 96	4	NLNG
LNG Lagos	177,000	Bonny Gas	Hyundai	Oct-15	Bermuda	DFDE	TZ Mk III	4	Nigeria LNG
LNG Leo	126,400	MOL/LNG Japan	GD Quincy	Dec-78	Marshall Is.	S	Moss	5	Pertamina
LNG Lerici	65,000	Exmar	Italcantieri Sestri	Mar-98	Italy	S	GT NO 96	4	Sonatrach
LNG Libra	126,400	Hoegh LNG	GD Quincy	Apr-79	Marshall Is.	S	Moss	5	Various
LNG Lokoja	148,300	BW Gas	Daewoo	Dec-06	Bermuda	S	GT No. 96	4	Nigeria LNG
LNG Mars	155,000	MOL/Osaka Gas	Mitsubishi	Oct-16	Marshall Is.	S	Moss	5	Various
LNG Ogun	148,300	NYK Line	Samsung	Aug-07	Japan	S	TZ Mk. III	4	Nigeria LNG
LNG Ondo	148,300	BW Gas	Daewoo	Sep-07	Bermuda	S	GT NO 96	4	Nigeria LNG



LNG Oyo	140,500	BW Gas	Daewoo	Dec-05	Bermuda	S	GT NO 96	4	Nigeria LNG
LNG Pioneer	138,000	MOL	Daewoo	Jul-05	Bahamas	S	GT No 96	4	Idku
LNG Port Harcourt	175,000	Bonny Gas	Samsung	Oct-15	Bermuda	DFDE	TZ Mk III	4	Nigeria LNG
LNG Portovenere	65,000	Exmar	Italcantieri Sestri	Jun-96	Italy	S	GT No 96	4	Sonatrach
LNG River Niger	141,000	Bonny Gas Transport	Hyundai	May-06	Bermuda	S	Moss	4	Various
LNG River Orashi	145,910	BW Gas	Daewoo	Nov-04	Bermuda	S	GT No 96	4	Nigeria LNG
LNG Rivers	137,231	Bonny Gas Transport	Hyundai	Jun-02	Bermuda	S	Moss	4	Nigeria LNG
LNG Saturn	153,000	MOL	MHI	Nov-15	Japan	S	Moss	4	Various
LNG Sokoto	137,231	Bonny Gas Transport	Hyundai	Aug-02	Bermuda	S	Moss	4	Nigeria LNG
LNG Taurus	126,300	MOL/LNG Japan	GD Quincy	Aug-79	Marshall Is.	S	Moss	5	Various
LNG Venus	155,000	Osaka/MOL	MHI	Oct-14	Japan	S	Moss	4	Various
LNG Vesta	127,547	Tokyo Gas Consortium	Mitsubishi Nagasaki	Jun-94	Japan	S	Moss	4	Pertamina
LNG Virgo	126,400	MOL/LNG Japan	GD Quincy	Dec-79	Marshall Is.	S	Moss	5	Pertamina
Lobito	160,400	Mitsui/NYK/Teekay	Samsung	Oct-11	Bahamas	DFDE	TZ Mk. III	4	Various
Lusail	138,000	Peninsular LNG	Samsung	May-05	Bahamas	S	TZ Mk. III	4	Qatar
Madrid Spirit	138,000	Teekay LNG Partners	IZAR Puerto Real	Jan-05	Spain	S	GT No 96	4	Engas
Magellan Spirit	165,500	Teekay LNG Partners	Samsung	Sep-08	Denmark	DFDE	TZ Mk. III	4	Various
Malanje	160,400	Mitsui/NYK/Teekay	Samsung	Jul-11	Bahamas	DFDE	TZ Mk. III	4	Various
Maran Gas Achilles	174,000	Maran	Hyundai Samho	Feb-16	Greece	DFDE	GT No 96	4	Various
Maran Gas Agamemnon	174,000	Maran	Hyundai Samho	May-16	Greece	DFDE	GT No 96	4	Various
Maran Gas Alexandria	161,870	Maran	Hyundai Samho	Sep-15	Greece	DFDE	TZ Mk. III	4	Various
Maran Gas Amphipolis	173,400	Maran	Daewoo	Aug-16	Greece	DFDE	GT No 96	4	Various
Maran Gas Apollonia	161,870	Maran	Daewoo	Jan-14	Greece	DFDE	GT No 96	4	Various
Maran Gas Asclepius	145,000	Kristen Navigation	Daewoo	Jul-05	Bermuda	S	GT No 96	4	Qatar
Maran Gas Coronis	145,700	Maran	Daewoo	Sep-07	Greece	S	GT No 96	4	Rasgas II
Maran Gas Delphi	159,800	Maran	Daewoo	Feb-14	Greece	DFDE	GT No 96	4	Various
Maran Gas Efessos	159,800	Maran	Daewoo	Jun-14	Greece	DFDE	GT No 96	4	Various
Maran Gas Hector	174,000	Maran	Hyundai Samho	Nov-16	Greece	DFDE	GT No 96	4	Various
Maran Gas Lindos	159,800	Maran	Daewoo	Jun-15	Greece	DFDE	GT No. 96	4	Various
Maran Gas Mystras	155,900	Maran Gas	Daewoo	May-15	Greece	DFDE	GT No 96	4	various
Maran Gas Pericles	174,000	Maran	Hyundai Samho	June-16	Greece	DFDE	GT No 96	4	Various
Maran Gas Posidonia	161,870	Maran	Daewoo	May-14	Greece	DFDE	GT No 96	4	Various
Maran Gas Roxana	173,400	Maran	Daewoo	Jan-17	Greece	DFDE	GT No 96	4	Various
Maran Gas Sparta	161,870	Maran	Hyundai Samho	April-15	Greece	DFDE	G TZ Mk. III	4	Various
Maran Gas Troy	155,900	Maran Gas	Daewoo	May-15	Greece	DFDE	GT No 96	4	various
Maran Gas Ulysses	174,000	Maran	Hyundai Samho	Jan-17	Greece	DFDE	GT No 96	4	Various
Maria Energy	174,000	Tsakos	Hyundai	Mar-15	Marshall Is.	TFDE	GTT Mk II	4	Various
Marib Spirit	165,000	Teekay LNG	Samsung	May-08	Marshall Is.	DFDE	TZ Mk. III	4	Various
Matthew	126,540	Suez LNG Shipping	Newport News	Jun-79	Bahamas	S	TZ Mk. I	6	Atlantic LNG
Mekaines	266,000	Nakilat	Samsung	Mar-09	Liberia	DRL	GT No 96	4	Qatar-Atlantic Basin
Meridian Spirit	165,500	Teekay LNG	Samsung	Jan-10	Denmark	DFDE	TZ Mk. III	4	Various
Mesaimmer	210,100	Nakilat	Hyundai	Mar-09	Liberia	DRL	GT No 96	4	Qatar-Atlantic Basin
