



The LNG industry  
**GIIGNL ANNUAL REPORT**

# 2018

# 78 MEMBER COMPANIES IN 26 COUNTRIES

## GIIGNL (International Group of LNG Importers)

is the worldwide association of LNG importers.

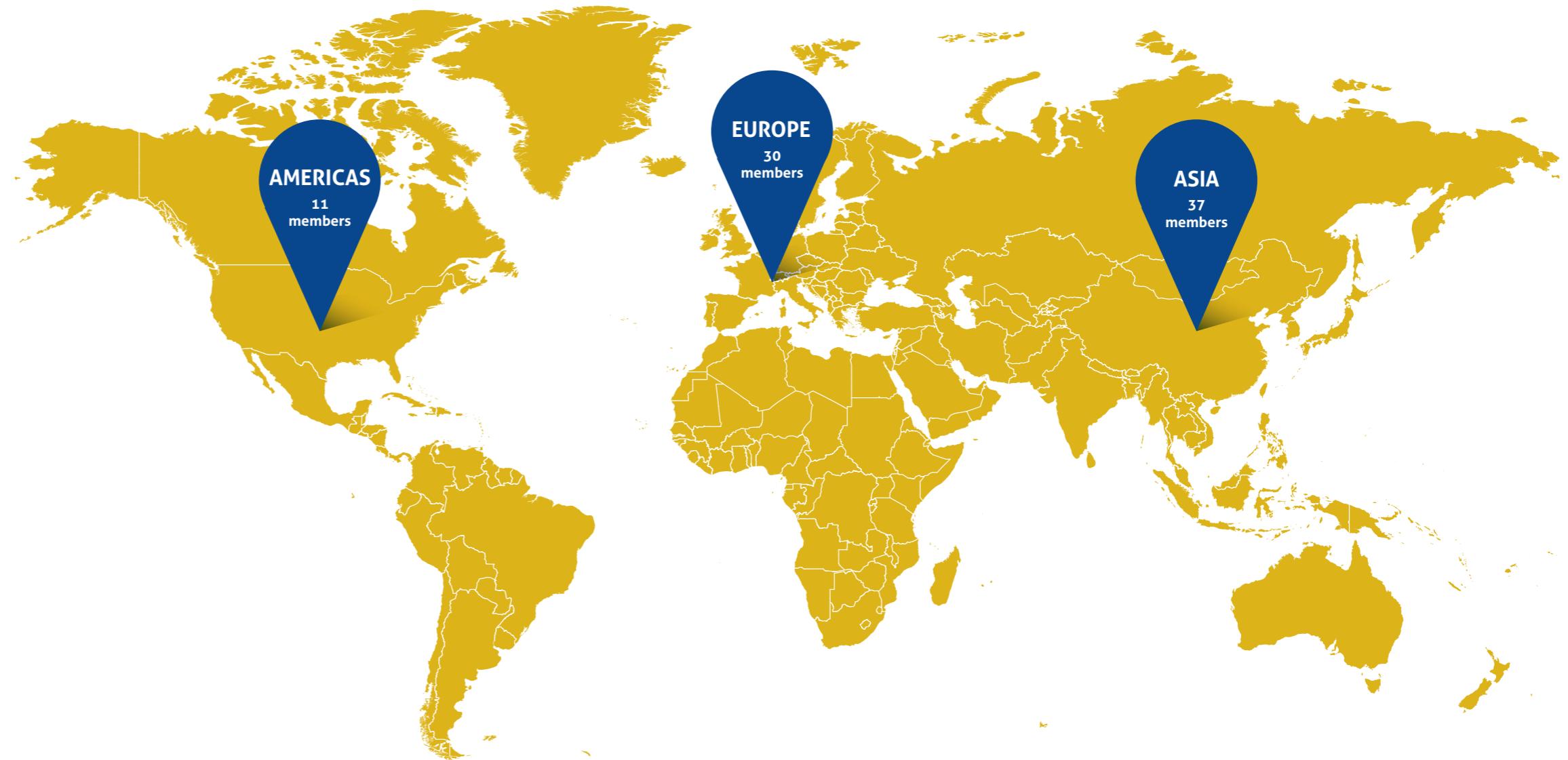
Founded in 1971, at the outset of the LNG industry, its membership has grown to 78 companies worldwide, comprising nearly all companies active in LNG imports or in the operation of LNG terminals. It is a non-profit organization and its resources only come from the membership fees.

The association constitutes a forum for exchange of experience among its members, with a view to enhance safety, reliability and efficiency of LNG imports.

GIIGNL members are coming from 26 countries

headquartered in the main three regions:

Americas, 11 members, Asia, 37, Europe, 30.



### Full Members

BOTAŞ  
BP Global LNG  
Centrica LNG Company  
Cheniere Energy, Inc.  
Chubu Electric Power Co., Inc.  
CNOOC Gas & Power Trading & Marketing Ltd.  
CPC Corporation, Taiwan  
DEPA  
Dominion Cove Point LNG  
Dunkerque LNG SAS  
Edison S.p.A.  
EDP - Energias De Portugal SA  
Elençy S.A.  
Enagas  
Enel Trade SpA  
ENGIE  
ENGIE Gas and LNG, LLC  
Eni S.p.A.  
Excelerate Energy L.P.  
Fluxys LNG SA  
Freeport LNG Development, L.P.  
Gail (India) Limited  
Gas Natural Fenosa  
Gate Terminal B.V.  
GNL Italia S.p.A.  
GNL Quintero S.A.

Guangdong Dapeng LNG Company, Ltd.  
Hazira LNG Private Ltd.  
Hiroshima Gas Co., Ltd.  
Höegh LNG  
Hokkaido Gas Co., Ltd.  
Iberdrola Generación España, S.A.U.  
Itochu Corporation  
JXTG Nippon Oil & Energy Corporation  
Korea Gas Corporation  
Kyushu Electric Power Co., Inc.  
LNG Japan Corporation  
Marubeni Corporation  
Mitsubishi Corporation  
Mitsui & Co., Ltd.

National Grid Grain LNG, Ltd.  
Nippon Gas Co., Ltd.  
N.V. Nederlandse Gasunie  
Osaka Gas Co., Ltd.  
Pakistan LNG Limited (PLL)  
Petronet LNG Limited  
PTT Public Company Limited  
Ren Atlântico, SA  
Saibu Gas Co., Ltd.  
Sempra LNG & Midstream  
Shell Energy North America, L.P.  
Shizuoka Gas Co., Ltd.  
Singapore LNG Corporation  
SK E&S Co., Ltd.

Southern LNG Company, L.L.C.  
South Hook LNG Terminal Company, Ltd.  
Sumitomo Corporation  
TEPCO Fuel & Power, Inc.  
The Chugoku Electric Power Co., Inc.  
The Kansai Electric Power Co., Inc.  
Toho Gas Co., Ltd.  
Tohoku Electric Power Co., Inc.  
Tokyo Gas Co., Ltd.  
Total S.A.  
Uniper Global Commodities SE  
Vopak LNG Holding B.V.

Associate Members  
EDF Trading Limited  
ENN LNG Trading Company Limited  
Gazprom Marketing & Trading Limited  
GSPC LNG Limited  
INPEX Corporation  
Ørsted  
Polskie LNG S.A.  
PT Pertamina (Persero)  
Repsol Energy Canada, Ltd.  
Shikoku Electric Power Co., Inc.  
Sonatrach Gas Marketing UK Limited  
YPF S.A.

# THE LNG INDUSTRY IN 2017

## Editorial

### Dear Colleagues,

Global LNG imports in 2017 recorded their highest annual growth rate (+9.9%) since 2010, reaching 289.8 MT.

Despite several delayed start-ups, new liquefaction capacity continued to come online in various areas of the world ranging from the United States to Australia, Malaysia and Russia, leading to a 26.2 MTPA increase in LNG supply compared with 2016. Meanwhile, expectations of an LNG surplus and of depressed prices have not materialized, as rising imports into China contributed substantially to balancing the market.

Mirroring the 2016 situation, spot LNG prices followed a seasonal profile last year, although the increase in the last few weeks of 2017 was stronger than a year earlier because of much higher than expected Chinese demand and colder than normal weather in North East Asia. Contract LNG prices also increased as a consequence of higher oil prices. Spot charter rates finished the year on a bullish note, mainly driven by the demand for ships to transport US LNG.

The main additions to LNG supply came from Australia and the United States, where production from trains commissioned in 2016 continued to ramp-up and a total of 5 new liquefaction trains - Gorgon Train 3, Wheatstone Train 1 in Australia, Sabine Pass Train 3 and Train 4 in the United States and Yamal LNG Train 1 in Russia - started-up in 2017. Malaysia's Floating LNG Satu, the world's first FLNG project, also began producing during the year.

The current contracting and pricing environment is challenging for new supply developments: while two FIDs had been taken in 2016, only one project - Coral FLNG, in Mozambique (+3.4 MTPA, the first LNG project to be developed in East Africa) - was sanctioned in 2017.

On the demand side, the LNG market is becoming more diverse and more complex, with a total of 40 countries now importing LNG. Despite competitive LNG prices and notwithstanding the development of FSRUs, only one country - Malta - started receiving LNG last year, a sign that practical commercial and regulatory challenges still need to be overcome in order for new importers to develop LNG import infrastructure.

Most of the demand growth occurred in Asia, where LNG imports grew by 19.6 MT. Mainly influenced by energy policy orientation in China, Korea and Taiwan, demand from North East Asian buyers experienced a strong rebound which was not a given at the beginning of the year. China overtook South Korea as the world's second largest importer, a direct consequence of the Chinese government's efforts in the residential, commercial and industrial sectors to restrict the penetration of coal in order to reduce pollution in urban areas.

Our industry seems to experience an acceleration of change and 2017 was indeed a year for pioneers: first FLNG plant online, first LNG bunkering vessels operating in Europe and first LNG exported from the Arctic region. As meaningful, the first large order of 9 LNG-fueled containerships indicated that new market sectors are ready to embrace LNG and paved the way for the worldwide implementation of LNG as a solution to reduce marine pollution.

Driven by US LNG exports, the significant supply build-up on the horizon could further transform our industry and bring on new evolutions, including a rise in market liquidity and flexibility. New commercial instruments are implemented to adapt to the new realities of the markets as some traditional ones - such as destination restrictions - tend to be progressively shelved. As aggregators and traders take a greater share of the market, the break-up of the traditional value chain is gathering pace.

However, given the recent slow-down in FIDs in the last two years and the significant demand growth prospects, risks of a potential tightening of demand and supply must not be minimized for the medium term. Cost reduction - without compromising safety and reliability - and meeting the changing requirements of buyers and consumers will be key for new projects to be developed.

Over the last 46 years, GIIGNL has been working to disseminate technical and commercial best practices and to develop safer LNG imports all over the world.

Through our annual report and other publications, our Association remains committed to provide key insights into the market and to support the development of a more efficient, more diverse and more sustainable LNG industry.

Yours Sincerely,



Jean-Marie Dauger  
President

## CONTENTS



About GIIGNL

Key Figures 2017

LNG Trade in 2017



Contracts concluded  
in 2017



Medium-term and  
long-term contracts  
in force in 2017



LNG Shipping



Liquefaction texts



Liquefaction tables



LNG Characteristics



Liquefaction and  
regasification maps



Regasification texts



Regasification tables

2017 IMPORTS/  
EXPORTS MATRIX

# About GIIGNL

GIIGNL is a non-profit association registered under the French law of July 1, 1901. The Association is governed by an **Executive Committee** which is composed of 12 Members, who are elected by the General Assembly for 2-year terms. The Executive Committee elects a **Bureau** composed of the

**President** and of **3 regional Vice-Presidents** to assist him. Each year, the Executive Committee convenes in the Spring and the whole membership holds its General Assembly in the Fall. The Executive Committee steers **two Standing Study Groups** within which leaders from the LNG industry

offer their commercial and technical expertise to improve efficiency and safety across the midstream of the LNG value chain. GIIGNL's day-to-day activities are coordinated by the General Delegate, in charge of the Central Office located in Paris (Neuilly-sur-Seine).



Brussels General Assembly hosted by Fluxys (October 2017)

## GIIGNL Central-Office



1 Vincent Demoury  
GENERAL DELEGATE

2 Sibylle de Veyrac  
LNG ANALYST &  
COMMUNICATIONS OFFICER

3 Seung-Ha Hwang  
LNG ADVISOR

# GIIGNL Officers

## GIIGNL Bureau

### PRESIDENT



J.M.Dauger

### VP FOR THE AMERICAS



S.Hill  
(SHELL)

### VP FOR ASIA



M.Hirose  
(TOKYO GAS)

### VP FOR EUROPE



E.Van Bruysel  
(ENI)

## GIIGNL Executive Committee

### AMERICAS



1 E.Bensaude  
(CHENIERE)



2 A.Bacigalupo  
(GNL QUINTERO)



3 O.Simoes  
(SEMPRA LNG &  
MIDSTREAM)



4 A.Collins  
(SHELL)

### ASIA



1 C.Yoo  
(KOGAS)



2 H.Ozaki  
(OSAKA GAS)



3 H.Nishimura  
(TEPCO FUEL & POWER)



4 T.Higo  
(TOKYO GAS)

### EUROPE



1 D.Tzortzis  
(DEPA)



2 P.Chareyre  
(ENGIE)



3 A. Della Zoppa  
(ENI)



4 J.M.Egea  
(GAS NATURAL FENOSA)

**289.8 MT**

IMPORTED  
OR A **9.9%** INCREASE VS. 2016

**77.6 MT**

IMPORTED ON A SPOT  
OR SHORT TERM BASIS  
OR **27%** OF TOTAL TRADE

**72.9%**

of global LNG  
demand in Asia

**26.7%**

of global LNG  
volumes supplied  
from Qatar

**45.3%**

of global LNG  
volumes supplied  
from the Pacific Basin

# Key figures 2017

**1**

NEW IMPORTING COUNTRY

**5**

NEW LNG REGASIFICATION TERMINALS

**850** MTPA

*total regasification capacity*

**365** MTPA

*total nameplate  
liquefaction capacity*

**40**

IMPORTING COUNTRIES

**19**

EXPORTING COUNTRIES

# LNG TRADE IN 2017

In 2017, global LNG imports reached 289.8 million tons (MT), increasing by 26.2 MT or 9.9% compared to the previous year, the strongest growth rate since 2010. No new country joined the LNG producing community in 2017, the number of exporting countries remaining at 19. One country imported LNG for the first time (Malta), bringing the total number of importing countries to 40.

**83.5 MT**

imported into Japan,  
followed by China (39 MT)

**42 %**

increase in Chinese LNG  
imports, following a  
36.9% growth in 2016

**10 200 000**

TONS OF LNG LOADED ONTO TRUCKS  
IN CHINESE RECEIVING TERMINALS

**40 %**

of US exports delivered to  
Asia, 34% to the Americas,  
15% to Europe and 11% to  
the Middle East

## STRONGEST GROWTH IN LNG SUPPLY SINCE 2010

On the supply side, 5 new onshore liquefaction trains were commissioned, 2 in Australia (Gorgon Train 3 and Wheatstone Train 1), 2 in the United States (Sabine Pass Trains 3 and 4) and 1 in Russia (Yamal LNG) plus one floating liquefaction unit offshore in Malaysia.

The surge in LNG supply was driven by new production from Australia (+10.7 MT) and from the United States (+9.6 MT) as well as by better performance of existing liquefaction plants in Algeria, Angola and Nigeria (+6.2 MT). In opposite direction, supplies from the Middle East decreased by 2.3 MT as a result of scheduled and unscheduled maintenance in Qatar.

The Pacific Basin remains the largest source of LNG supplies with 131.4 MT or 45.3% of the global market, followed by the Middle East (31.5%) and the Atlantic Basin (23.2%). Due to the decline in production from Qatar, the gap between supplies from the Pacific Basin and the Middle East has widened, from 25 MT in 2016 to 40 MT in 2017. Between the Atlantic Basin and the Middle East the gap has narrowed from 42.2 MTPA to 24.2 MT. In 2018, the supply share of Atlantic Basin LNG volumes in global trade should increase, as new liquefaction plants come online in the United States.

## CHINA AND MATURE ASIAN GAS MARKETS DRIVING DEMAND GROWTH

Asian LNG imports grew by 10.2% to 211.2 MT as Asia consolidated its position as the largest LNG importing region with a 72.9% market share. Japan remained the leading importing country, with 83.5 MT or a 28.8% market share, followed by China (39 MT). The latter country overtook South Korea as the world's second largest LNG importer and contributed substantially to balancing demand with supply in the LNG market in 2017. As a result of a political decision to favor the use of gas over coal to reduce air pollution in major cities, China's imports recorded a 42.3% (+11.6 MT) increase, which followed the already strong growth of 36.9% in 2016.

A sign that the Chinese retail LNG market is thriving is the 10.2 MTPA reported to have been loaded from Chinese import terminals onto LNG trucks.

South Korea also experienced a strong increase in LNG imports in 2017 (+3.6 MT) thanks to rising gas demand from the power sector. On the other hand, India (Asia's and the world's 4th largest importer) recorded only a modest increase (+1.2%) due to the effects of stronger LNG spot prices and higher oil-indexed prices in 2017. Pakistan, which commissioned its second FSRU in the fourth quarter, overtook Thailand and Indonesia to become Asia's sixth largest market with 4.6 MT imported last year.

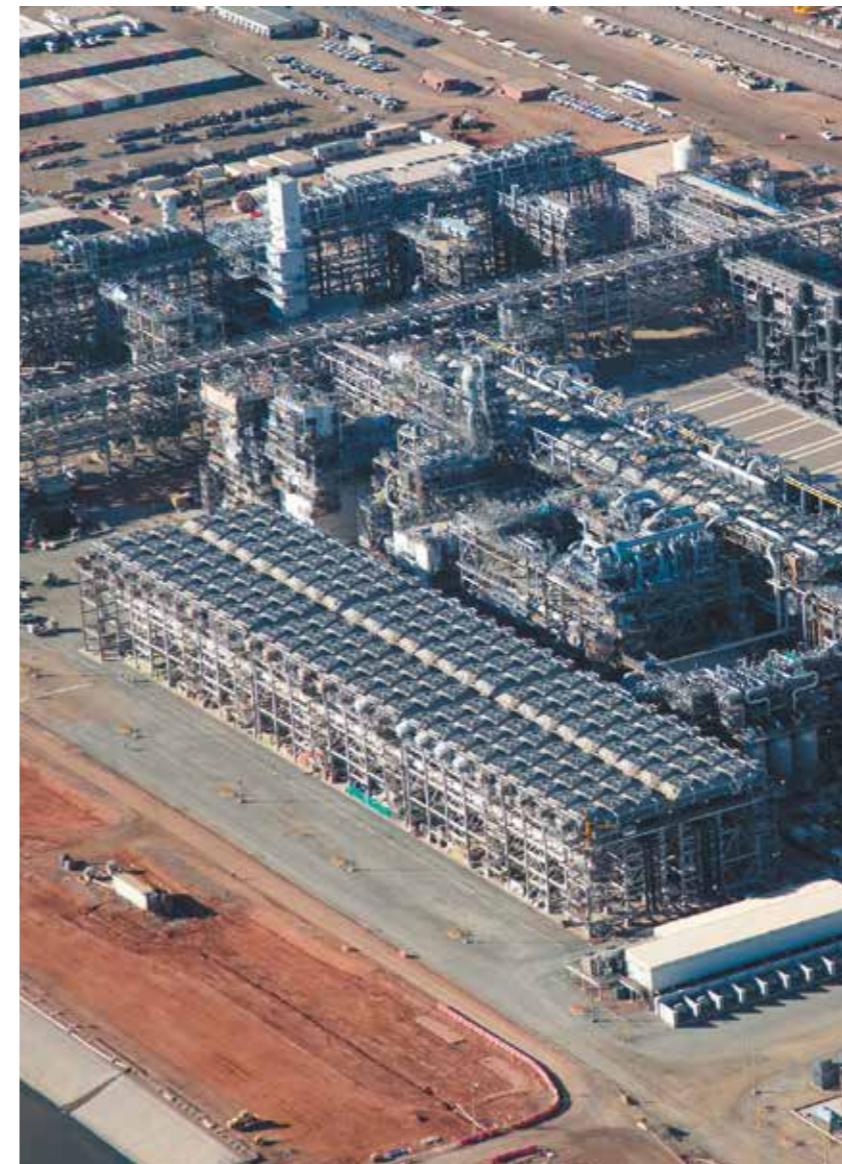
In Europe, net LNG imports (after deducting reloads) were up by 7.5 MT (+19.5%), mainly driven by gas demand for power generation. A combination of low hydropower, low nuclear production in France and hot weather in the summer led to a 9.1 MT increase in countries of southern Europe (France, Greece, Italy, Portugal, Spain, Turkey), whereas net imports into northern countries (Belgium, Netherlands, UK) declined by 2.1 MT. The decline is attributable to the United Kingdom which experienced a sharp drop (-2.6 MT) in LNG intake due to the reduction of deliveries from Qatar. Despite the increase in imports in 2017, Europe's share of global LNG imports has fallen by nearly 50% since 2010 (from 29.4% in 2010 to 15.9% in 2017), mainly due to a decline in gas demand and to the competition from pipeline imports.

Imports into the American region ended the year slightly higher (+4.1%) than in 2016. Mexico accounted for most of the region's growth due to constraints on pipeline imports from the United States. LNG Imports into Puerto Rico decreased by 0.3 MT, partly because of the impact of Hurricane Maria in September. Argentinean LNG imports continued to decline (-0.1 MT) as domestic gas production rose.

Overall, the Middle East was the only region where imports declined in 2017 with deliveries falling by 9.1% (-1.6 MT) as the start of production from new gas fields increased domestic gas supply in Egypt. Demand from emerging importers (Colombia, Jamaica, Jordan, Malta, Pakistan, Poland) increased by a combined 2.7 MT, 1.7 MT of which was in Pakistan.

## A GRADUALLY MORE LIQUID MARKET

Due to the rising demand in Asian markets and to the growing availability of Australian LNG volumes, intra-Pacific LNG flows retained the lion's share of global LNG flows (127.9 MT or 44%), followed by Middle East to Pacific flows (65 MT or 22%). Atlantic



**77.6 MT**

(+2.1 MT vs 2016) of volumes  
delivered on a spot and  
short-term basis\*, representing  
27% of total LNG imports

**20 %**

OF VOLUMES DELIVERED  
ON A SPOT BASIS\*\*

**2.6 MT**

re-exported from 12 countries  
to 20 destination countries

\*Spot and short-term trades denotes trades under contracts of a duration of 4 years or less

\*\*Cargoes delivered within 90 days from the transaction date

volumes was essentially underpinned by the development of US exports, which accounted for 10.4% of LNG volumes delivered under contracts of 4 years or less in 2017. On the other hand, Qatar saw its share of this market decrease from 27.3% in 2016 to 19.7% last year.

In terms of customer diversification, the United States now lead the pack with 25 countries supplied in 2017 vs 13 countries in 2016, followed by Qatar (24 countries supplied vs 25 in 2016) and Nigeria (24 countries supplied vs 21 in 2016). 40% of US exports ended up in Asia, 34% remained in the Americas, 15% went to Europe and 11% to the Middle East.

Spot and short-term imports (volumes delivered under contracts with a duration of 4 years or less) increased by 2.1 MT and amounted to 77.6 MT in 2017 compared to 75.5 MT in 2016. The share of spot and short-term imports in total LNG imports remained flat, at around 27%.

On the supply side, the rise of spot and short-term

contracting for portfolio trade and by the growing volumes handled by traders. Asia received about 60% of spot LNG (35.4 MT), followed by Europe (9.0 MT), the Americas (8.6 MT) and the Middle East (5.5 MT). The largest growth in spot imports came from China and South Korea, who imported 21% and 22%, respectively, of their LNG supplies on a spot basis last year.

In 2017 a total of 2.6 MT of LNG was re-exported from 12 countries to 20 destination countries, down from 4.5 MT in 2016 because of narrower price differentials between markets for much of the year and due to the increased availability of destination flexible LNG. France was the main source of LNG re-exports (0.7 MT), followed by the Netherlands (0.5 MT) and Singapore (0.5 MT). More than one quarter of the reloaded volumes (0.7 MT) were delivered to China. Two new countries started re-exporting LNG last year (Japan and the Dominican Republic).

# CONTRACTS CONCLUDED IN 2017

Origin	Export country / Exporter	Buyer	Import country	ACQ (MTPA)	Duration (years)	Start date	Delivery Format	Comments
LONG & MEDIUM TERM SALES (>4 YEARS)	Portfolio / Total	Chugoku Electric	Japan	0.25	17	2019	DES	
	Portfolio / Chevron	CPC	Taiwan	1.12	5	2017	DES	
	Russia / Sakhalin Energy	CPC	Taiwan	0.75	5	2017	DES	
	USA / Calcasieu Pass LNG / Venture Global	Edison	Multiple	1	20	2021	FOB	
	Indonesia / Bontang / Pertamina, ENI Muara bakau	ENI	Indonesia	1	10	2017	FOB	
	Portfolio / Gazprom Marketing & Trading	Ghana National Petroleum Corporation (GNPC)	Ghana	1.8	12	2019	DES	
	Malaysia / MLNG / Petronas	Hokkaido Electric Power	Japan	up to 0.13	10	2018	DES	
	Portfolio / Kansai Electric	Hokkaido Electric Power	Japan	approx. 0.2	10	2018	DES	
	Portfolio / Mitsui	Hokkaido Gas	Japan	3 cargoes per annum	10	2019	DES	
	Portfolio / Shell	KPC	Kuwait	Unknown	15	2020	DES	
	Qatar / Qatargas IV / Qatargas	OMV	Netherlands	up to 1.1	5	2019	DES	
	Indonesia / Bontang / Pertamina, ENI Muara bakau	Pertamina	Indonesia	1.4	7	2017	FOB	
	Portfolio / Woodside	Pertamina	Indonesia	0.6	20	2019	DES	There are provisions allowing the volume to increase up to 1.1 MTPA from 2024 to 2038
	Qatar / Rasgas	Petrobangla	Bangladesh	2.5	15	2018	DES	
	Portfolio / ExxonMobil	Petronet	India	1.2	15	Unknown	DES	
	USA / Sabine Pass / Centrica	PGNiG	Poland	up to 9 cargoes	5	2018	DES	
	Portfolio / ENI	Pakistan LNG Limited	Pakistan	0.75	15	2017	DES	
	Portfolio / Gunvor	Pakistan LNG Limited	Pakistan	60 cargoes	5	2017	DES	
	Indonesia / Tangguh Expansion / BP	PLN	Indonesia	1	15	2020	DES	
	Portfolio / Petronas	PTT	Thailand	1.2	15	2017	DES	
	Qatar / Qatargas IV / Qatargas	Shell	Europe (Netherlands or UK)	up to 1.1	5	2019	DES	
	Portfolio / Petronas	S-Oil	South Korea	0.7	15	2018	DES	
	Malaysia / MLNG	Tokyo Gas	Japan	0.3	13	2019	FOB	
SHORT TERM CONTRACTS (<= 4 YEARS)	Qatar / Qatargas II / Qatargas	BOTAŞ	Turkey	1.5	3	2017	DES	
	Portfolio / JERA	CPC	Taiwan	0.3	3	2018	DES	
	Portfolio / Gunvor	Gail	India	15 cargoes	1	2017	DES	
	Portfolio / Gail	Gunvor	Multiple	10 cargoes	1	2018	FOB	
	Portfolio / Centrica	New Fortress Energy	Jamaica	3 to 4 cargoes per annum	3	2017	DES	Centrica will deliver as many as 3 cargoes to Jamaica in the first year, and up to 4 cargoes in the second year
	Portfolio / Gas Natural Fenosa	PREPA	Puerto Rico	1.47	3	2017	DES	
CONTRACT MODIFICATION	Portfolio / Woodside	RWE	Multiple	up to 12 cargoes	2	2018	DES	
	Qatar / Qatargas III / Qatargas	PGNiG	Poland	0.9	17	2018	DES	This side agreement to the existing SPA increases the contracted volume from 1.1 to 2 MTPA from 2018 to 2034
HEADS OF AGREEMENT (HOAS)	Equatorial Guinea / Fortuna FLNG	Gunvor	Multiple	2.2	10	2021	FOB	The contract structure allows flexibility for up to 1.1 MTPA of the Fortuna capacity to be marketed on an alternate basis
	Malaysia / MLNG	JERA	Japan	2.5	3	2018	FOB/DES	
	Portfolio / ExxonMobil	Pertamina	Indonesia	1	20	2025	DES	
	Mozambique / Mozambique LNG	Tohoku Electric	Japan	0.28	15	Early 2020's	DES	The contract will last 15 years from the start of production
MEMORANDUMS OF UNDERSTANDING (MOUs)	USA / Magnolia LNG	VGS	India (Kakinada)	up to 4	20	2022	FOB	
	USA / Delfin LNG / Delfin LNG	China Gas Holdings	China	3	15	2021	DES	
AGREEMENTS ON LIQUEFACTION / REGASIFICATION RIGHTS	Portfolio / Total	CNOOC Gas & Power	China	up to 1	Unknown	2020	DES	Extension of the existing contract
	Polskie LNG	PGNiG	Poland	*	17	2018		*PGNiG booked an additional 35% of regassification capacity (200,000 m³/h) at Swinoujście LNG Terminal

# MEDIUM-TERM AND LONG-TERM CONTRACTS\* IN FORCE IN 2017

Export country	Loading point	Seller	Buyer	ACQ (MTPA)	Duration	Delivery Format	Comments
<b>ATLANTIC BASIN</b>							
ALGERIA	Skikda-Bethioua	Sonatrach	Botaş	3.2	1994/2024	DES	
			Cepsa Gas	0.77	2002/2022	DES	
			DEPA	0.72	2000/2021	CIF	In 2017 the ACQ was increased from 0.35 to 0.72 MTPA
			Endesa	0.75	2002/2017	DES	
			Enel	0.15	1999/2022	DES	Delivery under the "GDF SUEZ/Enel" swap agreement
				2.5	1972/2019	DES	
EGYPT	Damietta	SEGAS	ENGIE	3.7	1976/2019	DES	
			Iberdrola	1.3	1992/2019	FOB	
			BP	1	2005/2025	FOB	
			Union Fenosa gas	3	2005/2030	FOB	
			ELNGT1	ENGIE	3.6	2005/2025	FOB
			ELNGT2	Shell	3.6	2006/2026	FOB
EQUATORIAL GUINEA	Punta Europa	EGLNG	Shell	3.4	2007/2024	FOB	
			Botaş	0.91	1999/2021	DES	
			Enel	2.45	1999/2022	DES	
			ENGIE	0.33	1999/2022	DES	
			Galp Energia	0.26	2000/2020	DES	
			Gas Natural Fenosa	1.17	1999/2021	DES	
NIGERIA	Bonny Island	Nigeria LNG T1 & 2	Galp Energia	0.73	2003/2023	DES	
			Gas Natural Fenosa	1.99	2002/2024	DES	
			Endesa	0.75	2006/2026	DES	
			ENI	1.15	2006/2026	DES	
			Galp Energia	1.42	2006/2026	DES	
			Iberdrola	0.38	2006/2026	DES	
NORWAY	Hammerfest	Nigeria LNG T4 & 5	Shell	2.3	2006/2026	DES	
			Total	1.13	2006/2026	DES	
			Shell	3.1	2008/2027	DES	
			Nigeria LNG T6	0.9	2008/2030	DES	
			ENGIE	0.5	2007/depletion	FOB	
			Statoil	1.13	2006/2025	DES	
TRINIDAD & TOBAGO	Point Fortin	Atlantic LNG T1	Iberdrola	1.75	2007/2021	DES	
			Total	0.7	2007/depletion	FOB	
			ENGIE	1.6	1999/2018	FOB	
			Gas Natural Fenosa	1.06	1999/2018	FOB	
			ENGIE	0.6	2000/2020	DES	Related to ENGIE/ALNGT1 contract
			BP	0.85	2002/2021	FOB	
		Atlantic LNG T2 & 3	ENGIE	0.35	2002/2023	FOB	
			Gas Natural Fenosa	0.65	2003/2023	FOB	
			Naturgas Energia	0.74	2003/2023	FOB	GNF/Naturgas swap. GNF buys 0.74 MTPA on a FOB basis until 2023
			Shell	1.7	2003/2023	FOB	
			BP	2	2006/2023	FOB	
			AES	0.75	2003/2023	DES	Related to BP/ALNG T2 & 3 contract
		Shell	BP	2.5	2006/2026	FOB	
			Shell	1.5	2006/2026	FOB	LNG is sourced from Atlantic LNG T4
				1.15	2014/2026	FOB	

\* Duration above 4 years



Export country	Loading point	Seller	Buyer	ACQ (MTPA)	Duration	Delivery Format	Comments
<b>ATLANTIC BASIN</b>							
USA	Sabine Pass	Cheniere	Cheniere Marketing	excess from Sabine Pass	2016+	FOB	
			Gas Natural Fenosa	3.5	2017/2037	FOB	
			KOGAS	3.5	2017/2037	FOB	
			Shell	5.5	2016/2036	FOB	
<b>MIDDLE EAST</b>							
OMAN	Qalhat	Oman LNG	KOGAS	4.06	2000/2024	FOB	
		Oman LNG	Osaka Gas	0.66	2000/2024	FOB	
		Oman and Qalhat LNG	Itochu Corp.	0.77	2006/2026	FOB	
			Itochu Corp.	0.77	2006/2026	FOB	
		Qalhat LNG	Mitsubishi Corp.	0.8	2006/2020	FOB	
			Osaka Gas	0.8	2009/2026	FOB	
			Union Fenosa Gas	1.65	2006/2025	DES	
			Chugoku Electric, JERA, Kansai Electric, Osaka Gas, Toho Gas, Tohoku Electric, Tokyo Gas	2	1998/2021	DES	
		Qatargas I	Gas Natural Fenosa	0.75	2005/2024	DES	
			JERA	0.75	2006/2025	FOB	
QATAR	Ras Laffan		JERA	4	1997/2021	DES	
			JERA	1	2012/2021	DES	
		Qatargas II T1	Shizuoka Gas	0.2	2016/2020	DES	Tripaite SPA (Qatar Liquefied Gas Co., Ltd., JERA Co., Inc. and Shizuoka Gas)
			Pakistan State Oil	3.75	2016/2031	DES	
				1.85	2009/2034	DES	
		Qatargas II T2	Total	1.85	2009/2034	DES	
				1.5	2009/2034	DES	
			CNOOC	2	2011/2035	DES	
			JERA	1	2013/2028	DES	Nominal quantity (ACQ): 2013/2017: 1 MTPA; 2018/2028: 0.7 MTPA
			Kansai Electric	0.5	2013/2027	DES	
QATAR	Ras Laffan	Qatargas III	PGNiG	1.1	2015/2034	DES	In 2017, Qatargas and PGNiG signed a side agreement to the existing SPA to increase the contracted volume from 1.1 to 2 MTPA from 2018 to 2034
			PTT	2	2015/2035	DES	
			RWE Supply & Trading	up to 1.1	2016/2023	DES	
			Tohoku Electric	0.06-0.09	2016/2030	DES	Nominal quantity (ACQ): 2016/2018: 0.06-0.09 MTPA; 2018/2030: 0.18 MTPA
			Centrica	up to 3	2014/2023	DES	Extension of the previous 4.5 years contract. Nominal quantity (ACQ): 2014/2018: up to 3 MTPA; 2019/2023: up to 2 MTPA
		Qatargas IV	Marubeni	1	2011/2031	DES	
			Petrochina	3	2011/2036	DES	
			Petronas	up to 1.14	2014/2023	DES	Extension of the previous 5 years contract. Nominal quantity (ACQ): 2014/2018: up to 1.14 MTPA; 2019/2023: up to 1.1 MTPA
			Uniper	up to 1.5	2014/2018	DES	
		RasGas I	Endesa	0.74	2005/2025	DES	
UAE	Das Island		KOGAS	4.92	1999/2024	FOB	
		RasGas II T1	Petronet LNG	5	2004/2028	FOB	
		RasGas II T2	Edison	4.6	2009/2034	DES	
			CPC	3.08	2008/2032	FOB	
		RasGas II T3	EDF Trading	3.4	2007/2027	DES	Extended to 2027
			ENI	2.05	2007/2027	DES	Former Distrigas contract
		RasGas III T1	EDF	up to 2	2017/2021	DES	
			KOGAS	2.1	2007/2026	DES	
			Petronet LNG	2.5	2009/2029	FOB	
		RasGas III T2	CPC	1.5	2013/2032	DES	
YEMEN	Balhaf		KOGAS	2	2012/2032	DES	
			Petronet LNG	1	2016/2028	FOB	
		Yemen LNG T1	JERA	4.7	1994/2019	DES	
		Yemen LNG T1 & 2	KOGAS	2	2008/2028	FOB	No deliveries in 2017
YEMEN	Balhaf		Total	2	2009/2029	DES	No deliveries in 2017
			Yemen LNG T2	2.55	2009/2029	FOB	No deliveries in 2017