Methane Alison Victoria	145,000	GasLog	Samsung	Aug-07	Bermuda	S	TZ III	4	Eq.Guinea LNG
Methane Becki Anne	170,000	GasLog	Samsung	Sep-10	Bermuda	TFDE	TZ Mk. III	4	Various
Methane Heather Sally	145,000	GasLog	Samsung	Jul-07	Bermuda	S	Tz Mk. III	4	Eq.Guinea LNG
Methane Jane Elizabeth	145,000	GasLog	Samsung	Jun-06	Bermuda	TFDE	TZ Mk. III	4	Engas
Methane Julia Louise	170,000	GasLog	Samsung	Dec-09	Bermuda	TFDE	TZ Mk. III	4	Various
Methane Kari Elin	138,200	Shell	Samsung	Jun-04	Bermuda	S	TZ Mk. III	4	Various
Methane Lake Charles	145,000	Shell	Samsung	Feb-07	Bermuda	S	TZ Mk. III	4	Marathon Oil
Methane Lydon Volney	145,000	Shell	Samsung	Aug-06	Bermuda	S	TZ Mk. III	4	Engas
Methane Mickie Harper	170,000	Shell-GasLog	Samsung	Nov-10	Bermuda	TFDE	TZ Mk. III	4	Various
Methane Nile Eagle	145,000	Shell-GasLog	Samsung	Dec-07	Bermuda	S	TZ Mk. III	4	Engas
Methane Patricia Camila	170,000	Shell-GasLog	Samsung	Oct-10	Bermuda	TFDE	TZ Mk. III	4	Various
Methane Princess	138,159	Golar LNG	Daewoo	2003	UK	S	GT No 96	4	Spot BG
Methane Rita Andre	145,000	GasLog	Samsung	Mar-06	Bermuda	S	TZ Mk. III	4	Engas
Methane Shirley Elizabeth	145,000	GasLog	Samsung	Apr-07	Bermuda	S	TZ Mk. III	4	Marathon Oil
Methane Sprit	165,000	Teekay LNG	Samsung	Mar-08	Singapore	DFDE	TZ Mk. III	4	Various
Milaha Qatar	145,000	Milaha	Samsung	Apr-06	Denmark	S	TZ Mk. III	4	Qatar
Milaha Ras Laffan	138,270	Milaha	Samsung	Mar-04	Denmark	S	TZ Mk. III	4	RasGas II
Min Lu	147,000	China Ships	Hudong	Aug-09	China	S	GT No 96	4	Various
Min Rong	147,000	China LNG Ships	Hudong	Feb-09	Hong Kong	S	GT No 96	4	Australia-China
Mourad Didouche	126,130	SNTM-Hyproc	Atlantique	Jul-80	Algeria	S	GT No 85	5	Sonatrach
Mozah	266,000	QGTC	Samsung	Aug-08	Qatar	DRL	TZ Mk III	5	Qatargas II
Mraweh	137,000	National Gas Shipping	Kvaerner-Masa	Jun-96	Liberia	S	Moss	4	ADGAS
Mubaraz	137,000	National Gas Shipping	Kvaerner-Masa	Jan-96	Liberia	S	Moss	4	Various
Muraq	210,100	J5-K Line	Daewoo	May-08	Marshall Is.	DRL	GT No 96	4	Qatar-Atl'c Basin
Murwab	210,100	J5 Consortium	Daewoo	May-08	Marshall Is.	DRL	GT No. 96	4	Qatargas
Muscat LNG	149,170	Oman Gas/MOL	Kawasaki Sakaide	Mar-04	Japan	S	Moss	4	Oman Gas
Neo Energy	149,700	Tsakos	Hyundai	Feb-07	Liberia	S	GTT Mk II	4	Various
Nizwah LNG	145,000	Oryx LNG Carriers	Kawasaki Sakaide	Dec-05	Japan	S	Moss	4	Oman Gas
Northwest Sanderling	127,525	Australia LNG	Mitsubishi Nagasaki	Jun-89	Australia	S	Moss	4	NWS
Northwest Sandpiper	127,500	Australia LNG	Mitsui Chiba	Feb-93	Australia	S	Moss	4	NWS
Northwest Seaeagle	127,450	Australia LNG	Mitsubishi Nagasaki	Nov-92	Bermuda	S	Moss	4	NWS
Northwest Shearwater	127,500	Australia LNG	Kawasaki Sakaide	Sep-91	Bermuda	S	Moss	4	NWS
Northwest Snipe	127,747	Australia LNG	Mitsui Chiba	Sep-90	Australia	S	Moss	4	NWS
Northwest Stormpetrel	127,600	Australia LNG	Mitsubishi Nagasaki	Dec-94	Australia	S	Moss	4	NWS
Northwest Swallow	127,708	J3 Consortium	Mitsui Chiba	Nov-89	Japan	S	Moss	4	NWS
Northwest Swan	138,000	Australia LNG	Daewoo	Mar-04	Australia	S	GT NO 96	4	NWS
Northwest Swift	127,590	J3 Consortium	Mitsubishi Nagasaki	Sep-89	Japan	S	Moss	4	NWS
Oak Spirit	173,400	Teekay	Daewoo	Jan-16	Bahamas	MEGI-DF	NO. 96 GW	4	Cheniere
Ob River	150,000	Lance Shipping	Hyundai	Oct-07	Marshall Is.	S	TZ Mk. III	4	Various
Onaiza	210,100	Nakilat	Daewoo	Apr-09	Liberia	DRL	GT NO 96	4	Qatar-Atlantic Basin
Pacific Arcadia	147,200	NYK Line	MHI	Oct-14	Bahamas	S	KM	4	Various
Pacific Enlightenment	145,000	LNG MT	Mitsubishi	Mar-09	Japan	S	Moss	4	Various
Pacific Eurys	137,000	LNG Marine Transport	Mitsubishi Nagasaki	Mar-06	Bahamas	S	Moss	4	Darwin
Pacific Mimosa	155,300	NYK Line	MHI	Nov-17	Bahamas	S	Moss	4	Australia-Japan
Pacific Notus	137,006	Pacific LNG Shipping	Mitsubishi Nagasaki	Sep-03	Bahamas	S	Moss	5	Darwin
Palu LNG	160,106	TMSC Gas	Daewoo	Jun-14	Malta	TFDE	GT No 96	4	Various
Pan Asia	174,000	Teekay	Hudong-Zhonghua	July-17	Bahamas	TFDE	NO. 96 GW	4	Cheniere
Papua	171,800	MOL-China	Hudong	Jan-15	Hong Kong	DFDE	SSD	4	PNG LNG
Polar Eagle	89,880	Polar LNG	IHI Chita	Jun-93	Liberia	S	IHI SPB	4	ConocoPhillips/Marathon
Prachi	173,000	NYK-SCI	Hyundai	Nov-16	Singapore	TFDE	GT No 96	4	Petronet