Export country	Loading point	Seller	Buyer	ACQ (MTPA)	Duration	Delivery Format	Comments
<b>PACIFIC BASIN</b>							
AUSTRALIA	Withnell Bay	Woodside, Shell, BHP BP Australia, Chevron, Japan Australia LNG Pty Ltd (Mitsubishi & Mitsui)	Chugoku Electric	1.43	2009/2021	DES	
			GDLNG	3.3	2006/2031	FOB	
			JERA	0.5	2009/2019	DES	
				0.3	2009/2024	DES	
				0.6	2009/2029	DES	
			Kansai Electric	0.5-0.93	2009/2024	DES	
				0.2-0.44	2009/2024	DES	
			Kyushu Electric	0.7	2009/2023	FOB	
			Osaka Gas	0.5	2006/2021	DES	
			Shizuoka Gas	1	2004/2033	FOB	
AUSTRALIA	Darwin		Toho Gas, Tokyo Gas	0.13	2004/2029	FOB	
			Toho Gas	0.76	2009/2019	DES	
			Tohoku Electric	1	2010/2018	DES	
			Tokyo Gas	0.5	2009/2024	DES	
			JERA	2	2006/2022	FOB	
			Tokyo Gas	1	2006/2022	FOB	
			Kansai Electric	1.75-2	2011/2025	FOB/DES	
			Tokyo Gas	1.5	2011/2025	FOB/DES	
			CNOOC	3.6	2014/2034	DES	
			Shell	3.8	2014/2034	FOB	
AUSTRALIA	Curtis Island		Tokyo Gas	1.2	2015/2035	DES	
			GLNG	3.5	2015/2035	FOB	
			Petronas	3.5	2015/2035	FOB	
			Kansai Electric	1	2016/2035	FOB	
			Sinopec	7.6	2016/2036	FOB	
			GS Caltex	0.5	2016/2036	DES	
			JERA	1.44 + 0.06	2014/2039	FOB/DES	
			JX Nippon Oil & Energy Corporation	0.3	2015/2030	DES	
			Kyushu Electric	0.3	2015/2029	DES	
			Osaka Gas	1.375 + 0.1875	2014/2039	FOB	
AUSTRALIA	Barrow Island		SK Group	0.83	2017/2021	FOB	SK will receive 4.15 MT of LNG over a five-year period starting in 2017
			Tokyo Gas	1.1 + 0.15	2014/2039	FOB	
			ExxonMobil	2.25	2016/2036	DES	
			Petrobras	1.43	2016/2036	DES	
			Shell	0.5	2016/2036	FOB	
			JERA	1.7	2017/2036	DES	Nominal quantity (ACQ): 2017-2018: 1.7 MTPA 2018-2027: 3.3 MTPA
			Chevron, KUFPEC	0.7	2017/2036	FOB	
			Tohoku Electric	0.92	2017/2036	DES	
			PE Wheatstone	0.5	2017/2036	DES	Nominal quantity (ACQ): 2017-2018: 0.5 MTPA 2018-2027: 0.7 MTPA
			JERA, Osaka Gas, Tokyo Gas	3.4	2013/2023	DES	
INDONESIA	Lumut	Brunei LNG	KOGAS	1	1997/2018	DES	
			Petronas	0.9	2013/2		

Export country	Loading point	Seller	Buyer	ACQ (MTPA)	Duration	Delivery Format	Comments
<b>PACIFIC BASIN</b>							
MALAYSIA	Bintulu	Malaysia LNG Satu	Hiroshima Gas	0.1	2016/2026	FOB	
			JERA.Tokyo Gas	7.4	1983/2003	1.8 MTPA FOB 5.6 MTPA DES	Extended to 2018
			Saibu Gas	0.45	2014/2028	DES/FOB	
			Shikoku Electric	0.36	2010/2025	DES	
			CPC	2	1995/2020	DES	The contract has been extended in 2014 from 2015 to 2020
		Malaysia LNG Dua	Gas Bureau.City of Sendai	0.15	1997/2018	DES	
			JERA	0.54	2011/2031	DES	
			JX Nippon Oil & Energy Corporation	0.38	2015/2025	DES	
			KOGAS	1-2	1995/2018	FOB	
			Shizuoka Gas	0.33	2016/2025	DES	
PAPUA NEW GUINEA	Port Moresby	Malaysia LNG Tiga	Tohoku Electric	0.37	2016/2026	DES	
			Tokyo Gas	0.9	2015/2025	DES	
			CNOOC	3	2009/2029	DES	
			Japan Petroleum Exploration Co.	0.48	2002/2021	DES	
			KOGAS	2	2008/2028	DES	
		Malaysia LNG	Osaka Gas.Toho Gas.Tokyo Gas	0.68	2004/2024	DES	
			Toho Gas	0.52	2007/2027	DES	
			Tohoku Electric	0.5	2005/2025	DES	
			Osaka Gas	0.8	2009/2023	DES	
			CPC	1.2	2014/2033	DES	
PERU	Pampa Melchorita	Peru LNG	JERA	1.8	2014/2034	DES/FOB	
			Osaka Gas	1.5	2014/2034	DES/FOB	
			Sinopec	2	2014/2034	DES	
			Shell	4.2	2014/2028	FOB	
RUSSIA	Prigorodnoye	Sakhalin Energy Investment	CPC	0.75	2017/2022	DES	New MT contract
			Gazprom Global LNG	1	2009/2028	DES	
			Hiroshima Gas	0.21	2008/2028	FOB	
			JERA	1.5	2009/2029	FOB	
			KOGAS	0.5	2011/2026	DES	
			Kyushu Electric	1.5	2008/2028	FOB	
			Osaka Gas	0.5	2009/2031	DES	
			Saibu Gas	0.2	2008/2031	FOB	
			Shell	0.065	2014/2027	DES	
			Toho Gas	1	2009/2028	DES	
			Tohoku Electric	0.5	2009/2033	DES	
			Tokyo Gas	0.42	2010/2030	FOB	
				1.1	2007/2031	FOB	
<b>PORTFOLIO CONTRACTS</b>							
BP PORTFOLIO	BP	CPC	0.7	2017/2022	DES		
BP PORTFOLIO	BP	JERA	0.5	2012/2028	DES		
BP PORTFOLIO	BP	Kansai Electric	up to 13 MT through 23 years	2015/2038	DES	Total quantity of LNG during contract duration: approx 13 MT	
BP PORTFOLIO	BP	Kansai Electric	0.5	2017/2031	DES		
BP PORTFOLIO	BP	Kuwait Petroleum Corporation	0.5	2014/2020	DES		
BP PORTFOLIO	BP	PTT	1	2017/2037	DES		
CHEVRON PORTFOLIO	Chevron	CPC	1.12	2017/2022	DES	New MT contract	
CHEVRON PORTFOLIO	Chevron	Pertamina	0.2	2016/2022	FOB		
ENGIE PORTFOLIO	ENGIE	AES	0.7	2017/2029	DES		
ENI PORTFOLIO	ENI	Iberdrola	0.92	2002/2018	DES		
ENI PORTFOLIO	ENI	JERA/KOGAS	*	2013/2017	DES	*Total quantity of LNG during the contract duration: 28 cargoes (approx. 1.68 MT)	
ENI PORTFOLIO	ENI	Pakistan LNG Limited	0.75	2017/2032	DES	New LT contract	
ENI PORTFOLIO	ENI	Uniper	0.65	2007/2022	DES		
GAS NATURAL FENOSA PORTFOLIO	Gas Natural Fenosa	BHP Billiton	0.64	2016/2036	FOB		
GAS NATURAL FENOSA PORTFOLIO	Gas Natural Fenosa	Repsol	0.73	2017/2037	DES		
GAZPROM PORTFOLIO	Gazprom	EGAS	35 cargoes during 5 years	2015/2020			
GUNVOR PORTFOLIO	Gunvor	Pakistan LNG Limited	12 cargoes per year	2017/2022	DES	60 cargoes in total - New MT contract	
IBERDROLA PORTFOLIO	Iberdrola	BP	0.38	2012/2021			

Export country	Loading point	Seller	Buyer	ACQ (MTPA)	Duration	Delivery Format	Comments
IBERDROLA PORTFOLIO		Iberdrola	DONG	0.72	2011/2021	DES	
JERA PORTFOLIO		JERA LNG Coordination	INPEX	*	2013/2018	DES	*Total quantity of LNG during contract duration: 17 cargoes
JERA PORTFOLIO		JERA LNG Coordination	Shizuoka Gas	0.26	2014/2032	DES	
KOGAS PORTFOLIO		KOGAS	TOTAL	0.7	2017/2037	FOB	LNG is sourced from Sabine Pass
KYUSHU ELECTRIC PORTFOLIO		Kyushu Electric	Nippon Gas	0.05	2016/2031	DES	
OSAKA GAS PORTFOLIO		Osaka Gas	Hiroshima Gas	0.05-0.13	2016/2031	DES	
OSAKA GAS PORTFOLIO		Osaka Gas	Nippon Gas	0.08	2006/2026	DES	
OSAKA GAS PORTFOLIO		Osaka Gas	Shizuoka Gas	0.3	2015/2034	DES	
PETRONAS PORTFOLIO		Petronas LNG	JOVO	0.5	2016/2023	DES	
PETRONAS PORTFOLIO		Petronas LNG	PTT	1.2	2017/2032	DES	New LT contract
PETRONAS PORTFOLIO		Petronas LNG	Toho Gas	0.42-0.54	2017/2027	DES	
SHELL PORTFOLIO		Shell	BBE	-0.8	2003/2023		
SHELL PORTFOLIO		Shell	CFE	-3.08	2011/2027		
SHELL PORTFOLIO		Shell(Australia / USA)	CNOOC	5	2015/2035	DES	
SHELL PORTFOLIO		Shell	DUSUP	1	2010/2025	DES	
SHELL PORTFOLIO		Shell	ENGIE	0.4	2014/2034	DES	
SHELL PORTFOLIO		Shell	Gas Natural Fenosa	1.16	2006/2023	DES	
SHELL PORTFOLIO		Shell	GNL Chile	3	2009/2030	DES	
SHELL PORTFOLIO		Shell	GSPC	up to 2.5	2015/2035	DES	
SHELL PORTFOLIO		Shell	JERA	*	2014/2034	DES	*Maximum 12 cargoes per year
SHELL PORTFOLIO		Shell	JERA	up to 0.4	2014/2035	DES	
SHELL PORTFOLIO (NIGERIA, RUSSIA, AUSTRALIA)		Shell	JX Nippon Oil & Energy Corporation	0.2	2012/2029	DES	
SHELL PORTFOLIO		Shell	KOGAS	1-3.64	2013/2035	DES	
SHELL PORTFOLIO		Shell	Kuwait Petroleum Corporation	2	2014/2019	DES	
SHELL PORTFOLIO		Shell	NEPCO	1.1	2015/2020	DES	
SHELL PORTFOLIO		Shell	Osaka Gas	-0.8	2012/2038	DES	
SHELL PORTFOLIO		Shell	Petrochina	2	2016/2036	DES	
SHELL PORTFOLIO		Shell	PTT	1	2017/2032	DES	
SHELL PORTFOLIO		Shell	Singapore LNG	3	2013/2033	DES	
SHELL PORTFOLIO		Shell	SOCCAR	0.3	2016/2026	DES	
STATOIL PORTFOLIO		Statoil	Litgas	0.4	2015/2025	DES	
TOKYO GAS PORTFOLIO		Tokyo Gas	Hokkaido Gas	0.3-0.4	2012/2023	DES	
TOKYO GAS PORTFOLIO		Tokyo Gas	Saibu Gas	0.3	2014/2029	DES	
TOTAL PORTFOLIO		Total	Cepsa Gas Comercializadora	0.75	2006/2022	DES	
TOTAL PORTFOLIO		Total	CNOOC	1	2010/2024	DES	
TOTAL PORTFOLIO		Total	KOGAS	up to 2	2014/2031	DES	
VITOL PORTFOLIO		Vitol	KOMIPO	0.4	2015/2024		



# LNG SHIPPING

## 2017 HIGHLIGHTS

The total LNG tanker fleet consisted of 511 vessels at the end of 2017.

It included 28 FSRUs and 38 vessels of less than 50,000 cubic meters. Total shipping capacity at the end of 2017 stood at 73.9 million cubic meters. Total operational capacity (vessels that are known to be in service) amounted to 69.9 million cubic meters. In 2017, the average spot charter rate for a 160,000 cubic meters LNG carrier stood at \$46,058/day, compared to an average \$33,528/day in 2016. 19 new orders were placed, including 6 FSRUs and 5 vessels of less than 50,000 cubic meters, compared with 10 new orders placed in 2016. At the end of 2017, the orderbook consisted of 120 vessels, of which 109 were above 50,000 cubic meters. 72 vessels were scheduled for delivery in 2018.

**LNG CARRIERS SCRAPPED IN 2017 /** 2 ships were demolished during the year:

Built	Vessel Name	IMO Number	Type	Capacity (m³)	CCS*	Owner	Builder	Manager Name
1977	Larbi Ben M'Hidi	7400663	LNG Carrier	129 767	GT	Hyproc	C.N.I.M.	Hyproc
1979	Bachir Chihani	7400675	LNG Carrier	129 767	GT	Hyproc	C.N.I.M.	Hyproc

**LNG CARRIERS LAID-UP, IDLE OR OTHERWISE OUT OF SERVICE AT THE END OF 2017 /** 30 vessels were laid-up, idle or otherwise out of service at the end of the year. In addition, 3 vessels were idle, awaiting conversion:

Built	Vessel Name	IMO Number	Type	Capacity (m³)	CCS*	Owner	Builder	Manager Name
1976	Gimi	7382732	LNG Carrier	126 277	KM	Golar LNG	Moss Rosenberg	Golar LNG
1981	Fortune FSU (ex Tenaga Tiga)	7428471	LNG Carrier	130 000	GT	Dalian Inteh Group	France-Dunkerq.	Dalian Inteh Group
1981	Lucky FSU (ex Tenaga Dua)	7428469	LNG Carrier	130 000	GT	Dalian Inteh Group	France-Dunkerq.	Dalian Inteh Group

**LNG CARRIERS DELIVERED IN 2017 /** 34 ships were delivered during the year, including 4 FSRUs and 7 ships of less than 50,000 cubic meters. The average capacity of vessels delivered (excluding the MOL FSU Challenger and ships under 50,000 cubic meters) amounted to 170 435 cubic meters.

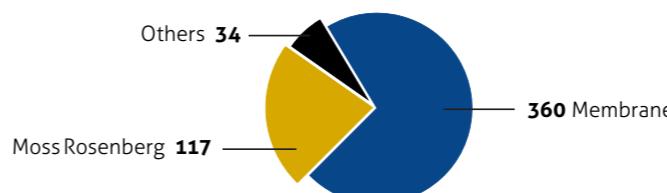
Built	Vessel Name	IMO Number	Type	Capacity (m³)	CCS*	Owner	Builder	Manager Name
Jan-17	CESI Qingdao	9672832	LNG Carrier	174 323	GT	China Shipping LNG	HZ	China Shipping LNG
Jan-17	Maran Gas Roxana	9701229	LNG Carrier	174 501	GT	Maran Gas Maritime	DSME	Maran Gas Maritime
Jan-17	Maran Gas Ulysses	9709491	LNG Carrier	175 069	TZM	Maran Gas Maritime	HSHI	Maran Gas Maritime
Jan-17	Seri Cenderawasih	9714288	LNG Carrier	150 200	KM	MISC	HHI	MISC
Feb-17	Engie Zeebrugge	9750024	LNG Bunkering Vessel	5 100	Other	NYK	Hanjin HI	NYK
Feb-17	Maran Gas Olympias	9732371	LNG Carrier	174 501	GT	Maran Gas Maritime	DSME	Maran Gas Maritime
Mar-17	Asia Integrity	9680188	LNG Carrier	160 000	TZM	Chevron	SHI	Chevron
Mar-17	BW Integrity	9724946	FSRU	170 000	TZM	BW Gas	SHI	BW Gas
Mar-17	JS Ineos Independence	9744960	LNG/Ethylene/LPG	27 566	Other	Evergas AS	Sinopacific Offshore	Evergas AS
Mar-17	JS Ineos Intuition	9771523	LNG/Ethylene/LPG	27 500	Other	Evergas AS	Jiangsu New YZJ	Evergas AS
Mar-17	JS Ineos Invention	9771511	LNG/Ethylene/LPG	27 500	Other	Evergas AS	Jiangsu New YZJ	Evergas AS
Mar-17	Ougarta	9761267	LNG Carrier	171 800	TZM	ITOCHU Corp	HII	ITOCHU Corp
Mar-17	Torben Spirit	9721401	LNG Carrier	173 400	GT	Teekay	DSME	Teekay
Apr-17	Höegh Giant	9762962	FSRU	170 000	TZM	Höegh LNG	HII	Teekay
Apr-17	SM Eagle	9761827	LNG Carrier	174 263	GT	K-Line	DSME	Teekay
May-17	Hyundai Princeps	9761841	LNG Carrier	174 000	GT	Hyundai LNG Shipping	DSME	Hyundai LNG Shipping
Jun-17	Cardissa	9765079	LNG Bunkering Vessel	6 469	Other	Shell Western LNG	STX Shipbuilding	STASCO
Jun-17	CESI Beihai	9672844	LNG Carrier	174 323	GT	China Shipping LNG	HZ	China Shipping LNG
Jun-17	Hyundai Peacepsia	9761853	LNG Carrier	174 000	GT	Hyundai LNG Shipping	DSME	Hyundai LNG Shipping
Jun-17	SM Seahawk	9761839	LNG Carrier	174 263	GT	K-Line	DSME	K-Line
Jul-17	Asia Venture	9680190	LNG Carrier	160 000	TZM	Chevron	SHI	Chevron
Jul-17	Seri Cempaka	9714290	LNG Carrier	150 200	KM	MISC	HII	MISC
Jul-17	SK Audace	9693161	LNG Carrier	180 000	TZM	SK/Marubeni JV	SHI	SK Shipping
Aug-17	Coralius	9769128	LNG Bunkering Vessel	5 737	Other	Anthony Veder	Schps. Bodewes	Anthony Veder
Sep-17	CESI Tianjin	9694749	LNG Carrier	174 323	GT	China Shipping LNG	HZ	China Shipping LNG
Oct-17	Boris Vilkitsky	9768368	LNG Carrier	172 000	GT	Dynagas LNG	DSME	Dynagas LNG
Oct-17	Macoma	9705653	LNG Carrier	173 400	GT	Teekay	DSME	Teekay
Oct-17	MOLFSRU Challenger	9713105	FSRU	263 000	GT	MOL	DSME	Teekay
Oct-17	Murex	9705641	LNG Carrier	173 400	GT	Teekay	DSME	Teekay
Oct-17	Pan Asia	9750220	LNG Carrier	174 000	GT	Teekay	HZ	Teekay
Nov-17	Fedor Litke	9768370	LNG Carrier	172 636	GT	Dynagas LNG	DSME	Dynagas LNG
Dec-17	Bishu Maru	9691137	LNG Carrier	164 700	KM	K-Line	KHI	K-Line
Dec-17	Eduard Toll	9750696	LNG Carrier	172 000	GT	Teekay/CLNG JV	DSME	Teekay/CLNG JV
Dec-17	Exmar FSRU	9757694	FSRU	25 000	Other	Exmar Offshore	Zhoushan Wison	Exmar Offshore

\* Cargo Containment System

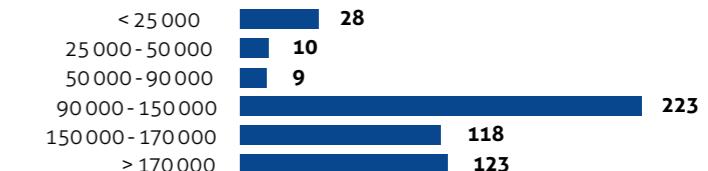
## LNG FLEET STATISTICS

At the end of 2017, the fleet could be classified as follows :

### ACCORDING TO CONTAINMENT SYSTEM

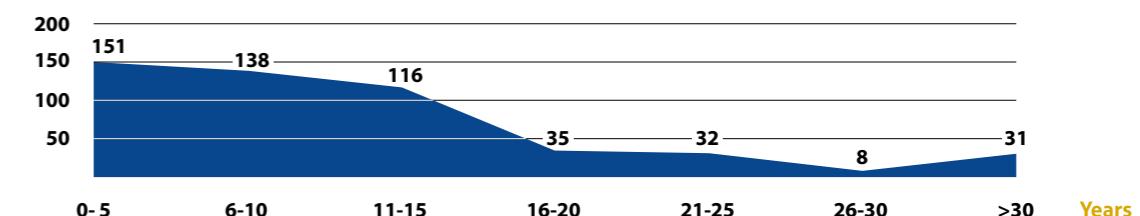


### ACCORDING TO CARGO CAPACITY (IN M³)



### AGE OF THE EXISTING LNG FLEET

Number of LNG vessels



## LNG CARRIER FLEET

Built	Vessel Name	Capacity (m³)	CCS*	Owner	Builder	Manager Name
1972	Bebatik (ex Gadinia)	75 060	TZM	Brunei Shell Tankers	Ch. de l'Atlantique	STASCO
1974	Seagas (ex Fjalar)	167	Other	Aga AB	Fiskerstrand	Sirius Shipping
1975	Belanak (ex Gouldia)	75 000	TZM	Brunei Shell Tankers	Ch. de La Ciota	STASCO
1976	Gimi	126 277	KM	Golar LNG	Moss Rosenberg	Golar LNG
1976	West Energy (ex LNG Lagos)	122 000	GT	Sinokor Merchant	Ch. de l'Atlantique	Sinokor Shipmngt.
1977	East Energy (ex LNG Port Harcourt)	122 000	GT	Sinokor Merchant	Ch. de l'Atlantique	Sinokor Shipmngt.
1977	LNG Aquarius	126 300	KM	Hanchem Shipping	General Dynamics	MOL
1978	Bering Energy (ex LNG Leo)	126 400	KM	Sinokor Merchant	General Dynamics	Sinokor Shipmngt.
1978	Gulf Energy (ex LNG Gemini)	126 300	KM	Sinokor Merchant	General Dynamics	Sinokor Shipmngt.
1978	LNG Capricorn	126 300	KM	Nova Shipping	General Dynamics	Nova Shipping
1979	Coral Energy (ex LNG Virgo)	126 400	KM	Sinokor Merchant	General Dynamics	Sinokor Shipmngt.
1979	GCL (ex LNG Libra)	126 400	KM	GCL	General Dynamics	Thome Shipmngt.
1979	LNG Taurus	126 300	KM	Nova Shipping	General Dynamics	Nova Shipping
1979	Ocean Quest (ex Matthew)	126 540	TZM	Hong Kong LNG	Newport News Shipbuilding	OSM Maritime
1980	Caribbean Energy (ex Gaea)	126 530	KM	Sinokor Merchant	General Dynamics	Sinokor Shipmngt.
1980	Mourad Didouche	126 130	GT	Hyproc	Ch. de l'Atlantique	Hyproc
1980	South Energy (ex LNG Edo)	126 530	KM	Sinokor Merchant	General Dynamics	Sinokor Shipmngt.
1981	Fortune FSU (ex Tenaga Tiga)	130 000	GT	Dalian Inteh Group	France-Dunkerq.	Dalian Inteh Group
1981	Lucky FSU (ex Tenaga Dua)	130 000	GT	Dalian Inteh Group	France-Dunkerq.	Dalian Inteh Group

<tbl

Built	Vessel Name	Capacity (m³)	CCS*	Owner	Builder	Manager Name
1993	Northwest Sandpiper	127 500	KM	NWSSSC	Mitsui Shipbuilding	STASCO
1993	Polar Spirit (ex Polar Eagle)	89 880	Other	Teekay	I.H.I.	Teekay
1994	Al Khaznah	135 496	KM	NGSCO	Mitsui Shipbuilding	NGSCO
1994	Dwiputra	127 386	KM	MOL	MHI	Humolco Trans
1994	Hyundai Utopia	125 182	KM	Hyundai LNG Shipping	HHI	Hyundai LNG Shipping
1994	LNG Vesta	127 547	KM	MOL	MHI	MOL
1994	Northwest Stormpetrel	127 606	KM	NWSSSC	MHI	STASCO
1994	Puteri Intan	130 405	GT	MISC	Ch. de l'Atlantique	MISC
1994	Shahamah	135 496	KM	NGSCO	KHI	NGSCO
1994	YK Sovereign	127 125	KM	SK Shipping	HHI	SK Shipping
1995	Ghasha	137 514	KM	NGSCO	Mitsui Shipbuilding	NGSCO
1995	Hanjin Pyeong Taek	130 600	GT	H-Line Shipping	Hanjin HI	G-Marine Service
1995	Ish	137 540	KM	NGSCO	MHI	NGSCO
1995	Puteri Delima	130 405	GT	MISC	Ch. de l'Atlantique	MISC
1995	Puteri Nilam	130 405	GT	MISC	Ch. de l'Atlantique	MISC
1996	Al Khor	137 354	KM	NYK	MHI	NYK
1996	Al Zubarah	137 573	KM	MOL	Mitsui Shipbuilding	MOL
1996	Hyundai Greenpia	125 000	KM	Hyundai LNG Shipping	HHI	Hyundai LNG Shipping
1996	Mraweh	137 000	KM	NGSCO	Kvaerner Masa	NGSCO
1996	Mubaraz	137 000	KM	NGSCO	Kvaerner Masa	NGSCO
1996	Puteri Zamrud	130 405	GT	MISC	Ch. de l'Atlantique	MISC
1996	Surya Aki	19 474	KM	Humpuss Intermoda	KHI	MOL
1997	Al Hamra	137 000	KM	NGSCO	Kvaerner Masa	NGSCO
1997	Al Rayyan	135 358	KM	K-Line	KHI	K-Line
1997	Al Wajbah	137 354	KM	MOL	MHI	MOL
1997	Aman Sendai	18 928	TZM	MISC	NKK	MISC
1997	LNG Portovenere (ex SNAM Portovenere)	65 000	GT	SNAM	Fincantieri Sestri	Exmar
1997	Puteri Firus	130 405	GT	MISC	Ch. de l'Atlantique	MISC
1997	Umm Al Ashtan	137 000	KM	NGSCO	Kvaerner Masa	NGSCO
1998	Al Wakrah	135 358	KM	MOL	KHI	MOL
1998	Aman Hakata	18 800	TZM	MISC	NKK	MISC
1998	Broog	135 466	KM	NYK	Mitsui Shipbuilding	NYK
1998	LNG Lerici	65 000	GT	SNAM	Fincantieri Sestri	Exmar
1998	Zekreet	135 420	KM	K-Line	Mitsui Shipbuilding	K-Line
1999	Al Bidda	135 279	KM	MOL	KHI	MOL
1999	Doha	137 354	KM	NYK	MHI	NYK
1999	Hanjin Muscat	138 200	GT	H-Line Shipping	Hanjin HI	G-Marine Service
1999	Hyundai Technopia	135 000	KM	Hyundai LNG Shipping	HHI	Hyundai LNG Shipping
1999	SK Summit	138 000	GT	SK Shipping	DSME	SK Shipping
2000	Al Jasra	137 100	KM	NYK	MHI	NYK
2000	Golar Mazo	136 867	KM	Golar LNG	MHI	Golar LNG
2000	HL Ras Laffan (ex Hanjin Ras Laffan)	138 214	GT	H-Line Shipping	Hanjin HI	G-Marine Service
2000	HL Sur (ex Hanjin Sun)	138 333	GT	H-Line Shipping	Hanjin HI	G-Marine Service
2000	Hyundai Aquapia	135 000	KM	Hyundai LNG Shipping	HHI	Hyundai LNG Shipping
2000	Hyundai Cosmopia	135 000	KM	Hyundai LNG Shipping	HHI	Hyundai LNG Shipping
2000	Hyundai Oceanpia	135 000	KM	Hyundai LNG Shipping	HHI	Hyundai LNG Shipping
2000	K.Acacia	138 017	GT	K-Line	DSME	KLCM
2000	K.Freesia	135 256	GT	K-Line	DSME	KLCM
2000	LNG Jamal	135 333	KM	NYK	MHI	NYK
2000	SK Splendor	138 375	TZM	SK Shipping	SHI	SK Shipping
2000	SK Stellar	138 375	TZM	SK Shipping	SHI	SK Shipping
2000	SK Supreme	138 200	TZM	SK Shipping	SHI	SK Shipping
2000	Triputra (ex Surya Satsuma)	23 096	TZM	Humpuss Intermoda	NKK	Humolco Trans
2001	Sohar LNG (ex Lakshmi)	137 248	KM	OSC	MHI	OSMC
2002	Abadi	136 912	KM	Brunei Gas Carriers	MHI	STASCO
2002	Excalibur	138 034	GT	Exmar	DSME	Exmar
2002	Galea	136 967	KM	Shell Tankers	MHI	STASCO
2002	Gallina	137 001	KM	Shell Tankers	MHI	STASCO
2002	Hispania Spirit (ex Fernando Tapias)	140 500	GT	Teekay	DSME	Teekay

Built	Vessel Name	Capacity (m³)	CCS*	Owner	Builder	Manager Name
2002	LNG Rivers	137 231	KM	Bonny Gas Transport	HHI	Nigeria LNG
2002	LNG Sokoto	137 231	KM	Bonny Gas Transport	HHI	Nigeria LNG
2002	Puteri Delima Satu	137 100	GT	MISC	Mitsui Shipbuilding	MISC
2002	Puteri Intan Satu	137 489	GT	MISC	MHI	MISC
2002	Trader (ex British Trader)	138 000	TZM	Lloyds Banking Group	SHI	K Line
2003	British Innovator	138 287	TZM	BP Shipping	SHI	BP Shipping
2003	British Merchant	138 283	TZM	BP Shipping	SHI	BP Shipping
2003	BW Boston (ex BW GDF Suez Boston)	138 059	GT	BW Gas	DSME	BW
2003	Everett (ex BW GDF Suez Everett)	138 028	GT	BW Gas	DSME	BW
2003	Castillo de Villalba	138 183	GT	Elcano	IZAR (Puerto Real)	Elcano
2003	Catalunya Spirit (ex Iingo Tapias)	138 000	GT	Teekay	IZAR (Sestao)	Teekay
2003	Energy Frontier	147 599	KM	Tokyo LNG Tanker	KHI	MOL
2003	Excel	138 107	GT	Global LNG	DSME	Exmar
2003	Golar Arctic (ex Granatina)	140 648	GT	Golar LNG	DSME	Golar LNG
2003	LNG Bayelsa	137 006	KM	Bonny Gas Transport	HHI	Nigeria LNG
2003	Methane Princess	138 000	GT	Golar LNG	DSME	Golar LNG
2003	Pacific Notus	137 006	KM	TEPCO	MHI	NYK
2003	Puteri Nilam Satu	137 585	GT	MISC	MHI	MISC
2003	Shinju Maru No. 1 2 513	Other	NS United Tanker	Higaki Zosen	NS United Tanker	
2003	SK Sunrise	138 306	TZM	I.S. Carriers S.A.	SHI	lino Marine Service
2004	Berge Arzew	138 088	GT	BW Gas	DSME	BW
2004	Bilbao Knutsen	138 000	GT	Knutsen	IZAR (Sestao)	Knutsen
2004	Cadiz Knutsen	138 826	GT	Knutsen	IZAR (Puerto Real)	Knutsen
2004	Disha	136 026	GT	India LNG Transport	DSME	SCI
2004	Dukhan	137 661	KM	MOL	Mitsui Shipbuilding	MOL
2004	Fuji LNG (ex Muscat LNG)	149 172	KM	Cardiff Marine	KHI	TMS Cardiff Gas
2004	Fuwairit	138 000	TZM	MOL	SHI	MOL
2004	Galicia Spirit	140 624	GT	Teekay	DSME	Teekay
2004	Gemmata	136 985	KM	STASCO	MHI	STASCO
2004	Lalla Fatma N'Soumer	147 845	KM	Algeria Nippon Gas	KHI	Hyproc
2004	LNG Akwa Ibom	141 038	KM	Bonny Gas Transport	HHI	Nigeria LNG
2004	LNG River Orashi	145 914	GT	BW Gas	DSME	BW
2004	Madrid Spirit	138 000	GT	Teekay	IZAR (Puerto Real)	Teekay
2004	Methane Kari Elin	138 209	TZM	STASCO	SHI	GasLog
2004	Milaha Ras Laffan (ex Maersk Ras Laffan)	138 270	TZM	Qatar Shipping	SHI	PRONAV
2004	Northwest Swan	138 000	GT	Chevron	DSME	Chevron
2004	Pioneer Knutsen	1 100	Other	Knutsen	Veka SY Lemmer	Knutsen
2004	Puteri Firus Satu	137 617	GT	MISC	MHI	MISC
2004	Puteri Zamrud Satu	137 100	GT	MISC	Mitsui Shipbuilding	MISC
2004	Raahi	136 026	GT	India LNG Transport	DSME	SCI
2005	Al Deebel	145 130	TZM	MOL	SHI	MOL
2005	Al Thakhira	145 130	TZM	K-Line	SHI	K-Line
2005	Grace Acacia	149 786	TZM	Gazoecean	HHI	Gazoecean
2005	Grace Barleria	149 700	TZM	NYK	HHI	NYK
2005	Grand Elena	145 580	KM	SCF	MHI	NYK
2005	LNG Borno	149 600	TZM	NYK	SHI	NYK
2005	LNG Kano	149 600	GT	BW Gas	DSME	BW
2005	LNG Ogun	149 600	TZM	NYK	SHI	NYK
2005	LNG Ondo	148 300	GT	BW Gas	DSME	BW
2005	Maran Gas Coronis	145 700	GT	Maran Naklat	DSME	Maran Gas Maritime
2005	Methane Alison Victoria	145 127	TZM	GasLog Partners	SHI	GasLog
2005	Methane Heather Sally	145 127	TZM	GasLog Partners	SHI	GasLog
2005	Methane Nile Eagle	145 144	TZM	STASCO	SHI	GasLog
2005	Methane Shirley Elisabeth	145 127	TZM	GasLog Partners	SHI	GasLog
2005	Neo Energy	149 700	TZM			

Built	Vessel Name	Capacity (m³)	CCS*	Owner	Builder	Manager Name
2009	Aseem	155 000	TZM	India LNG Transport	SHI	SCI
2009	BW GDF Suez Brussels	162 400	GT	BW Gas	DSME	BW
2009	BW GDF Suez Paris	162 400	GT	BW Gas	DSME	BW
2009	Coral Methane	7 500	Other	Anthony Veder	Remontowa Repair	Anthony Veder
2009	Cygnus Passage	147 200	KM	Cygnus LNG Shipping	MHI	NYK
2009	Dapeng Star	147 210	GT	CLNG	HZ	CLNG
2009	Energy Confidence	153 000	KM	Tokyo LNG Tanker	KHI	NYK
2009	Lijmiliya	261 700	GT	Nakilat	DSME	STASCO
2009	LNG Jupiter	153 659	KM	NYK	KHI	NYK
2009	Magellan Spirit (ex Maersk Magellan)	165 500	TZM	Malt LNG	SHI	Teekay
2009	Mekaines	267 335	TZM	Nakilat	SHI	Nakilat
2009	Mesaimer	216 200	TZM	Nakilat	HHI	Nakilat
2009	Min Lu	147 210	GT	CLNG	HZ	CLNG
2009	Min Rong	147 000	GT	CLNG	HZ	CLNG
2009	Onaiza	210 100	GT	Nakilat	DSME	Nakilat
2009	Pacific Enlighten	147 200	KM	TEPCO	MHI	MISC
2009	Seri Balqis	157 611	GT	MISC	MHI	MISC
2009	Shagra	267 335	TZM	Nakilat	SHI	STASCO
2009	Taitar No. 1	147 362	KM	Nimic Shipmngt.	MHI	Nimic Shipmngt.
2009	Taitar No. 2	147 500	KM	Nimic Shipmngt.	KHI	Nimic Shipmngt.
2009	Tangguh Palung	155 642	TZM	K-Line	SHI	K-Line
2009	Tangguh Sago	154 971	TZM	Teekay	HSII	Teekay
2009	Trinity Glory	154 999	TZM	K-Line	Koyo Dock KK.	K-Line
2009	Woodside Donaldson	165 936	TZM	Malt LNG	SHI	Teekay
2010	Aamira	267 335	TZM	Nakilat	SHI	STASCO
2010	Al Bahiya	210 185	GT	Nakilat	DSME	STASCO
2010	Barcelona Knutsen	173 400	GT	Knutsen	DSME	Knutsen
2010	Castillo de Santisteban	173 673	GT	Elcano	STX Shipbuilding	Elcano
2010	GasLog Chelsea (ex STX Frontier)	153 000	TZM	GasLog	Hanjin HI	GasLog
2010	GasLog Savannah	155 000	TZM	GasLog	SHI	GasLog
2010	GasLog Singapore	155 000	TZM	GasLog	SHI	GasLog
2010	GDF Suez Point Fortin	154 914	TZM	Trinity LNG Carrier	Koyo Dock KK.	MOL
2010	Gigira Leitebo (ex Abdelkader)	155 000	TZM	MOL	HHI	MOL
2010	Meridian Spirit (ex Maersk Meridian)	165 772	TZM	Malt LNG	SHI	Teekay
2010	Methane Becki Anne	170 678	TZM	GasLog	SHI	GasLog
2010	Methane Julia Louise	170 000	TZM	Lepta Shipping	SHI	GasLog
2010	Methane Mickie Harper	170 000	TZM	STASCO	SHI	STASCO
2010	Methane Patricia Camila	170 000	TZM	STASCO	SHI	STASCO
2010	Norgas Creation	10 030	Other	Norgas Carriers	Taizhou Skaugen	Norgas Carriers
2010	Norgas Innovation	10 030	Other	Norgas Carriers	Taizhou Skaugen	Norgas Carriers
2010	Rasheeda	267 335	TZM	Nakilat	SHI	STASCO
2010	Ribera Del Duero Knutsen	173 400	GT	Knutsen	DSME	Knutsen
2010	Sevilla Knutsen	173 400	GT	Knutsen	DSME	Knutsen
2010	Spirit of Hela (ex Ben Badis)	173 010	TZM	MOL	HSII	MOL
2010	Taitar No. 3	147 366	KM	Nimic Shipmngt.	MHI	Nimic Shipmngt.
2010	Taitar No. 4	147 546	KM	Nimic Shipmngt.	KHI	Nimic Shipmngt.
2010	Valencia Knutsen	173 400	GT	Knutsen	DSME	Knutsen
2010	Zarga	267 335	TZM	Nakilat	SHI	STASCO
2011	Akebono Maru	3 556	Other	NS United Tanker	Higaki Zosen	NS United Tanker
2011	Amali	148 000	GT	Brunei Shell Tankers	DSME	STASCO
2011	Arkat	147 228	GT	Brunei Gas Carriers	DSME	STASCO
2011	Energy Horizon	177 441	KM	Tokyo LNG Tanker	KHI	NYK
2011	Lobito	161 337	TZM	MiNT LNG	SHI	Teekay
2011	Malanje	160 400	TZM	MiNT LNG	SHI	Mitsui & Co
2011	Norgas Conception	10 030	Other	Norgas Carriers	Taizhou Skaugen	Norgas Carriers



\* Cargo Containment System

Clarksons Research, 2018.