CARRIER FLEET



Provalys	153,500	Gaz de France	Chantiers	Nov-06	France	DFDE	CS1	4	ELNG
Puteri Delima	130,400	MISC	Atlantique	Jan-95	Malaysia	S	GT NO 96	4	Petronas
Puteri Delima Satu	137,100	MISC	Mitsui Chiba	Apr-02	Malaysia	S	GT NO 96	4	Petronas
Puteri Firuz	130,400	MISC	Atlantique	May-97	Malaysia	S	GT NO 96	4	Petronas
Puteri Firuz Satu	137,100	MISC	Mitsubishi Nagasaki	Sep-04	Malaysia	S	GT NO 96	4	Petronas
Puteri Intan	130,400	MISC	Atlantique	Aug-94	Malaysia	S	GT NO 96	4	Petronas
Puteri Intan Satu	137,100	MISC	Mitsubishi Nagasaki	Dec-01	Malaysia	S	GT NO 96	4	Petronas
Puteri Mutiera Satu	137,100	MISC	Mitsui Chiba	Apr-05	Malaysia	S	GT NO 96	4	Petronas
Puteri Nilam	130,400	MISC	Atlantique	Jun-95	Malaysia	S	GT NO 96	4	Petronas
Puteri Nilam Satu	137,100	MISC	Mitsubishi Nagasaki	Sep-03	Malaysia	S	GT NO 96	4	Petronas
Puteri Zamrud	130,400	MISC	Atlantique	May-96	Malaysia	S	GT NO 96	4	Petronas
Puteri Zamrud Satu	137,100	MISC	Mitsui Chiba	Apr-87	Malaysia	S	GT NO 96	4	Atlantic LNG
Raahi	136,000	Petronet LNG Ltd	Daewoo	Dec-04	Malta	S	GT NO 96	4	Qatargas
Ramdane Abane	126,130	SNTM-Hyproc	Atlantique	Jul-81	Algeria	S	GT NO 85	5	Sonatrach
Rasheeda	266,000	QGTC	Samsung	Jun-10	Liberia	DRL	TZ Mk. III		Various
Ribera del Duero Knutsen	173,400	Knutsen	Daewoo	Nov-10	Nor-NIS	DFDE	GT NO. 96	4	Various
Rioja Knutsen	176,300	Knutsen	Daewoo	Dec-16	Nor-NIS	DFDE	TZ Mk III	4	Various
Salalah LNG	147,000	Oman Gas/MOL	Samsung	Dec-05	Japan	S	TZ Mk. III	4	Oman
SCF Polar	71,500	Sovcomflot	Kockums	Aug-69	Liberia	S	GT NO 82	6	Sonatrach
Seishu Maru	162,000	K Line-Transpacific	Kawasaki Sakaide	Jan-15	Panama	S	Moss	4	Australia-Japan
Seri Alam	138,000	MISC	Samsung	Oct-05	Malaysia	S	TZ Mk. III	4	Yemen LNG
Seri Amanah	145,000	MISC	Samsung	Mar-06	Malaysia	S	TZ Mk. III	4	Yemen LNG
Seri Anggun	145,000	MISC	Samsung	Nov-06	Malaysia	S	TZ Mk. III	4	Yemen LNG
Seri Angkasa	145,000	MISC	Samsung	Feb-07	Malaysia	S	TZ Mk. III	4	Petronas
Seri Ayu	145,000	MISC	Samsung	Oct-07	Malaysia	S	TZ Mk. III	4	Various
Seri Bakti	152,300	MISC	Mitsubishi	Mar-07	Malaysia	S	GT NO 96	4	Petronas
Seri Balhaf	152,000	MISC	Mitsubishi	Sep-08	Malaysia	S	GT NO 96	4	Various
Seri Balquis	152,000	MISC	Mitsubishi	Dec-08	Malaysia	S	GT NO 96	4	Various
Seri Begawan	152,300	MISC	Mitsubishi	Dec-07	Malaysia	S	GT NO 96	4	Various
Seri Bijaksana	152,300	MISC	Mitsubishi	Feb-08	Malaysia	S	GT NO 96	4	Petronas
Seri Camar	150,200	MISC	Hyundai	Feb-18	Malaysia	S	Moss	4	Petronas
Seri Camellia	150,000	MISC	Hyundai	Nov-16	Malaysia	S	Moss	4	Petronas
Seri Cenderawasih	150,000	MISC	Hyundai	Jan-17	Malaysia	S	Moss	4	Petronas
Sestao Knutsen	138,000	Knutsen	IZAR Sestao	Jan-07	Spain	S	GT NO 96	4	Atlantic LNG
Sevilla Knutsen	173,400	Knutsen	Daewoo	Jun-10	N.I.S.	DFDE	GT NO 96	4	Various
Shahamah	135,500	National Gas Shipping	Kawasaki Sakaide	Oct-94	Liberia	S	Moss	5	ADGAS
Shangra	266,000	QGTC	Samsung	Nov-09	Liberia	DRL	TZ Mk. III	5	Qatargas IV
Shen Hai	147,100	China LNG	Hudong Zhonghua	Sep-12	China	AB/CC Steam	GT NO 96	4	Various
Simaisma	147,700	Maran Gas Maritime	Daewoo	Jul-06	Greece	S	GT No 96	4	Qatar
SK Splendor	138,375	SK Shipping	Samsung	Mar-00	Panama	S	TZ Mk. III	4	Oman Gas
SK Stellar	138,375	SK Shipping	Samsung	Dec-00	Panama	S	TZ Mk. III	4	RasGas
SK Summit	138,000	SK Shipping	Daewoo	Aug-99	Panama	S	GT NO 96	4	RasGas
SK Sunrise	138,306	I. S. Carriers	Samsung	Sep-03	Panama	S	TZ Mk. III	4	RasGas
SK Supreme	138,200	SK Shipping	Samsung	Jan-00	Panama	S	TZ Mk. III	4	RasGas
Sohar LNG	137,250	Oman Gas/ MOL	Mitsubishi Nagasaki	Oct-01	Malta	S	Moss	5	Oman Gas
Solaris	155,000	GasLog	Samsung	Jul-14	Bermuda	TFDE	TZ Mk. III	4	Various