Built	Vessel Name	Capacity (m³)	CCS*	Owner	Builder	Manager Name
2011	Norgas Invention	10 030	Other	Norgas Carriers	Taizhou Skaugen	Norgas Carriers
2011	Norgas Unikum	12 000	Other	Teekay	AVIC Dingheng	Norgas Carriers
2011	Sonangol Benguela	160 500	GT	Sonangol	DSME	Chevron
2011	Sonangol Etosha	160 786	GT	Sonangol	DSME	Chevron
2011	Sonangol Sambizanga	160 785	GT	Sonangol	DSME	Chevron
2011	Soyo	161 337	TZM	MiNT LNG	SHI	Teekay
2011	Stena Clear Sky	173 593	GT	Stena Bulk	DSME	Northern Marine Mngt
2011	Stena Crystal Sky	173 611	GT	Stena Bulk	DSME	Northern Marine Mngt
2011	Vision Spirit (ex Bahrain Vision)	12 022	Other	Teekay	AVIC Dingheng	Teekay
2012	Coral Energy	15 600	Other	Anthony Veder	Neptun Werft	Anthony Veder
2012	Cubal	160 534	TZM	MiNT LNG	SHI	NYK
2012	Shen Hai	147 210	GT	CLNG	HZ	CLNG
2013	Arctic Aurora	154 899	TZM	Dynagas LNG	HHI	Dynagas LNG
2013	Cool Voyager	160 372	TZM	Thenamaris	SHI	Thenamaris
2013	Coral Anthelia	6 500	Other	Anthony Veder	AVIC Dingheng	Anthony Veder
2013	GasLog Santiago	155 000	TZM	GasLog Partners	SHI	GasLog
2013	GasLog Seattle	155 000	TZM	GasLog Partners	SHI	GasLog
2013	GasLog Shanghai	155 000	TZM	GasLog Partners	SHI	GasLog
2013	GasLog Skagen	155 000	TZM	GasLog	SHI	GasLog
2013	GasLog Sydney	155 000	TZM	GasLog Partners	SHI	GasLog
2013	GasLog Skagen	155 000	TZM	GasLog	SHI	GasLog
2013	GasLog Copenhagen	155 000	TZM	GasLog	SHI	GasLog
2013	GasLog Goode	159 662	GT	Maran Gas Maritime	DSME	Maran Gas Maritime
2013	GasLog Rogers	160 668	GT	Maran Gas Maritime	DSME	Maran Gas Maritime
2013	Yenisei River	155 000	TZM	Dynagas LNG	HHI	Dynagas LNG
2014	Adam LNG	161 870	TZM	OSC	HHI	OSMC
2014	Amani	154 800	TZM	Brunei Gas Carriers	HHI	STASCO
2014	Asia Energy	160 000	TZM	Chevron	SHI	Chevron
2014	Asia Vision	160 000	TZM	Chevron	SHI	Chevron
2014	Clean Ocean	161 881	TZM	Dynagas LNG	HHI	Dynagas LNG
2014	Christophe de Margerie	172 845	GT	SCF	DSME	SCF
2014	Clean Vision	161 814	TZM	Dynagas LNG	HHI	Dynagas LNG
2014	Cool Runner	160 000	TZM	Thenamaris	SHI	Thenamaris
2014	Corcovado LNG	160 106	GT	Cardiff Marine	DSME	TMS Cardiff Gas
2014	Esshua Maru	155 300	KM	Mitsubishi Corp	MHI	MOL
2014	Gaslog Saratoga	155 000	TZM	GasLog	SHI	GasLog
2014	Golar Bear	160 000	TZM	Golar LNG	SHI	Golar LNG
2014	Golar Crystal	160 000	TZM	COSCO Shipping	SHI	Golar LNG
2014	Golar Frost	160 000	TZM	Golar LNG	SHI	Golar LNG
2014	Golar Glacier	162 000	TZM	Golar LNG	HSII	Golar LNG
2014	Golar Penguin	160 000	TZM	Golar LNG	SHI	Golar LNG
2014	Kita LNG	160 118	GT	Cardiff Marine	DSME	TMS Cardiff Gas
2014	LNG Venus	155 873	KM	Osaka Gas	MHI	Osaka Gas
2014	Maran Gas Apollonia	161 870	TZM	Maran Nakilat	HSII	Maran Gas Maritime
2014	Maran Gas Delphi	159 800	GT	Maran Nakilat	DSME	Maran Nakilat
2014	Maran Gas Efessos	159 800	GT	Maran Nakilat	DSME	Maran Gas Maritime
2014	Maran Gas Posidonia	161 870	TZM	Maran Nakilat	HSII	Maran Nakilat
2014	Pacific Arcadia	147 200	KM	NYK	MHI	NYK
2014	Palu LNG	160 000	GT	Cardiff Marine	DSME	TMS Cardiff Gas
2014	Pskov	170 200	GT	SCF	STX Shipbuilding	SCF
2014	Seishu Maru	155 300	KM	Mitsubishi Corp	MHI	NYK
2014	Solaris	155 000	TZM	GasLog Partners	SHI	STASCO
2014	Velikiy Novgorod	170 567	GT	SCF	STX Shipbuilding	SCF
2014	Yari LNG	160 000	GT	Cardiff Marine	DSME	TMS Cardiff Gas
2015	Amadi</td					



## FSRU FLEET

The total FSRU fleet consisted of **28 units** at the end of 2017. Total FSRU cargo capacity at the end of 2017 stood at 4.3 million cubic meters. The orderbook comprised of 12 FSRUs. 5 of these vessels were scheduled for 2018 delivery.

### FSRU FLEET AT THE END OF 2017

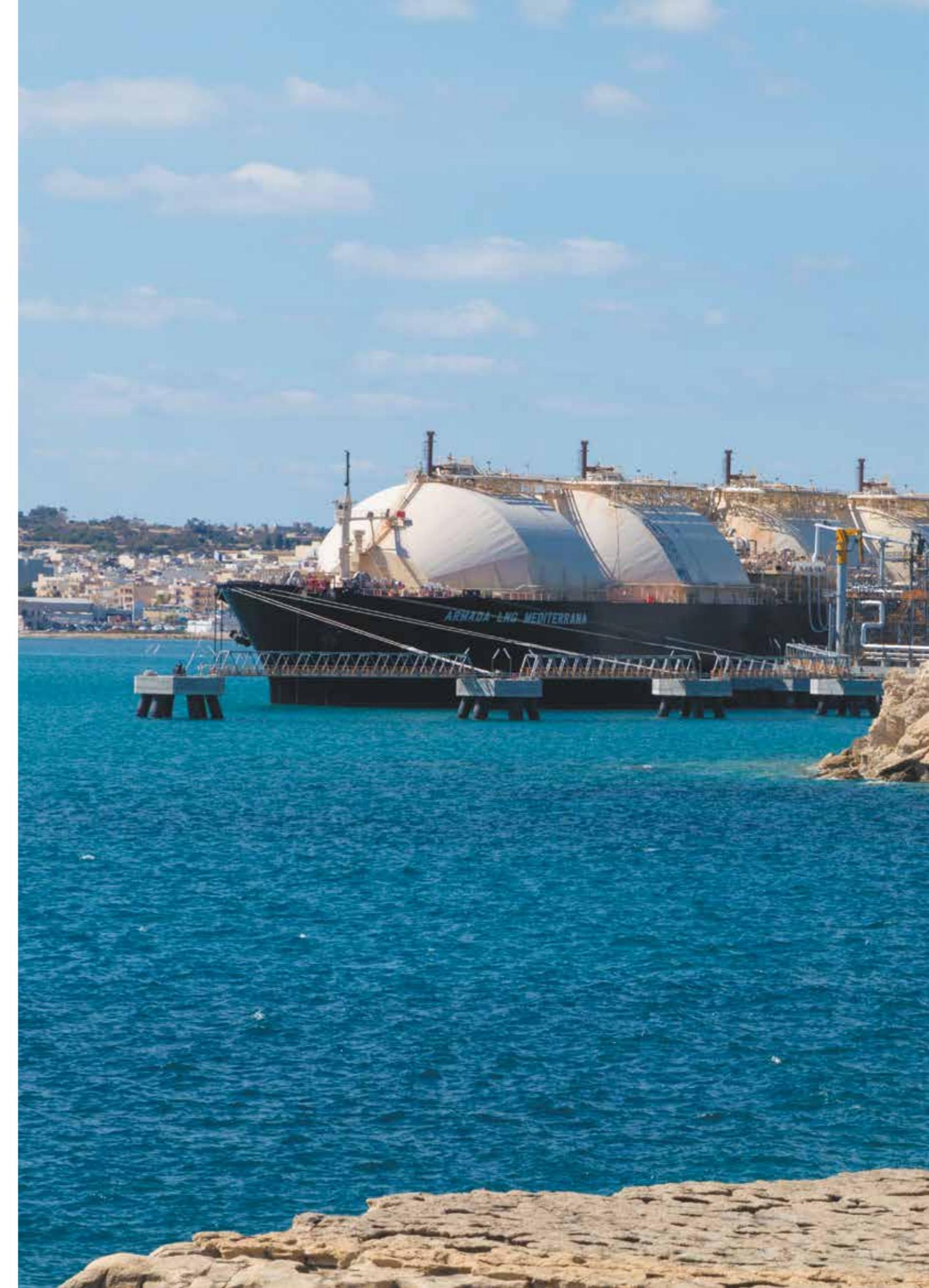
Built	Vessel Name	Capacity (m³)	CCS*	Owner	Builder	Manager Name
1977	Golar Freeze	125 000	KM	Golar LNG	Keppel Shipyard	Golar LNG
1977	Nusantara Regas Satu (ex Khannur)	125 000	KM	Golar LNG	Jurong Shipyard	Golar LNG
1981	Golar Spirit	129 000	KM	Golar LNG	Keppel Shipyard	Golar LNG
2003	FSRU Toscana (ex Golar Frost (Livorno FSRU))	137 000	KM	OLT Offshore	Drydocks World Dubai	ECOS
2004	Golar Winter	138 000	GT	Golar LNG	Keppel Shipyard	Golar LNG
2005	Excellence	138 120	GT	Excelerate Energy	DSME	Exmar
2005	Excelsior	138 087	GT	Exmar	DSME	Exmar
2006	Excelerate	138 074	GT	Excelerate Energy	DSME	Exmar
2008	Explorer	151 008	GT	Excelerate Energy	DSME	Exmar
2009	Express	150 900	GT	Excelerate Energy	DSME	Exmar
2009	Exquisite	151 000	GT	Excelerate Energy	DSME	Exmar
2009	Neptune (ex GDF Suez Neptune)	145 130	TZM	Höegh LNG	SHI	Höegh LNG
2010	Exemplar	151 000	GT	Excelerate Energy	DSME	Exmar
2010	Expedient	151 000	GT	Excelerate Energy	DSME	Excelerate Energy
2010	GDF Suez Cape Ann	145 130	TZM	Höegh LNG	SHI	Höegh LNG
2014	Experience	173 660	GT	Excelerate Energy	DSME	Excelerate Energy
2014	Golar Eskimo	160 000	TZM	Golar LNG	SHI	Golar LNG
2014	Golar Igloo	170 000	TZM	Golar LNG	SHI	Golar LNG
2014	Höegh Gallant	170 000	TZM	Höegh LNG	HHI	Höegh LNG
2014	Independence	170 000	TZM	Höegh LNG	HHI	Höegh LNG
2014	PGN FSRU Lampung	170 000	TZM	Höegh LNG	HHI	Höegh LNG
2015	BW Singapore	170 000	TZM	BW Gas	SHI	BW Gas
2015	Golar Tundra	170 000	TZM	Golar LNG	SHI	Golar LNG
2016	Höegh Grace	170 000	TZM	Höegh LNG	HHI	Höegh LNG
2017	BW Integrity	170 000	TZM	BW Gas	SHI	BW Gas
2017	Exmar FSRU	25 000	Other	Exmar Offshore	Zhoushan Wilson	Exmar Offshore
2017	Höegh Giant	170 000	TZM	Höegh LNG	HHI	Höegh LNG
2017	MOL FSRU Challenger	263 000	GT	MOL	DSME	MOL

### FSRU ORDERBOOK AT THE END OF 2017

Built	Vessel Name	Capacity (m³)	CCS*	Owner	Builder	Manager Name
2018	N/B PaxOcean / Bali LNG FSRU	26 000	Other	Jaya Samudra	PaxOcean	Jaya Samudra
2018	N/B HHI 2865 - Penco-Lirquen (Octopus) FSRU	170 032	TZM	Höegh LNG	HHI	Höegh LNG
2018	Marshal Vasilevskiy (ex Kaliningrad FSRU)	170 000	TZM	Gazprom	HHI	Gazprom
2018	Golar Nanook	170 000	TZM	Golar LNG	SHI	Golar LNG
2018	N/B HHI 2909 (ex Port Qasim FSRU)	170 000	TZM	Höegh LNG	HHI	Höegh LNG
2019	N/B HHI 2945 (ex Turkey FSRU)	170 000	TZM	Kolin Construction	HHI	Kolin Construction
2019	N/B SHI 2220	170 000	TZM	Höegh LNG	SHI	Höegh LNG
2019	N/B DSME 2489	173 400	GT	BW Gas	DSME	BW Gas
2020	N/B DSME 2477	173 400	GT	Maran Gas Maritime	DSME	Maran Gas Maritime
2020	N/B HHI (ex Swan Energy Pipavav FSRU)	180 000	TZM	Swan Energy	HHI	Swan Energy
2021	N/B HZ	174 000	GT	Dynagas LNG	HZ	Dynagas LNG
2021	N/B HZ	174 000	GT	Dynagas LNG	HZ	Dynagas LNG

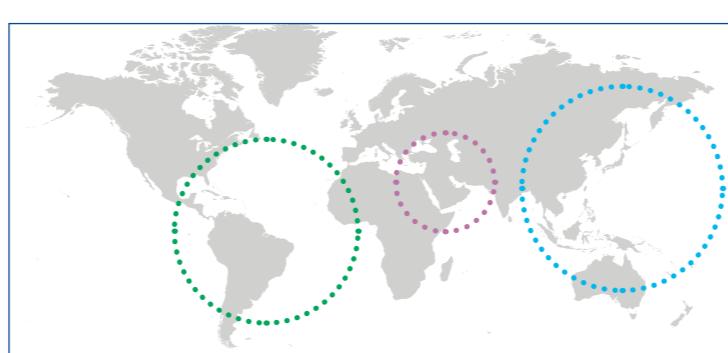
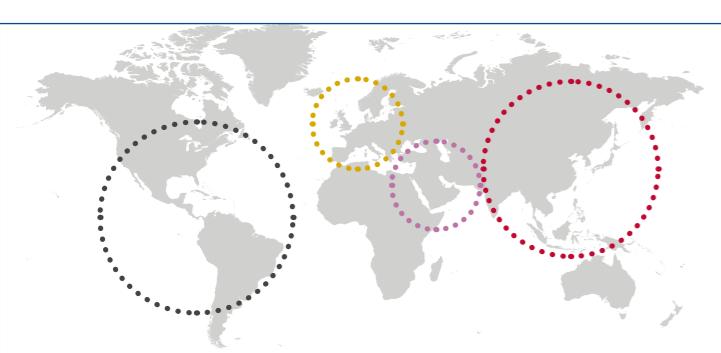
Clarksons Research, 2018.