Sonangol Benguela	160,500	Sonangol	Daewoo	Sep-11	Bahamas	S	GT No. 96	4	Angola LNG
Sonangol Etosha	160,500	Sonangol	Daewoo	Sep-11	Bahamas	S	GT No. 96	4	Angola LNG
Sonangol Sambizanga	160,500	Sonangol	Daewoo	Sep-11	Bahamas	S	GT No. 96	4	Angola LNG
Southern Cross	172,000	MOL	Hudong	May-15	Hong Kong	DRL	GT NO. 96	4	Various
Soyo	160,400	Mitsui/NYK/Teekay	Samsung	May-11	Bahamas	DFDE	TZ Mk. III	4	Various
Spirit of Hela	177,000	MOL	Hyundai	Oct-09	Panama	DFDE	TZ Mk. III	4	Various
Stena Blue Sky	145,700	Stena	Daewoo	Jan-06	Panama	S	GT No 96	4	Various
Stena Clear Sky	171,800	Stena	Daewoo	Sep-10	Panama	DFDE	GT NO 96	4	Various
Stena Crystal Sky	171,800	Stena	Daewoo	Jul-10	Panama	DFDE	GT NO 96	4	Various
STX Kolt	145,700	STX Panocean	Korea Hanjin	Nov-08	Panama	DFDE	TZ Mk. III	4	Various
Suez Point Fortin	154,200	Trinity LNG	Koyo Japan	Nov-09	Panama	S	TZ Mk. III	4	Yemen LNG
Taitar No. 1	145,000	NYK Line	Mitsubishi	Oct-09	Liberia	S	Moss	4	Various
Taitar No. 3	145,000	NYK Line	Mitsubishi	Jan-10	Liberia	S	Moss	4	Various
Taitar No. 4	145,000	NYK	Mitsubishi	Jan-10	Liberia	S	Moss	4	Various
Tangguh Batur	145,700	Sovcomflot/NYK	Daewoo	Dec-08	Cyprus	S	GT NO 96		Tangguh
Tangguh Foja	155,000	K Line	Samsung	Jul-08	Panama	DFDE	TZ Mk. III	4	Tangguh LNG
Tangguh Hiri	155,000	Teekay LNG	Hyundai	Nov-08	IOM	DFDE	TZ Mk. III	4	Tangguh
Tangguh Jaya	145,700	K Line	Samsung	Nov-08	Panama	DFDE	TZ Mk. III	4	Tangguh
Tangguh Palung	155,000	K Line	Samsung	Mar-09	Panama	DFDE	TZ Mk. III	4	Tangguh
Tangguh Sago	155,000	Teekay LNG	Hyundai	Mar-09	IOM	DFDE	TZ Mk. III	4	Tangguh LNG
Tangguh Towuti	145,700	Sovcomflot/NYK	Daewoo	Oct-08	Cyprus	S	GT NO 96	4	Tangguh
Tembek	216,200	OSG/Nakilat	Samsung	Sep-07	Marshall Is.	DRL	TZ Mk. III	4	Qatargas II
Tenaga Satu	130,000	MISC	Dunkerque	Sep-82	Malaysia	S	GT NO 88	5	Petronas
Torben Spirit	173,000	Teekay	Daewoo	Feb-17	Bahama	MEGI-DF	No 96 GW	4	Various
Trinity Arrow	154,900	K Line	Imabari Shipbuilding	Mar-08	Panama	S	TZ Mk. III	4	Various
Umm Al Amad	210,100	J5	Daewoo	Aug-08	Marshall Is.	DRL	GT NO 96	4	Ras Gas III
Umm Al Ashtan	137,000	National Gas Shipping	Kvaerner- Masa	May-97	Liberia	S	Moss	4	ADGAS
Umm Bab	145,000	Kristen Navigation	Daewoo	Nov-05	Bermuda	S	GT NO 96	4	Qatargas
Umm Slaat	266,000	QGTC	Samsung	Nov-08	Qatar	DRL	TZ Mk. III	5	Qatargas
Valencia Knutsen	173,400	Knutsen	Daewoo	Sep-10	Nor-NIS	DFDE	GT NO. 96	4	Various
Velikiy Novgorod	170,200	SovComFlot	STX	Feb-14	Liberia	DFDE	GT No. 96	4	Various
Wakaba Maru	125,000	J3 Consortium	Mitsui Chiba	Apr-85	Japan	S	Moss	5	Pertamina
WilEnergy	125,500	Awilco LNG	Mitsubishi	Oct-83	NIS	S	Moss	5	Various
WilForce	156,000	Teekay LNG	Daewoo	Aug-13	NIS	DFDE	GT NO 96	4	Various
WilGas	125,500	Awilco LNG	Mitsubishi	Jul-84	NIS	S	Moss	5	Various
WilPower	125,500	Awilco LNG	Mitsubishi	Jul-84	NIS	S	Moss	5	Various
Woodside Cheney	174,000	Maran	Hyundai Samho	March-16	Greece	DFDE	GT No 96	4	Various
Woodside Donaldson	165,500	Teekay LNG	Samsung	Dec-09	Singapore	DFDE	TZ Mk. III	4	Various
Woodside Goode	159,800	Maran	Daewoo	Jul-14	Greece	DFDE	GT No. 96	4	Various
Woodside Reeswithers	173,400	Maran	Daewoo	Nov-16	Greece	DFDE	GT No 96	4	Various
Woodside Rogers	155,900	Maran Gas	DSME	Jul-13	Greece	DFDE	GT NO 96	4	Various
Yari LNG	159,983	TMSC Gas	Daewoo	Jun-14	Malta	TFDE	GT No 96	4	Various
Yenisei River	155,000	Dynagas	Hyundai	Jul-13	Marshall Is.	DFDE	TZ Mk. III	4	Various
YK Sovereign	127,125	SK Shipping	Hyundai	Dec-94	Panama	S	Moss	4	Pertamina
Zarga	266,000	QGTC	Samsung	Dec-09	Liberia	DRL	TZ Mk. III	5	Qatar-Atlantic
Zekreet	135,420	J4 Consortium	Mitsui Chiba	Dec-98	Japan	S	Moss	5	Qatargas