\* Cargo Containment System



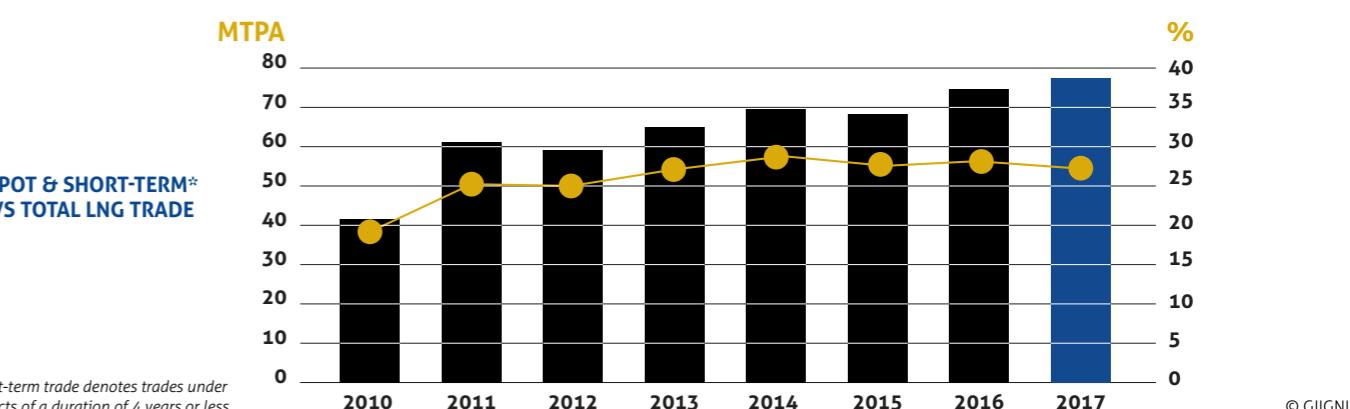
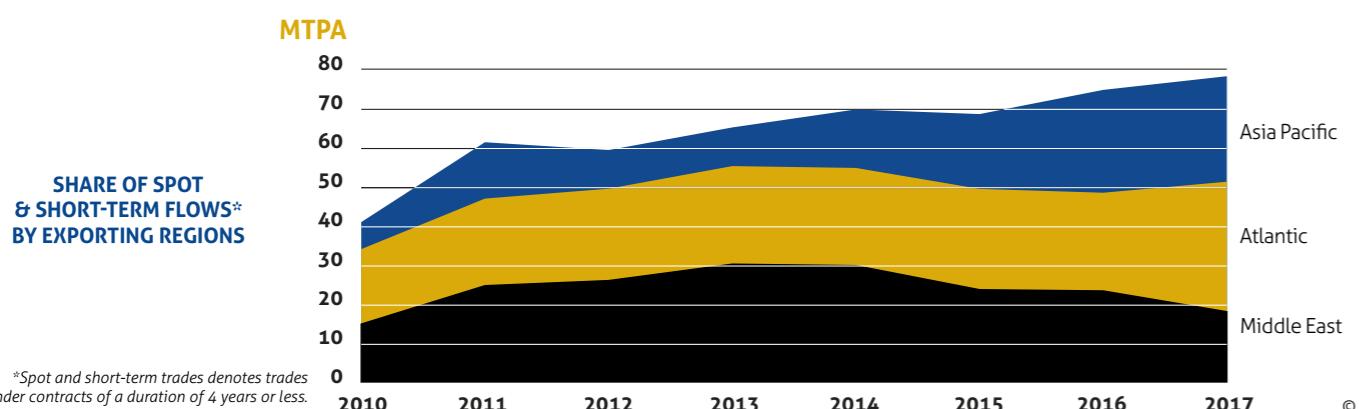
# QUANTITIES (IN 10<sup>6</sup> T) RECEIVED IN 2017 BY THE IMPORTING COUNTRIES FROM THE EXPORTING COUNTRIES

	Algeria	Angola	Egypt	Equatorial Guinea	Nigeria	Norway	Trinidad & Tobago	USA	Oman	Qatar	UAE	Australia	Brunei	Indonesia	Malaysia	Papua New Guinea	Peru	Russia	Re-exports received	Re-exports loaded	Net imports	
Japan	0.07	0.13	0.13	0.40	1.52	-	0.06	0.95	2.77	10.13	4.68	25.67	3.73	6.51	14.81	4.23	0.31	7.26	0.24	-0.12	83.52	
China	0.06	0.28	0.06	0.13	0.35	0.06	0.13	1.38	0.19	7.69	-	17.82	0.28	3.14	4.21	2.03	0.07	0.44	0.69	-	39.01	
South Korea	0.13	0.26	-	0.21	0.78	0.07	0.20	1.91	4.19	11.78	-	7.01	1.44	3.71	3.75	0.07	0.34	1.99	0.19	-0.19	37.83	
India	0.19	1.01	0.19	0.94	3.08	0.03	0.17	0.33	0.38	10.14	0.40	1.71	-	0.13	0.20	-	-	0.38	-0.06	19.22		
Taiwan	0.07	-	-	-	0.50	-	0.21	0.16	0.12	5.23	0.06	1.02	0.43	2.13	3.05	1.78	0.06	1.66	0.13	-	16.61	
Pakistan	-	-	-	0.24	0.39	-	0.06	0.06	-	3.86	-	-	-	-	-	-	-	-	-	4.62		
Thailand	0.07	-	-	0.06	0.15	-	-	0.06	-	2.39	0.06	0.50	0.07	0.20	0.38	-	-	-	-	-	3.95	
Indonesia	-	-	-	-	-	-	-	-	-	-	-	-	-	2.64	-	-	-	-	-	2.64		
Singapore	0.06	-	0.07	0.06	-	-	-	-	-	0.93	-	1.22	-	-	0.14	-	-	-	-0.48	2.00		
Malaysia	-	-	-	-	-	-	-	-	-	-	0.53	0.93	-	0.34	-	-	-	-	-	1.80		
<b>Asia</b>	<b>0.65</b>	<b>1.68</b>	<b>0.45</b>	<b>2.04</b>	<b>6.77</b>	<b>0.16</b>	<b>0.84</b>	<b>4.85</b>	<b>7.66</b>	<b>52.16</b>	<b>5.21</b>	<b>55.48</b>	<b>6.88</b>	<b>18.46</b>	<b>26.87</b>	<b>8.12</b>	<b>0.78</b>	<b>11.35</b>	<b>1.63</b>	<b>-0.85</b>	<b>211.18</b>	
Spain	2.00	0.20	0.07	-	3.21	0.60	0.39	0.49	-	2.79	-	-	-	-	-	-	2.35	-	0.06	-0.06	12.10	
France	3.25	0.14	0.06	-	2.39	0.58	0.06	-	-	1.47	-	-	-	-	-	-	0.13	-	-0.73	7.35		
Turkey	3.29	-	-	0.21	1.40	0.63	0.29	0.53	-	0.85	-	-	-	-	-	-	-	0.13	-	7.33		
Italy	0.60	-	0.06	-	0.07	0.12	0.22	0.06	-	4.83	-	-	-	-	-	-	-	-	-	5.97		
UK	0.17	-	-	-	0.07	0.06	0.15	0.07	-	4.38	-	-	-	-	-	-	0.06	0.07	0.03	-0.17	4.88	
Portugal	0.19	0.07	-	-	1.55	-	-	0.39	-	0.45	-	-	-	-	-	-	-	-	-	2.71		
Greece	0.94	-	-	-	-	0.06	-	-	-	0.27	-	-	-	-	-	-	-	-	-	1.28		
Poland	-	-	-	-	-	0.06	-	0.07	-	1.15	-	-	-	-	-	-	-	-	-	1.27		
Belgium	-	-	-	-	-	0.02	-	-	-	0.90	-	-	-	-	-	-	-	0.04	-0.09	0.88		
Lithuania	-	-	-	-	0.07	0.59	0.06	0.13	-	-	-	-	-	-	-	-	-	-	-	0.85		
Netherlands	0.04	-	-	-	-	0.07	0.44	-	0.06	-	0.57	-	-	-	-	-	-	0.07	0.06	-0.54	0.77	
Sweden	-	-	-	-	-	-	0.14	-	-	-	-	-	-	-	-	-	-	0.18	-	0.32		
Malta	-	-	0.01	0.05	-	-	0.16	0.02	-	-	-	-	-	-	-	-	-	-	-	0.23		
Finland	-	-	-	-	-	0.05	-	-	-	-	-	-	-	-	-	-	-	0.01	-	0.05		
<b>Europe</b>	<b>10.48</b>	<b>0.41</b>	<b>0.21</b>	<b>0.25</b>	<b>8.81</b>	<b>3.36</b>	<b>1.33</b>	<b>1.81</b>	-	<b>17.66</b>	-	-	-	-	-	-	-	<b>2.54</b>	<b>0.15</b>	<b>0.57</b>	<b>-1.59</b>	<b>45.98</b>
Mexico	-	-	-	0.06	1.08	-	0.30	2.80	-	-	-	-	-	0.19	-	-	0.36	-	0.01	-	4.78	
Argentina	0.06	-	-	0.56	0.37	-	0.48	0.31	-	1.48	-	-	-	-	-	-	0.04	-	0.04	-	3.35	
Chile	-	-	-	0.06	-	-	2.67	0.54	-	-	-	-	-	-	-	-	-	-	-	3.27		
Brazil	-	0.28	-	-	0.45	-	0.38	0.39	-	0.22	-	-	-	-	-	-	-	0.07	-0.16	1.62		
USA	-	-	-	-	0.07	-	1.42	-	-	-	-	-	-	-	-	-	-	-	-0.01	1.49		
Puerto Rico	-	-	-	-	-	-	0.94	-	-	-	-	-	-	-	-	-	-	-	-	0.94		
Dom. Rep.	-	-	-	-	-	-	0.73	0.17	-	-	-	-	-	-	-	-	-	-	-0.03	0.87		
Canada	-	-	-	0.07	-	0.05	0.17	-	-	-	-	-	-	-	-	-	-	-	-	0.29		
Jamaica	-	-	-	-	0.06	-	0.11	-	-	-	-	-	-	-	-	-	-	-	-	0.17		
Colombia	-	-	-	-	-	-	0.03	-	-	-	-	-	-	-	-	-	-	-	-	0.03		
<b>Americas</b>	<b>0.06</b>	<b>0.28</b>	-	<b>0.73</b>	<b>2.03</b>	<b>0.05</b>	<b>7.23</b>	<b>4.21</b>	-	<b>1.70</b>	-	-	-	<b>0.19</b>	-	-	<b>0.40</b>	-	<b>0.12</b>	-0.20	<b>16.80</b>	
Egypt	0.41	0.14	-	0.07	0.93	0.20	-	0.19	-	4.18	-	-	-	-	-	-	-	0.07	-	-	6.18	
Kuwait	0.27	0.19	0.12	0.07	0.53	-	0.05	0.38	0.32	1.51	-	-	-	-	-	-	-	0.07	-	3.51		
Jordan	0.27	0.21	-	0.54	0.93	0.07	0.29	0.55	0.13	0.13	0.06	-	-	-	-	-	-	0.13	-	3.31		
UAE	0.20	0.62	-	0.13	0.34	0.07	0.06	0.25	0.13	0.17	0.32	0.07	-	0.06	-	-	-	0.06	-	2.47		
Israel	-	-	-	-	-	-	0.38	-	-	-	-	-	-	-	-	-	-	-	-	0.38		
<b>Middle East</b>	<b>1.15</b>	<b>1.16</b>	<b>0.12</b>	<b>0.80</b>	<b>2.73</b>	<b>0.33</b>	<b>0.79</b>	<b>1.36</b>	<b>0.58</b>	<b>5.98</b>	<b>0.38</b>	<b>0.07</b>	-	<b>0.06</b>	-	-	-	<b>0.33</b>	-	<b>15.85</b>		
<b>Total</b>	<b>12.34</b>	<b>3.53</b>	<b>0.78</b>	<b>3.83</b>	<b>20.34</b>	<b>3.90</b>	<b>10.19</b>	<b>12.24</b>	<b>8.24</b>	<b>77.50</b>	<b>5.59</b>	<b>55.56</b>	<b>6.88</b>	<b>18.71</b>	<b>26.87</b>	<b>8.12</b>	<b>3.72</b>	<b>11.49</b>	<b>2.64</b>	<b>-2.64</b>	<b>289.81</b>	



# SPOT AND SHORT TERM QUANTITIES (IN 10<sup>3</sup> T) RECEIVED IN 2017 BY THE IMPORTING COUNTRIES FROM THE EXPORTING COUNTRIES

	Algeria	Angola	Egypt	Equatorial Guinea	Nigeria	Norway	Trinidad & Tobago	USA	Oman	Qatar	UAE	Australia	Brunei	Indonesia	Malaysia	Papua New Guinea	Peru	Russia	Re-exports received	Re-exports loaded	Net imports
Japan	73	67	130	162	1081	-	58	954	388	1216	47	1772	75	1915	1925	892	231	1162	243	-117	12274
South Korea	128	265	-	143	650	74	195	634	322	1 870	-	2510	61	653	832	65	198	388	186	-188	8988
India	193	941	187	640	2 368	29	173	331	379	1 798	337	672	-	130	203	-	-	384	-63	8702	
China	59	275	59	-	287	59	134	324	188	118	-	4265	137	587	623	208	70	182	686	-	8261
Taiwan	66	-	-	-	321	-	211	163	124	759	-	563	61	375	1 057	665	-	955	127	-	5447
Thailand	68	-	-	64	149	-	-	-	-	-	62	67	70	204	62	-	-	-	-	745	
Indonesia	-	-	-	-	-	-	-	-	-	-	-	-	-	392	-	-	-	-	-	392	
Malaysia	-	-	-	-	-	-	-	-	-	-	-	196	66	-	69	-	-	-	-	331	
Pakistan	-	-	-	-	64	-	64	-	-	-	-	-	-	-	-	-	-	-	-	128	
Singapore	64	-	-	58	-	-	-	-	-	77	-	-	-	-	136	-	-	-	-488	-154	
Asia	652	1548	376	1066	4920	163	836	2407	1402	5 838	447	10 045	469	4 256	4 906	1 829	500	2 687	1 626	-856	45 116
Egypt	408	136	-	70	934	196	-	189	-	4 176	-	-	-	-	-	-	-	67	-	6176	
Kuwait	199	194	59	65	397	-	54	125	319	914	-	-	-	-	-	-	-	68	-	2395	
UAE	133	348	-	-	208	66	59	66	-	97	316	74	-	-	-	-	-	65	-	1432	
Jordan	66	142	-	-	351	67	69	133	64	69	64	-	-	-	-	-	-	128	-	1153	
Israel	-	-	-	-	-	-	384	-	-	-	-	-	-	-	-	-	-	-	-	384	
Middle East	807	819	59	135	1 890	329	566	512	383	5 257	380	74	-	-	-	-	-	-	328	-	11 539
Mexico	-	-	-	56	1 078	-	239	2 797	-	-	-	-	-	-	-	59	-	9	-	4238	
Argentina	64	-	-	557	367	-	483	310	-	1 482	-	-	-	-	-	39	-	45	-	3348	
Brazil	-	281	-	-	452	-	376	387	-	219	-	-	-	-	-	-	-	69	-164	1620	
Puerto Rico	-	-	-	-	-	-	552	-	-	-	-	-	-	-	-	-	-	-	-	552	
USA	-	-	-	-	70	-	221	-	-	-	-	-	-	-	-	-	-	-	-9	282	
Dom. Rep.	-	-	-	-	-	-	111	168	-	-	-	-	-	-	-	-	-	-	-28	251	
Canada	-	-	-	65	-	50	59	-	-	-	-	-	-	-	-	-	-	-	-	174	
Jamaica	-	-	-	-	58	-	109	-	-	-	-	-	-	-	-	-	-	-	-	168	
Colombia	-	-	-	-	-	-	31	-	-	-	-	-	-	-	-	-	-	-	-	31	
Americas	64	281	-	678	2 025	50	2 182	3 663	-	1 701	-	-	-	-	-	-	98	-	122	-201	10 663
Spain	760	198	-	-	388	124	56	421	-	789	-	-	-	-	-	-	1 335	-	56	-64	4063
Turkey	68	-	-	208	510	627	288	533	-	566	-	-	-	-	-	-	-	-	133	-	2932
Italy	423	-	63	-	65	123	223	62	-	186	-	-	-	-	-	-	-	-	-	-	1144
Portugal	34	71	-	-	270	-	-	110	-	173	-	-	-	-	-	-	-	60	-	719	
Greece	-	-	-	-	-	64	-	-	272	-	-	-	-	-	-	-	-	-	-	336	
Lithuania	-	-	-	-	67	64	60	132	-	-	-	-	-	-	-	-	-	-	-	324	
Sweden	-	-	-	-	-	141	-	-	-	-	-	-	-	-	-	-	-	177	-	318	
UK	168	-	-	-	66	61	-	65	-	-	-	-	-	-	-	-	-	28	-169	220	
Poland	-	-	-	-	-	62	-	65	-	-	-	-	-	-	-	-	-	-	-	128	
Malta	-	-	-	-	-	-	79	-	-	-	-	-	-	-	-	-	-	-	-	79	
Finland	-	-	-	-	-	47	-	-	-	-	-	-	-	-	-	-	7	-	-	54	
France	-	-	-	-	-	244	55	-	409	-	-	-	-	-	-	-	65	-	-727	45	
Belgium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	42	-86	-44	-82	
Netherlands	41	-	-	-	66	62	-	59	-	94	-	-	-	-	-	-	74	62	-539	-82	
Europe	1 493	269	63	208	1 432	1 621	761	1 447	-	2 488	-	-	-	-	-	-	1 399	74	565	-1 585	10 236
Total	3016	2917	498	2088	10 267	2162	4345	8 028	1785	15 284	827	10 119	469	4 256	4 906	1 829	1 997	2 761	2 642	-2 642	77 554

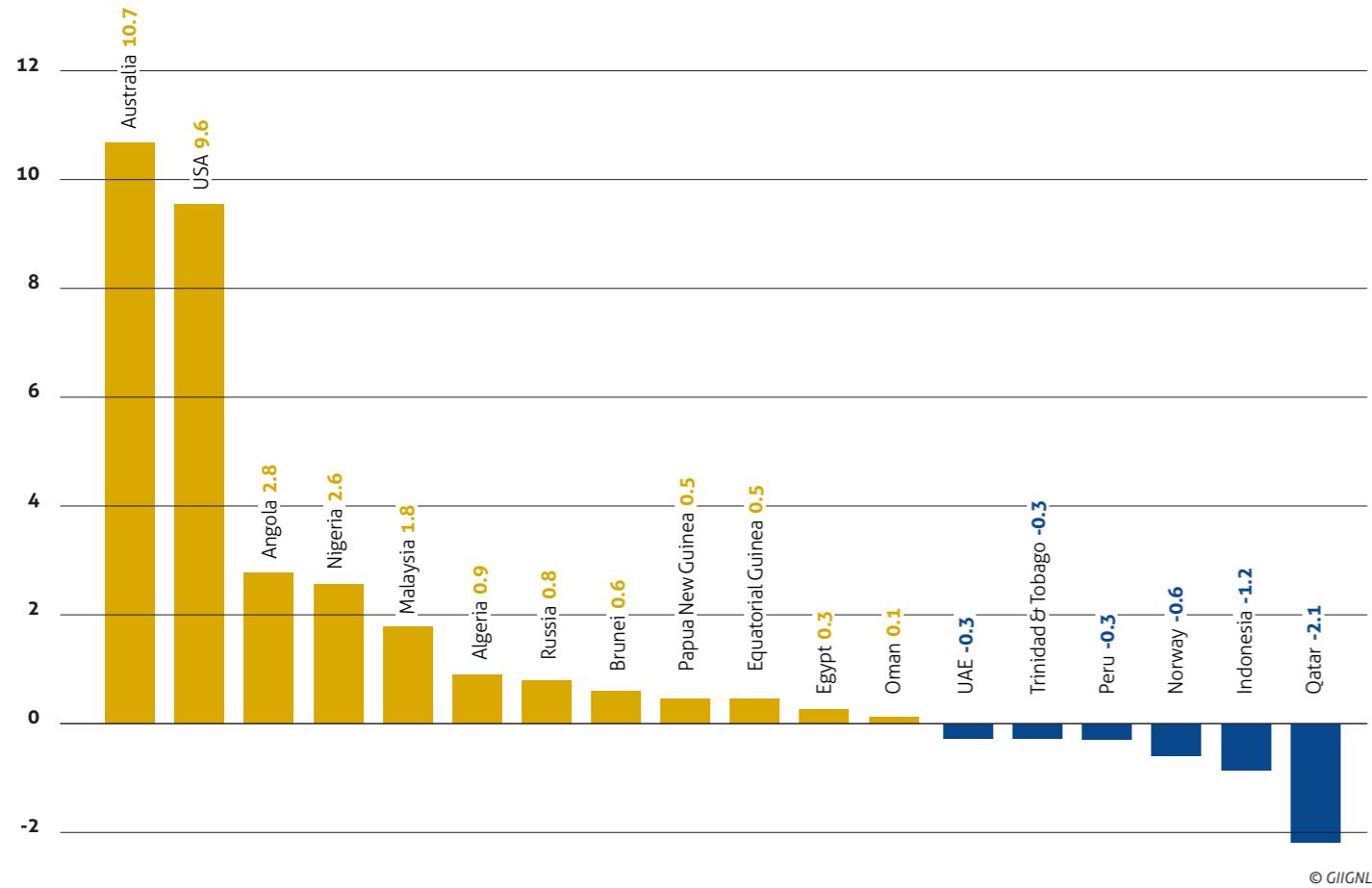


# SOURCE OF IMPORTS 2017

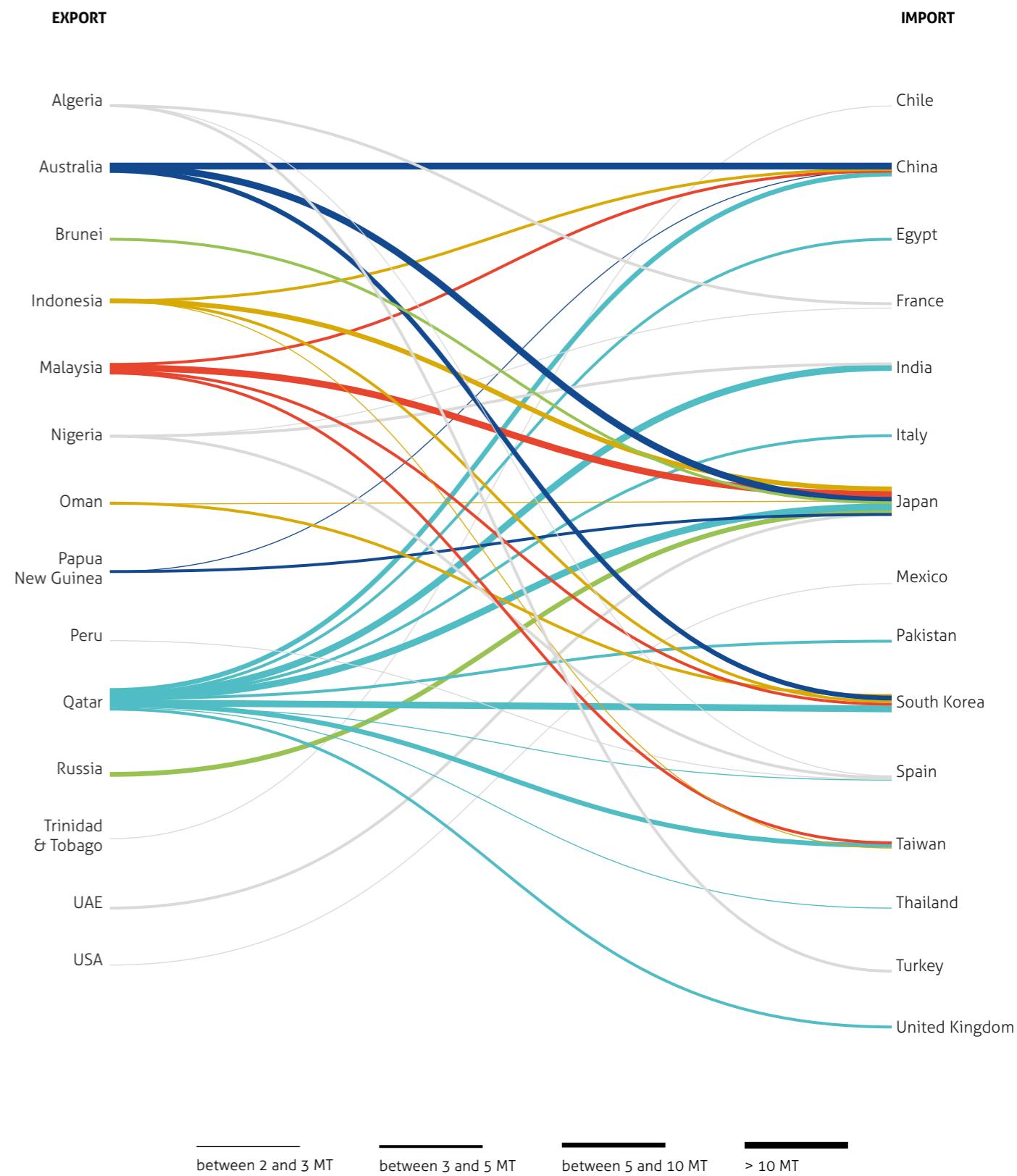
	10 <sup>6</sup> m <sup>3</sup> liquid	10 <sup>6</sup> T	10 <sup>9</sup> m <sup>3</sup> (n) gaseous	Share (%)	2017/2016 (%)
Australia	123.17	55.56	69.61	19.2 %	23.8 %
Brunei	14.31	6.88	8.08	2.4 %	9.5 %
Indonesia	41.08	18.71	23.52	6.5 %	-6.2 %
Malaysia	56.77	26.87	32.31	9.3 %	7.1 %
Papua New Guinea	17.74	8.12	10.14	2.8 %	6.0 %
Peru	8.10	3.72	4.65	1.3 %	-7.4 %
Russia	25.56	11.5	14.59	4.0 %	7.4 %
<b>Pacific Basin</b>	<b>286.71</b>	<b>131.35</b>	<b>162.91</b>	<b>45.3 %</b>	<b>10.8 %</b>
Oman	17.99	8.24	10.22	2.8 %	1.5 %
Qatar	171.37	77.50	97.80	26.7 %	-2.7 %
UAE	12.02	5.59	6.80	1.9 %	-4.6 %
<b>Middle East</b>	<b>201.38</b>	<b>91.33</b>	<b>114.82</b>	<b>31.5 %</b>	<b>-2.4 %</b>

	10 <sup>6</sup> m <sup>3</sup> liquid	10 <sup>6</sup> T	10 <sup>9</sup> m <sup>3</sup> (n) gaseous	Share (%)	2017/2016 (%)
Algeria	27.26	12.34	15.61	4.3 %	7.9 %
Angola	7.83	3.53	4.48	1.2 %	367.1 %
Egypt	1.79	0.78	1.04	0.3 %	51.8 %
Equatorial Guinea	8.59	3.83	4.97	1.3 %	13.5 %
Nigeria	45.05	20.34	25.72	7.0 %	14.4 %
Norway	8.70	3.90	4.99	1.3 %	-13.2 %
Trinidad & Tobago	23.76	10.19	13.82	3.5 %	-2.6 %
USA	28.46	12.24	16.68	4.2 %	363.5 %
<b>Atlantic Basin</b>	<b>151.43</b>	<b>67.13</b>	<b>87.31</b>	<b>23.2 %</b>	<b>30.5 %</b>
<b>Total</b>	<b>639.52</b>	<b>289.81</b>	<b>365.04</b>	<b>100 %</b>	<b>9.9 %</b>

# SOURCE OF IMPORTS: 2017 VS 2016 (MT)



# 2017 MAJOR LNG FLOWS



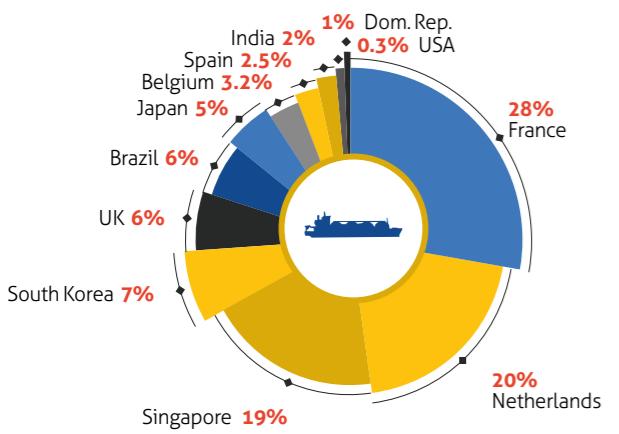
# INTERNATIONAL RE-EXPORTS

(Based on cargoes received in 2017)

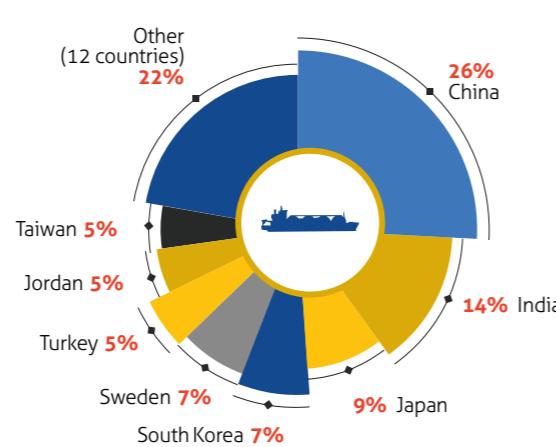


Re-Exporting Country	Import country	Re-exported volumes (MT)	Total (MT)
Belgium	Finland	0.01	0.09
	Sweden	0.08	
	Belgium	0.01	
	Brazil	0.07	
	China	0.26	
	Egypt	0.07	
	India	0.07	
	Japan	0.12	
	Netherlands	0.06	
	UAE	0.06	
France	India	0.12	0.73
	Jordan	0.13	
	Brazil	0.01	
	China	0.26	
	Egypt	0.07	
	India	0.07	
	Japan	0.12	
Netherlands	Netherlands	0.06	0.54
	UAE	0.06	
	India	0.12	
	Jordan	0.13	
	Kuwait	0.07	
Spain	Spain	0.06	0.06
	Belgium	0.03	
	India	0.07	
	Turkey	0.07	
UK	India	0.06	0.17
	Belgium	0.03	
	India	0.07	
Europe	Turkey	0.07	
			1.59

RE-EXPORTS LOADED BY RELOADING COUNTRY IN 2017 (2.6 MT)



RE-EXPORTS RECEIVED BY RECEIVING COUNTRY IN 2017 (2.6 MT)

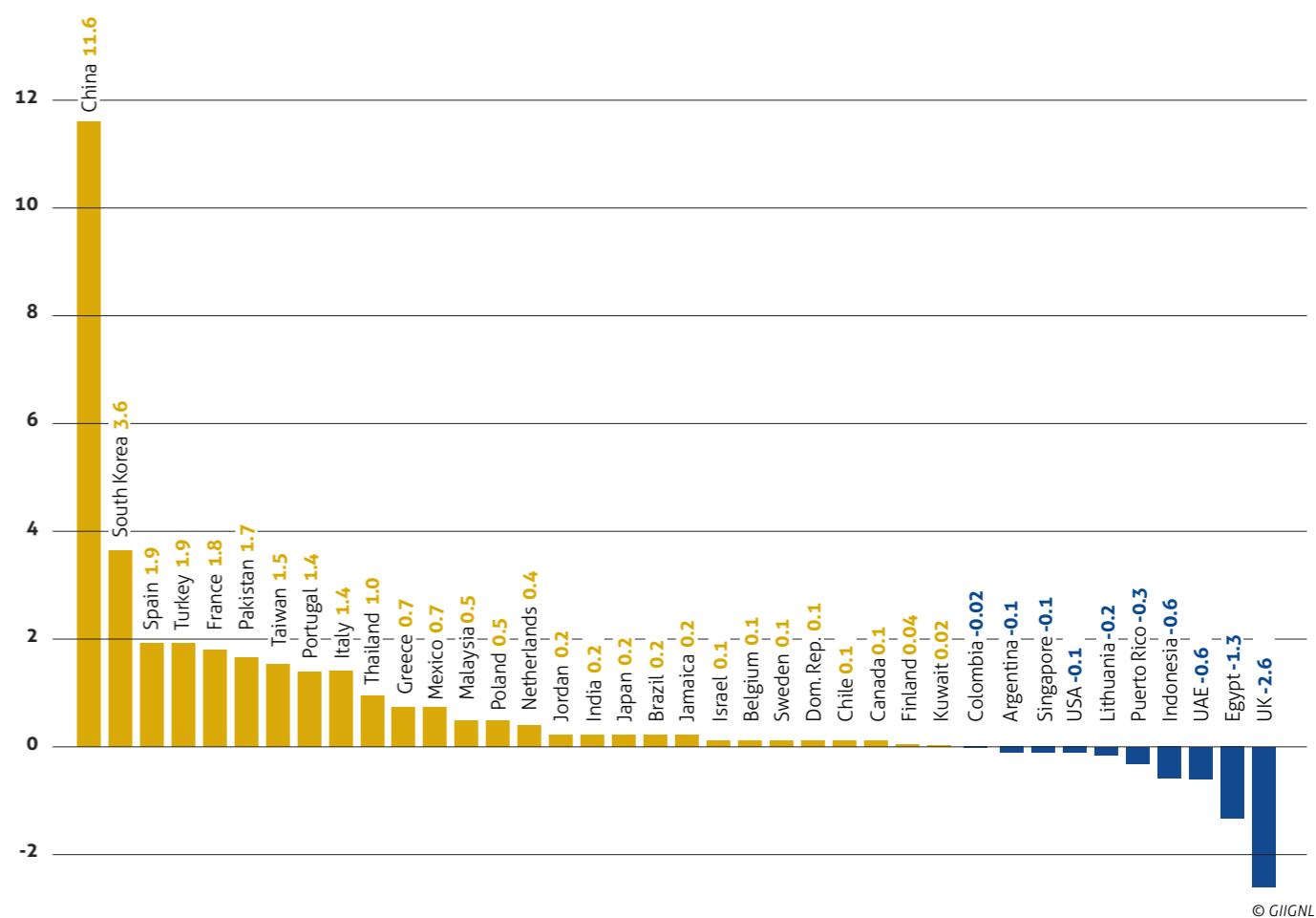


© GIGNL

# LNG IMPORTS 2017 (NET OF RE-EXPORTS)

	10 <sup>6</sup> m <sup>3</sup> liquid	10 <sup>6</sup> T	10 <sup>9</sup> m <sup>3</sup> (n) gaseous	Share (%)	Var. 2017/2016 (%)		10 <sup>6</sup> m <sup>3</sup> liquid	10 <sup>6</sup> T	10 <sup>9</sup> m <sup>3</sup> (n) gaseous	Share (%)	Var. 2017/2016 (%)	
China	86.88	39.01	49.42	13.5 %	42.3 %		Argentina	7.52	3.35	4.32	1.2 %	-2.2 %
India	42.61	19.22	24.33	6.6 %	1.2 %		Brazil	3.67	1.62	2.12	0.6 %	10.9 %
Indonesia	5.89	2.64	3.37	0.9 %	-18.3 %		Canada	0.66	0.29	0.38	0.1 %	23.3 %
Japan	180.49	83.52	102.63	28.8 %	0.2 %		Chile	7.58	3.27	4.41	1.1 %	2.0 %
Malaysia	3.93	1.80	2.22	0.6 %	36.2 %		Colombia	0.07	0.03	0.04	0.01 %	-44.8 %
Pakistan	10.22	4.62	5.84	1.6 %	56.4 %		Dom. Rep.	2.03	0.87	1.18	0.3 %	8.8 %
Singapore	4.45	2.00	2.53	0.7 %	-3.8 %		Jamaica	0.38	0.17	0.22	0.1 %	1366.5 %
South Korea	83.84	37.83	47.80	13.1 %	10.6 %		Mexico	10.94	4.78	6.35	1.6 %	16.7 %
Taiwan	36.68	16.61	20.93	5.7 %	10.2 %		Puerto Rico	2.18	0.94	1.27	0.3 %	-24.8 %
Thailand	8.72	3.95	4.97	1.4 %	31.9 %		USA	3.44	1.49	2.00	0.5 %	-6.7 %
<b>Asia</b>	<b>463.71</b>	<b>211.18</b>	<b>264.05</b>	<b>72.9 %</b>	<b>10.2 %</b>		<b>Americas</b>	<b>38.46</b>	<b>16.80</b>	<b>22.31</b>	<b>5.8 %</b>	<b>4.1 %</b>
Belgium	1.94	0.88	1.11	0.3 %	11.7 %		Egypt	13.66	6.18	7.81	2.1 %	-17.7 %
Finland	0.12	0.05	0.07	0.02 %	196.8 %		Israel	0.89	0.38	0.52	0.1 %	38.0 %
France	16.26	7.35	9.30	2.5 %	32.4 %		Jordan	7.44	3.31	4.29	1.1 %	8.0 %
Greece	2.82	1.28	1.62	0.4 %	139.3 %		Kuwait	7.81	3.51	4.47	1.2 %	0.6 %
Italy	13.21	5.97	7.55	2.1 %	30.1 %		UAE	5.49	2.47	3.15	0.9 %	-20.1 %
Lithuania	1.92	0.85	1.10	0.3 %	-15.3 %		<b>Middle East</b>	<b>35.30</b>	<b>15.85</b>	<b>20.24</b>	<b>5.5 %</b>	<b>-9.1 %</b>
Malta	0.54	0.23	0.31	0.1 %	N/A		<b>Total</b>	<b>639.52</b>	<b>289.81</b>	<b>365.04</b>	<b>100 %</b>	<b>9.9 %</b>
Netherlands	1.71	0.77	0.98	0.3 %	108.3 %							
Poland	2.82	1.27	1.61	0.4 %	56.0 %							
Portugal	6.03	2.71	3.46	0.9 %	107.3 %							
Spain	26.86	12.10	15.39	4.2 %	19.0 %							
Sweden	0.70	0.32	0.40	0.1 %	35.1 %							
Turkey	16.32	7.33	9.36	2.5 %	34.0 %							
UK	10.79	4.88	6.17	1.7 %	-34.7 %							

# LNG IMPORTS: 2017 vs 2016 (MT)



© GIGNL



# LIQUEFACTION PLANTS

## In 2017, global liquefaction capacity increased by 25.4 MTPA to reach a total nameplate capacity of around 365 MTPA at year-end.