Any observations, additions or suggested revisions to the LNG journal World LNG Carrier Fleet list should be sent to editor@lngjournal.com

LNG Import Terminals

Explanatory Notes

- The tables do not include the following types of LNG facilities :
 - ◆ Small marine satellite terminals receiving LNG from liquefaction plants in their own country (such as exist in Norway) or which receive LNG transhipped from nearby reception terminals in their own country (such as in Japan)
 - ◆ Satellite LNG storage facilities that receive LNG transported only by road or rail
- Expansions of LNG reception terminals are only shown if they involve new storage tanks
- Where there is a blank in the table the information is uncertain or unknown.

Any comments on the tables, and corrections / additional information from terminal shareholders and project developers would be most welcome, and should be sent to [John McKay](mailto:John.McKay@lngjournal.com) e-mail editor@lngjournal.com

Country	Location (Project)	Owners	Start up	Storage	
				Tanks	Capacity
Belgium	Zeebrugge	Fluxys	1987	4	380,000
Canada	Canaport Saint John	Irving Oil, Repsol	2009	3	480,000
Chile	Quintero	ENAP, Metrogas, Enagas	2009	3	334,000
	Mejillones	Engie, Codelco	2010	1	175,000
China	Beihai LNG, Guangxi	Sinopec	2015	4	640,000
	Dalian	PetroChina	2011	3	480,000
	Dongguan, Guangdong	Jovo Group	2013	2	160 000
	Fujian LNG (Xiuyu)	CNOOC, Fujian I&D Corp.	2008	2	640,000
	Guangdong	CNOOC,BP	2006	3	480,000
	Haikou, Hainan LNG	CNOOC	2014	3	480,000
	Ningbo, Zhejiang	CNOOC, Zhejiang Energy	2012	3	480,000
	Qingdao, Shandong	Sinopec	2014	3	480,000
	Rudong	PetroChina	2011	3	530,000
	Shanghai	CNOOC, Shenergy Group	2009	3	495,000
	Shanghai, Mengtougou	Shanghai Gas	2008	3	120 000
	Shenzen, Diefu	CNOOC	2016	2	320,000
	Tangshan, Hebei	PetroChina	2013	3	480,000
	Tianjin North	Sinopec	2017	2	320,000
	Yuedong, Guangdong	CNOOC	2016	2	320,000
	Zhuhai, Gaolan	CNOOC	2013	3	480,000
Dominican Republic	Punta Caucedo	AES Andres	2003	1	160 000
Finland	Pori	Gasum Skangas	2016	1	30,000
France	Fos Tonkin	Elengy	1972	3	150,000
	Montoir-de-Bretagne	Elengy	1980	3	360,000
	Fos Cavaou	Engie, Total	2010	3	330,000
	Dunkirk LNG	EDF, Fluxys, Total	2016	3	570,000
Greece	Revithoussa	DEPA	2000	3	225,000
India	Dabhol	GAIL, NTPC (Ratnagiri Gas & Power)	2009	3	480,000
	Dahej	Petronet LNG	2004	4	592,000
	Hazira	Shell India, Total	2005	2	320,000
	Kochi, Kerala	Petronet LNG	2013	2	320,000
Indonesia	Arun	Pertamina	2015	5	507,000
Italy	Panigaglia	Snam	1969	2	100,000
	Porto Levante (offshore GBS)	ExxonMobil, Qatar Petroleum, Edison Gas	2009	2	250,000
Japan	Negishi	Tokyo Gas	1969	14	1,180,000
	Sodegaura	Tokyo Gas	1973	35	2,660,000
	Ohgishima	Tokyo Gas	1998	4	850,000
	Higashi-Ohgishima	Tokyo Electric	1984	9	540,000
	Futtsu	Tokyo Electric	1985	10	1,110,000
	Yokkaichi LNG	Chubu Electric	1988	4	320,000
	Kawagoe	Chubu Electric	1997	6	840,000
	Yokkaichi Works	Toho Gas	1991	2	160,000
	Chita LNG Joint	Toho Gas, Chubu Electric	1978	4	300,000
	Chita LNG	Toho Gas, Chubu Electric	1983	7	640,000
	Chita - Midorihama	Toho Gas	2001	3	600,000
	Senboku I	Osaka Gas	1972	4	180,000
	Senboku II	Osaka Gas	1977	18	1,585,000
	Himeji	Osaka Gas	1984	8	740,000
	Himeji LNG	Kansai Electric	1979	7	520,000
	Yanai	Chugoku Electric	1990	6	480,000
	Niigata	Nihonkai LNG, Tohoku Electric	1984	8	720,000
	Oita	Oita Gas, Kyushu Electric	1990	5	460,000
	Tobata	Kitakyushu LNG	1977	8	480,000
	Fukuoka	Saibu Gas	1993	2	70,000
	Sodeshi	Shizuoka Gas	1996	3	337,200
	Hatsukaichi	Hiroshima Gas	1996	2	170,000
	Kagoshima	Nippon Gas	1996	2	136,000
	Shin-Minato	Sendai City Gas	1997	1	80,000
	Nagasaki	Saibu Gas	2003	1	36,000
	Sakai	Kansai Electric, Cosmo Oil	2006	3	420,000
	Mizushima	Nippon Oil, Chugoku Electric	2006	2	320,000
	Sakaide	Shikoku Electric, Cosmo Oil	2011	1	180,000
	Ishikari LNG	Hokkaido Gas, Hokkaido Electric	2012	2	380,000
	Okinawa	Okinawa Electric Power	2012	2	280,000
	Naoetsu	Inpex	2013	2	360,000
	Joetsu	Chubu	2011	3	540,000
	Hachinohe LNG	Nippon Oil	2015	2	280,000
	Hitachi LNG	Tokyo Gas	2015	1	230,000
	Soma Fukushima	Japan Petroleum Exploration	2017	1	225,000
Korea	Boryeong	GS Energy, SK E&S	2017	3	200,000
	Incheon	Kogas	1996	20	2,880,000
	Kwangyang	POSCO	2005	4	530,000
	Pyeong-Taek	Kogas	1986	23	3,360,000
	Samcheok	Kogas	2014	3	600,000
	Tong-Yeong	Kogas	2002	17	2,620,000
Malaysia	Pengerang Johor	Petronas Gas	2017	2	400,000
Mexico	Altamira	Vopak, Enagas	2006	2	300,000
	Energia Costa Azul	Sempre LNG	2008	2	320,000
	Manzanillo	Samsung, Kogas, Mitsui	2012	2	300,000

LNG Import Terminals (continued)

Country	Location (Project)	Owners	Start up	Storage	
				Tanks	Capacity
Netherlands	Gate LNG	Gasunie, Royal Vopak	2011	3	540,000
Poland	Swinoujscie	Baltic Gaz System	2015	2	320,000
Portugal	Sines	REN Atlantico	2004	3	390,000
Puerto Rico	Penuelas	EcoElectrica	2000	1	160,000
Singapore	Singapore	Singapore Energy Authority	2013	3	540,000
Spain	Barcelona	Enagas	1969	8	840,000
	Huelva	Enagas	1988	5	610,000
	Cartagena	Enagas	1989	5	587,000
	Bilbao	Enagas, EVE	2003	3	450,000
	Sagunto	GNF, Osaka Gas, Oman Oil	2006	4	600,000
	Reganosa, Ferrol	Galicia, Sonatrach, Tojeiro	2006	2	300,000
	El Musel, Gijón,	Enagas	2013	2	300,000
Taiwan	Yung-An	CPC	1990	6	690,000
	Tai-Chung	CPC	2009	3	480,000
Thailand	Map Ta Phut	PTT LNG	2011	2	320,000
Turkey	Marmara Ereglisi	Botas	1994	3	255,000
	Izmir	EgeGaz	2006	2	280,000
USA	Everett	Suez LNG NA	1971	2	155,000
	Lake Charles	Shell, ETE	1982	4	425,000
	Elba Island	Kinder	2001	5	535,000
	Cove Point	Dominion	2003	5	530,000
	Freeport	Freeport LNG Development	2008	2	320,000
	Cameron	Sempra LNG	2009	3	480,000
	Golden Pass, TX	Qatar Petroleum, ExxonMobil	2010	5	775,000
	Pascagoula, MS	Gulf LNG, Kinder	2012	2	320,000
UK	Isle of Grain	National Grid	2005	8	1,000,000
	South Hook	ExxonMobil, Qatar Petroleum, Total	2009	5	775,000
	Dragon LNG, Milford Haven	Shell, Petronas	2009	2	310,000

LNG Import Terminal Projects

Country	Location/Project	Owners/Project Developers	Start up	Storage	
				Tanks	Capacity
China	Zhoushan Zhejiang	Enn Group	2018	2	320,000
Finland	Tornio	Gasum Skanga	2018	1	30,000
Gibraltar	Gasnor	Shell	2017	1	5,000
India	Ennore	Indian Oil Corp	2018	2	320,000
	Mundra	Gujarat State Petroleum, Adani Group	2018	2	320,000
	FSRU Andhra Pradesh	Engie, Andhra Pradesh Gas	2018	1	135,000
	Pipovav LNG (FSRU), Gujarat	Swan Energy	2018	2	320,000
	Andhra Pradesh	Hindustan LNG, Andhra Pradesh	studies	1	135,000
Indonesia	Labuhan Maringgai	Perusahaan Gas Negara	2018	1	135,000
Malaysia	Lahad Datu LNG, Sabah	Petronas	2018	studies	
Panama	Costa Norte	AES	2018	1	130,000
Philippines	Pagbilao LNG	Energy World Corp.	2017	1	130,000
UK	Port Meridian, Barrow-in-Furness	Port Meridian Energy Ltd.	2018	1	150,000
Uruguay FSRU	Montevideo	Gas Sayago, Mitsui Osk Lines	2018	1	230,000

LNG FSRU Import Facilities

Country	Location (Project)	Owners	Start up
Argentina	Bahia Blanca GasPort	Excelerate/YPF Repsol	2008
	Escobar GasPort	Excelerate/Enarsa	2011
Brazil	Pecem, FSRU	Petrobras	2009
	Guanabara Bay FSRU	Petrobras	2009
	Salvador, Bahia FSRU	Petrobras	2013
Colombia	Cartagena FSRU	Promigas, Sociedad Portuaria El Cayao	2016
Egypt	Ain Sokhna, Suez	EGAS, Hoegh	2015
	Ain Sokhna, Suez	EGAS, BW Gas	2015
Indonesia	Lampung	Hoegh LNG, PGN LNG	2014
	Nusantara (Jakarta Bay)	Golar LNG, Pertamina	2012
Italy	Livorno	OLT Offshore LNG Toscana	2013
Jordan	Aqaba, Jordan	Golar LNG	2015
Kuwait	Mina Al-Ahmadi	KPC	2009
Lithuania	Klaipeda	Klaipedos Nafta Hoegh LNG	2014
Malaysia	Malacca FSRU	Petronas	2012
Malta	FSU Armada Mediterrana	ElectroGas	2016
Pakistan	Port Qasim	Excelerate, Engro Corp	2015
	Port Qasim	BW-Mitsui, PGP Consortium	2017
Turkey	Aliaga FSRU, Neptune	Etki LNG	2016
	Dortyol FSRU Challenger	Botas	2018
UAE	Ruwais, Abu Dhabi	Gasco (UAE)	2016
	Jebel Ali Port, Dubai	DSA (UAE)	2010

LNG Export Projects

Country	Location/Project	Project Developers	Planned Start Up	Number of Trains	Capacity In MTPA
AUSTRALIA	Browse LNG	Woodside, BHP, BP Chevron, Shell, Mitsubishi, Mitsui	2021+	2	10.0
	Ichthys LNG	INPEX, Total	2017	2	8.4
	Prelude FLNG	Shell, Inpex, Kogas CPC	2018	1	3.5
CANADA	Bear Head LNG, Nova Scotia	LNG Ltd.	2024	4	8.0
	GNL Quebec, Saquenay	Freestone Capital and Breyer Capital	2024	4	10.0
	Goldboro LNG, Nova Scotia	Pieridae Energy	2024	2	10.0
	Kitimat LNG, BC	Woodside, Chevron	2024	2	10.0
	LNG Canada, BC	Shell, Mitsubishi, Kogas, PetroChina	2024	2	12.0
	Melford LNG project, Nova Scotia	H-Energy Hiranandani Group	Studies		
	Kwispaa FLNG, Vancouver	Steelhead LNG	2024	4	12.0
	Vancouver Tilbury	WesPac Midstream	2021	1	3.25
	Woodfibre LNG, Squamish	Pacific Oil & Gas Co	2020	2	2.1
EQ.GUINEA	Equatorial Guinea Fortuna FLNG	Ophir, Golar LNG, Schlumberger, GEPetrol	2019	1	2.0
INDONESIA	Sengkang LNG	Energy World Corp.	2017	4	2.0
MALAYSIA	Rotan FLNG (Sabah)	Petronas, Murphy Oil	2019	1	1.5
MOZAMBIQUE	Area 1 Onshore	Anadarko Petroleum and partners	2021	2	10
	Area 4 Onshore	Eni and partners	2021	2	10
	Area 4 FLNG	Eni and partners	2019	1	2.5
NIGERIA	NLNG Train 7	NNPC, Shell, BP, Total	2020+	1	8.4
PAPUA NEW GUINEA	Elk-Antelope LNG	Total, ExxonMobil Oil Search, Petromin	Studies		
RUSSIA	Sakhalin II expansion	Gazprom, Shell, Mitsui, Mitsubishi	2021	studies	
	Vladisvostok LNG	Gazprom, Itochu, various	2021	2	10.0
USA	Alaska LNG Nikiski	Alaska Gasline Development Corp.	2022	3	20.0
	Annova LNG, Brownsville	Exelon Corp.	2021	6	6.0
	Cameron LNG, Louisiana	Sempra	2018	5	24.92
	Commonwealth LNG, Louisiana	Commonwealth LNG LLP	2022	8	9.0
	Corpus Christi Liquefaction, Texas	Cheniere	2019	5	22.5
	Delfin LNG, Louisiana	Delfin, Hoegh	2021	3	9.0
	Driftwood LNG, Louisiana	Tellurian Investments	2022	6	26.0
	Elba Island, Georgia	Kinder Morgan, EIG Energy	2018	10	2.5
	Freeport LNG, Texas	Freeport LNG	2018	4	20.4
	Golden Pass, Texas	Qatar Petroleum, ExxonMobil	2021	3	15.6
	Jordan Cove, Coos Bay	Pembina Corp.	2024	2	7.8
	Lake Charles, Louisiana	Shell, ETE	2024	3	15.0
	Magnolia LNG	Louisiana LNG Ltd.	2021	4	8.0
	Port Arthur LNG	Sempra	2021	2	10.0
	Rio Grande LNG	NextDecade	2021	6	27.0
	Sabine Pass LNG, Louisiana	Cheniere	2018-19	2	9.0
	Texas LNG Brownsville	Chandra, Meyer, Samsung, others	2021	2	4.0
	VG LNG (Cameron Parish)	Venture Global	2021	5	10.0
	VG LNG (Plaquemines)	Venture Global	2021	10	20.0

LNG Exporters

Country	Location/Project	Shareholders	Start up	Liquefaction		Storage	
				Trains	capacity (nominal) mtpa	No. of tanks	Total capacity m³
ABU DHABI (UAE)	Das Island (Adgas)	ADNOC, Mitsui, BP, Total	1977 1994	2 1	3.2 2.5	3	240,000
ALGERIA	Arzew	Sonatrach GL4Z	1964	3	1.1	3	35,000
	Arzew	Sonatrach GL1Z	1978	6	7.8	3	300,000
	Arzew	Sonatrach GL2Z	1980	6	8.0	3	300,000
	Arzew	Sonatrach	2014	1	4.7		
	Skikda	Sonatrach GL1K II	1980	3	3.0	5	308,000
	Skikda	Sonatrach (rebuild)	2013	1	4.5		
ANGOLA	Soyo	Sonangol, Chevron, BP, ENI, Total	2012	1	5.2	2	370,000
AUSTRALIA	Karratha	NWS Woodside, Shell, BHP	1989	2	5.0	4	260,000
		(BP, Chevron	1992	1	2.5	1	130,000
		(Mistubishi/Mitsui)	2004	1	4.4	1	130,000
		NWS partners	2008	1	4.4	1	130,000
	Darwin	Darwin (Bayu Undan) ConocoPhillips, Santos, Eni, Inpex, TEPCO, Tokyo Gas	2006	1	3.5	1	188,000
	Australia Pacific LNG	ConocoPhillips, Origin Energy, Sinopec	2016	2	7.5	2	320,000
	Gladstone LNG	Santos, Petronas, Total, Kogas	2015	2	7.8	2	280,000
	Gorgon LNG	Chevron, Shell, ExxonMobil	2016	3	15.6	2	360,000
	Pluto LNG	Woodside, Tokyo Gas, Kansei	2012	1	4.8	2	240,000
	QCLNG	Shell, CNOOC	2014	2	8.0	2	280,000
	Wheatstone LNG	Chevron, Woodside, Kuwait (KUFPEC), Jera, Kyushu	2017	2	8.9	2	300,000
BRUNEI	Lumut	Brunei/Shell/Mitsubishi/Total	1972-74	5	7.2	3	176,000
EGYPT	Damietta	Union Fenosa, EGPC, EGAS	2004	1	5.0	2	300,000
	Idku	EGPC, EGAS, Shell, Total, Petronas	2005	2	7.2	2	280,000
EQ.GUINEA	Bioko Island	Marathon, Sonagas, Mitsui, Marubeni	2007	1	3.4	2	272,000
INDONESIA	Bontang I	Pertamina, VICO, JILCO, Total	1977	2	5.2	5	635,000
	Bontang II		1983	2	5.2		
	Bontang III		1989	1	2.8		
	Bontang IV		1993	1	2.8		
	Bontang V		1997	1	2.8		
	Bontang VI		1999	1	3.0		
	Sulawesi LNG	Medco Energi, Pertamina, Mitsubishi	2015	1	2.0	1	170,000
	Tangguh	BP, MI Berau, CNOOC, Nippon, LNG Japan	2008	2	7.6	2	340,000
MALAYSIA	Bintulu (MLNG Satu)	Petronas, Sarawak, Mitsubishi	1983	3	8.1	4	260,000
	Bintulu (MLNG Dua)	Petronas, Shell, Sarawak, Mitsubishi	1995	3	7.8	1	65,000
	Bintulu (MLNG Tiga)	Petronas, Shell, Sarawak, Mitsubishi, Nippon Oil	2003	2	6.8	1	120,000
	Bintulu Train 9	Petronas	2016	1	3.6		
	Kanowit FLNG	Petronas	2016	1	1.2		
NIGERIA	Bonny Island	NNPC, Shell, Total, Eni	1999	2	6.4	2	168,400
		Nigeria LNG (formed by above)	2002	1	3.2	1	84,200
		Nigeria LNG	2006	2	8.2		
		Nigeria LNG	2008	1	4.1	1	84,200
NORWAY	Snøhvit/Melkoya Island	Statoil, Total, GDF-Suez, Petoro	2007	1	4.2	2	280,000
OMAN	Oman LNG	Oman Govt., Shell, Total, Korea LNG	2000	2	7.1	2	240,000
		Mitsubishi, Mitsui, Partex and Itochu					
		Oman Govt., Oman LNG Union Fenosa, Osaka Gas, & Itochu	2006	1	3.7	2	240,000
PAPUA NEW GUINEA	PNG LNG	ExxonMobil, Oil Search, Santos, JX Nippon Oil	2014	2	6.9	2	320,000
PERU	Peru LNG	Hunt Oil, Shell, Marubeni, SK Group	2010	1	4.4	2	260,000
QATAR	Qatargas 1-T1&2	QP, ExxonMobil, Total, Marubeni, Mitsui	1997	2	6.4	4	340,000
	Qatargas 1-T3	QP, ExxonMobil, Total, Marubeni, Mitsui	1999	1	3.1		
	Qatargas II-T1	QP, ExxonMobil	2009	1	7.8		
	Qatargas II-T2	QP, ExxonMobil, Total	2009	1	7.8	8	1,160,000
	Qatargas III-T1	QP, ConocoPhillips, Mitsui	2010	1	7.8		
	Qatargas IV-T1	QP, Shell	2010	1	7.8		
	RasGas I- T1&2	QP, ExxonMobil, Kogas, Itochu, LNG Japan	1999	2	6.6		
	RasGas II- T3	QP, ExxonMobil	2004	1	4.7		
	RasGas II- T4	QP, ExxonMobil	2005	1	4.7	6	840,000
	RasGas II- T5	QP, ExxonMobil	2007	1	4.7		
	Rasgas III – T6	QP, ExxonMobil	2009	1	7.8		
	Rasgas III – T7	QP, ExxonMobil	2010	1	7.8		
RUSSIA	Sakhalin Island	(Sakhalin Energy) Gazprom, Shell, Mitsui, Mitsubishi	2009	2	9.6	2	200,000
	Yamal LNG Siberia	Novatek, Total, CNPC, Silk Fund	2017	3	16.5		
TRINIDAD & TOBAGO	Point Fortin Train 1	BP, Shell, CIC, NGC	1999	1	3.0	2	204,000
	Train 2	BP, Shell	2002	1	3.3	1	160,000
	Train 3	BP, Shell	2003	1	3.3	1	160,000
	Train 4	BP, Shell, NGC	2005	1	5.2	1	160,000
USA	Cheniere Sabine Pass	Cheniere Energy	2016	4	18.0	5	800,000
	Cove Point LNG	Dominion Energy	2017	1	5.3	7	695,000
YEMEN	Bal-Haf	Yemen LNG, Total, Yemen Gas, Hunt Oil, SK Group, Hyundai	2009	2	6.7	2	320,000

LNG OneWorld.com





GLOBAL LEADER IN **ENERGY TRANSPORTATION & MARITIME SERVICES**

Nakilat is a global shipping and maritime company with the world's largest fleet of LNG carriers. Having a fleet of 69 LNG and LPG carriers, we are experts in the management and maintenance of gas carriers, and offer an extensive range of maritime services through strategic joint ventures in Qatar.

SERVICES



**SHIP REPAIR &
CONVERSION**



**SHIP
BUILDING**



**CONSTRUCTION & REPAIR
OF OFFSHORE STRUCTURES**



TOWAGE



**SHIPPING AGENCY
& LOGISTICS**



www.nakilat.com



NAKILAT ناقلات