The year was marked by the first LNG exports from a floating liquefaction unit (FLNG), the PFLNG Satu (1.2 MTPA) and the start-up of LNG exports from the Arctic Region with the first cargoes shipped from Yamal LNG Train 1 (5.5 MTPA).

New production was also driven by new Australian capacity (Gorgon Train 3 and Wheatstone LNG Train 1) and new US capacity (Sabine Pass Train 3 and Train 4).

Only 1 FID was taken during the year, sanctioning the Coral FLNG project (3.4 MTPA) in Mozambique.

At the end of the year, approximately **89 MTPA** of new liquefaction capacity was under construction, 49 MTPA of which is located in the United States and 17 MTPA in Australia.

In 2018, around **38 MTPA** of new liquefaction capacity is expected to come online, 13 MTPA of which is located in the United States.

### Angola

In Angola, production from the Chevron-led Angola LNG project (5.2 MTPA) at **Soyo** in the north of the country steadily ramped up in 2017 after years of setbacks following the export of the first cargo in June 2013. Angola LNG signed several multi-year LNG contracts with Glencore, RWE and Vitol during the year.

### Australia

In Australia, Gorgon LNG Train 3 (5.2 MTPA) and Wheatstone LNG Train 1 (4.45 MTPA) started commercial operation.

- Chevron's **Gorgon LNG** (3 trains, 15.6 MTPA) started exports from its first two trains in 2016.
- In 2017, production from the first two trains has ramped up and Train 3 started to produce.
- **Wheatstone LNG** project (2 trains, 8.9 MTPA) loaded the first cargoes from its first train during the fourth quarter of 2017. Production from Train 2 is expected to start in 2018.

Inpex announced during the year that the **Ichthys** LNG Project is more than 90% complete. FID for the project was reached in 2012 and production is scheduled to start during the first half of 2018.

The project is expected to produce 8.9 MTPA of LNG and 1.6 MTPA of LPG, along with more than 100,000 barrels of condensate per day at peak. The Ichthys LNG Project is a joint venture between INPEX (operator), Total, CPC, Tokyo Gas, Osaka Gas, Kansai Electric Power, JERA and Toho Gas.

In July 2017, the **Prelude** FLNG unit has arrived in Australian waters to commence its hook-up and commissioning phase. Prelude is 488m long and 74m wide floating facility, moored approximately 475km north-north east of Broome in Western Australia. It will produce 3.6 MTPA of LNG, 1.3 MTPA of condensate and 0.4 MTPA of LPG. The Prelude FLNG facility will be operated by Shell in joint venture with INPEX (17.5%), KOGAS (10%) and CPC (5%).

### Cameroon

In 2017, Golar informed that the Golar Hilli had been successfully converted into an FLNG unit



that the company will proceed to start-up once an offtake agreement with PLN for the supply of LNG is finalised.

### Iran

The National Iranian Oil Company (NIOC) and IFLNG (a joint venture of Norway's Hemla and Iran's Kharg Gas Refining) are developing an FLNG project in Iran which would receive 2.3 mcm/day of gas from the South Pars field for 20 years.

Exmar is reported to be in negotiations for the use of its **Caribbean FLNG** vessel for this project. The barge-based liquefaction facility, delivered to Exmar from Wilson's shipyard in Nantong in July 2017, was initially destined to go to Colombia, but the contract was terminated in 2016. Caribbean FLNG has a capacity to produce around 0.5 MTPA of LNG.

### Malaysia

The 1.2 MTPA **PFLNG Satu** loaded its first cargo in April 2017.

The 1.5 MTPA **Rotan FLNG** (PFLNG 2), will enable liquefaction, production and offloading from the Rotan field, 240 kilometers offshore Sabah. The unit should be operational in 2020.

### Mexico

Sempra's subsidiary IEnova and Pemex are evaluating the possibility to construct a 2 x 6.2 MTPA liquefaction facility at **Energia Costa Azul** LNG receiving terminal. All major permits required have been received.

### Mozambique

In June, ENI and its partners (Galp Energia, Kogas and ENH) announced that they took FID on the **Coral South** LNG project in Mozambique. The FLNG will have a capacity of around 3.4 MTPA and will be the first FLNG in Africa. The Coral field, discovered in May 2012, is located within Area 4 of the Rovuma Basin and contains approximately 450 Bcm (16 Tcf) of gas in place. In 2016, BP committed to be the sole offtaker from the project for 20 years.

Anadarko and its partners (ENH, Mitsui, ONGC Videsh, Beas Rovuma Energy, BPRL Ventures and PTTEP) are developing a 12.9 MTPA LNG project in northern Mozambique. The project will support the development of the Golfinho/Atum fields located within Area 1 of the Rovuma Basin. In February 2018, Anadarko signed a 1.2 MTPA contract with EDF for 15 years and in March 2018 the project was approved by the Government of Mozambique.

### Papua New Guinea

In February 2018, ExxonMobil teamed up with Total to increase the capacity of its **PNG LNG** plant (6.9 MTPA) to around 16 MTPA. The expansion would include three new LNG trains which will process gas from the Elk-Antelope fields run by Total and existing fields and the new P'nyang field run by ExxonMobil. PNG LNG partners (ExxonMobil, Oil Search, Kumul Petroleum, Santos, JXTG, Marubeni and MRDC) and Total could start FEED work in the second half of 2018 and take an FID in 2019 with first LNG expected in 2023-2024.

In March 2018, the plant was affected by an earthquake which hit the country and will be closed until May 2018 to restore production.

**Elba Island** is constructing a 2.5 MTPA liquefaction facility. First LNG for export is expected around mid-2018.

At the end of 2017, **Freeport LNG** project (15.3

MTPA) was about 70% complete on all three trains but just under 50% complete in terms of the construction. The first train (5.1 MTPA) could start producing at the end of 2018 and full three-train operation is expected by the end of 2019 third quarter. A further expansion to add 5 MTPA of liquefaction capacity (Train 4) is under development, with commercial operations possibly starting as early as 2022.

Construction on **Corpus Christi**'s Trains 1 and 2 (9 MTPA) began in May 2015, and as of December 31, 2017, the overall project completion percentage for Trains 1 and 2 was approximately 81.8%.

Trains 1 and 2 should start production in the first and second half of 2019, respectively. Train 3 is under development, with all necessary regulatory approvals in place. Cheniere has entered into an EPC contract with Bechtel for this new train. Cheniere is also developing up to seven midscale liquefaction trains adjacent to the Corpus Christi Project and has initiated the regulatory approval process. The total expected nominal capacity of the seven trains is approximately 9.5 MTPA.

At **Cameron LNG** (3 trains, 12 MTPA) project, construction is on-going. The plant could start producing LNG by the end of 2018. Cameron LNG is jointly owned by Sempra LNG & Midstream, ENGIE, Mitsui and Japan LNG Investment (Mitsubishi Corporation, NYK).

Around **49 MTPA** are already under construction in the United States. Six projects (Cameron Trains 4 and 5, Corpus Christi Train 3, Golden Pass, Lake Charles, Magnolia, Sabine Pass Train 6) with a total nameplate capacity of around **56 MTPA** have already obtained FERC approval but have not started construction yet.

Among other proposed projects:

- In June 2017, Sempra LNG & Midstream and Woodside Energy signed an MOU with KOGAS regarding the development of the proposed **Port Arthur LNG** project (up to 13.5 MTPA) in Port Arthur, Texas. The MOU provides a framework for cooperation and joint discussion by the parties regarding KOGAS as a potential purchaser of LNG from, and equity participant in, the project. The project partners plan to take an FID on the project in 2019 and to start producing LNG in 2023.
- In September 2017, Edison committed to offtake 1 MTPA for 20 years from the **Calcasieu Pass LNG** project (10 MTPA). In March 2018, Shell agreed to increase the capacity of their existing 20-year LNG contract from 1 to 2 MTPA. Project developer Venture Global is expected to start operations in 2021.
- In November 2017, Tellurian awarded Bechtel the EPC contract for its **Driftwood LNG** project (27.6 MTPA). The project also filed formal application with the FERC in March 2017. FID and start of construction are expected in the first half of 2019. First LNG would be produced in 2023.



# LIQUEFACTION PLANTS AT THE END OF 2017

Country	Site	Liquefaction Number of trains	Nominal capacity in MTPA	Storage Number of tanks	Total capacity in liq m <sup>3</sup>	Owner(s)	Operator	MT-LTBuyer(s)	Start-up date
<b>ATLANTIC BASIN</b>									
ALGERIA	Arzew-Bethioua GL 1Z	6	7.9	3	300 000				1978
	Arzew-Bethioua GL 2Z	6	8.2	3	300 000	Sonatrach	Sonatrach	Botas, Cepsa Gas, DEPA, Endesa, Enel, ENGIE, ENI, Iberdrola	1981
	Arzew-Bethioua GL 3Z	1	4.7	2	320 000				2014
	Skikda GL1K	1	4.5	1	150 000				2013
ANGOLA	Soyo	1	5.2	1	360 000	Angola LNG (Chevron 36.4%, Sonangol 22.8%, BP 13.6%, ENI 13.6%, TOTAL 13.6%)	Angola LNG		2013
	Damietta (stopped)	1	5	2	300 000	Union Fenosa Gas (80%), EGPC (10%), EGAS (10%)	SEGAS SERVICES	BP, Union Fenosa Gas	2005
EGYPT	Idku T1	1	3.6		280 000	Shell (35.5%), Petronas (35.5%), EGPC (12%), EGAS (12%), ENGIE (5%)	Egyptian LNG	ENGIE	
	Idku T2	1	3.6			Shell (38%), Petronas (38%), EGAS (12%), EGPC (12%)		Shell	2005
EQUATORIAL GUINEA	Bioko Island	1	3.7	2	272 000	Marathon (60%), Sonagas (25%), Mitsui (8.5%), Marubeni (6.5%)	EG LNG	Shell	2007
	Bonny Island (NLNG T1&2)	2	6.6			Botas, Enel, ENGIE, Galp Energia, Gas Natural Fenosa			T1: 1999 T2: 2000
NIGERIA	Bonny Island (NLNG T3)	1	3.3	4	336 800	Nigeria LNG (NNPC 49%), Shell (25.6%), Total (15%), ENI (10.4%)	NLNG	Galp Energia, Gas Natural Fenosa	2002
	Bonny Island (NLNG T4 & 5)	2	8.2			Endesa, ENI, Galp Energia, Iberdrola, Shell, Total			2006
	Bonny Island (NLNG T6)	1	4.1			Shell, Total			2008
NORWAY	Hammerfest	1	4.2	2	250 000	Statoil (36.79%), Petro (30%), Total (18.4%), ENGIE (12%), RWE (2.81%)	Statoil	ENGIE, Iberdrola, Statoil, Total	2007
RUSSIA	Yamal LNG T1	1	5.5	4	640 000	Novatek (50.1%), Total (20%), CNPC (20%), Silk Road Fund (9.9%)	Yamal LNG	CNPC, Gas Natural Fenosa, Gazprom Trading Novatek, Total	2017
	Atlantic LNG T1	1	3.3	1	102 000	BP (34%), Shell (46%), CIC (10%), NGC Trinidad (10%)		ENGIE, Gas Natural Fenosa	1999
TRINIDAD & TOBAGO	Atlantic LNG T2 & 3	2	6.8	2	262 000	BP (42.5%), Shell (57.5%)	Atlantic LNG	BP, ENGIE, Gas Natural Fenosa, Naturgas Energia, Shell	T2: 2002 T3: 2003
	Atlantic LNG T4	1	5.2	1	160 000	BP (37.8%), Shell (51.1%), NGC Trinidad (11.1%)		BP, Shell	2006
USA	Sabine Pass T1	1	4.5			Cheniere Marketing, Shell			2016
	Sabine Pass T2	1	4.5	5	800 000	Sabine Pass Liquefaction (100%)	Cheniere	Cheniere Marketing, Gas Natural Fenosa, Shell	2016
	Sabine Pass T3	1	4.5			Cheniere Marketing, KOGAS, Shell			2017
	Sabine Pass T4	1	4.5			Cheniere Marketing, Gail, Shell			2017
<b>ATLANTIC BASIN TOTAL</b>									
		<b>111.6</b>			<b>4 832 800</b>				



Country	Site	Liquefaction Number of trains	Nominal capacity in MTPA	Storage Number of tanks	Total capacity in liq m <sup>3</sup>	Owner(s)	Operator	MT-LTBuyer(s)	Start-up date
<b>MIDDLE EAST</b>									
OMAN	Qalhat	2	7.1		240 000	Oman LNG Government of Oman (51%), Shell (30%), Total (5.5%), Korea LNG (5%), Mitsubishi (2.8%), Mitsui (2.8%), Partex (2%), Itochu (0.9%)	Itochu Corp., KOGAS, Osaka Gas	2000	
		1	3.7			Qalhat LNG Government of Oman (46.84%), Oman LNG (36.8%), Union Fenosa Gas (7.36%), Itochu (3%), Mitsubishi (3%), Osaka Gas (3%)	Itochu Corp., Mitsubishi, Osaka Gas, Union Fenosa Gas	2005	
QATAR	Ras Laffan (Qatargas I-T1 & 2)	2	6.4		340 000	Qatar Petroleum (65%), ExxonMobil (10%), Total (10%), Marubeni (7.5%), Mitsui (7.5%)	Qatargas I	Chugoku Electric, Gas Natural Fenosa, JERA, Kansai Electric, Osaka Gas, Shizuoka Gas, Toho Gas, Tohoku Electric, Tokyo Gas	T1: 1996 T2: 1997 T3: 1998
	Ras Laffan (Qatargas I-T3)	1	3.1			Qatar Petroleum (65%), ExxonMobil (18.3%), Total (16.7%)	Qatargas II	Pakistan State Oil	2009
	Ras Laffan (Qatargas II-T1)	1	7.8			Qatar Petroleum (70%), ExxonMobil (30%)		Total	2009
	Ras Laffan (Qatargas II-T2)	1	7.8		1 160 000	Qatar Petroleum (68.5%), ConocoPhillips (30%), Mitsui (1.5%)	Qatargas III	CNOOC, JERA, Kansai Electric, PGNiG, PTT, RWE Supply & Trading, Tohoku Electric	2010
	Ras Laffan (Qatargas III)	1	7.8			Qatar Petroleum (70%), ExxonMobil (30%)	Qatargas IV	Centrica, Marubeni, Petrochina, Petronas, Uniper	2011
	Ras Laffan (Rasgas I-T1 & 2)	2	6.6			Qatar Petroleum (63%), ExxonMobil (25%), KOGAS (5%), Itochu (4%), LNG Japan (3%)	RasGas I	Endesa, KOGAS	T1: 1999 T2: 2000
	Ras Laffan (Rasgas II-T1)	1	4.7					Petronet	2004
	Ras Laffan (Rasgas II-T2)	1	4.7	6	840 000	Qatar Petroleum (70%), ExxonMobil (30%)	RasGas II	Edison	2005
	Ras Laffan (Rasgas II-T3)	1	4.7					CPC, EDF Trading, ENI	2007
	Ras Laffan (Rasgas III-T1)	1	7.8				RasGas III	EDF, KOGAS, Petronet	2009
	Ras Laffan (Rasgas III-T2)	1	7.8					CPC, KOGAS, Petronet	2010
UAE	Das Island	3	5.8	3	240 000	ADNOC (70%), Mitsui (15%), BP (10%), Total (5%)	ADNOC LNG	JERA	1977
YEMEN (STOPPED)	Balhaf-T1 & 2	2	7.2	2	280 000	Yemen LNG (Total 39.6%, Hunt Oil Co. 17.2%, SK Corp. 9.6%, KOGAS 6%, Yemen Gas Co. 16.7%, Hyundai 5.9%, GASPP 5%)	Yemen LNG	ENGIE, KOGAS, Total	T1: 2009 T2: 2010
<b>MIDDLE EAST TOTAL</b>									
						<b>100.8</b>	<b>3 100 000</b>		



Country	Site	Liquefaction		Storage		Owner(s)	Operator	MT-LTBuyer(s)	Start-up date
		Number of trains	Nominal capacity in MTPA	Number of tanks	Total capacity in t/qm³				
<b>PACIFIC BASIN</b>									
AUSTRALIA	Withnell Bay - T1-5	5	16.3	4	260 000	Woodside, Shell, BHP BP Chevron (16.67% each), Mitsubishi, Mitsui (8.33% each)	Woodside	Chugoku Electric, GDLNG, JERA, Kansai Electric, Kyushu Electric, Osaka Gas, Shizuoka Gas, Toho Gas, Tohoku Electric, Tokyo Gas	T1 & 2: 1989 T3: 1992 T4: 2004 T5: 2008
	Darwin	1	3.7	1	188 000	ConocoPhillips (57%), ENI, Santos, Inpex (11% each), JERA (6%), Tokyo Gas (3%)	ConocoPhillips	JERA, Tokyo Gas	2006
	Pluto	1	4.3	2	240 000	Woodside (90%), Kansai Electric (5%), Tokyo Gas (5%)	Woodside	Kansai Electric, Tokyo Gas	2012
	Curtis Island - T1	1	4.3	1	140 000	Shell (50%), CNOOC (50%)	Shell	CNOOC, Shell	2015
	Curtis Island - T2	1	4.3	1	140 000	Shell (97.5%), Tokyo Gas (2.5%)		Shell, Tokyo Gas	2015
	GLNG - T1	1	3.9	2	280 000	Santos (30%), Petronas (27.5%), Total (27.5%), KOGAS (15%)	Santos	KOGAS, Petronas	2015
	GLNG - T2	1	3.9						2016
	APLNG - T1	1	4.5	2	320 000	ConocoPhillips (37.5%), Origin Energy (37.5%), Sinopec Group (25%)	Australia Pacific LNG	Sinopec	2016
	APLNG - T2	1	4.5					Kansai Electric, Sinopec	2016
	Gorgon - T1	1	5.2	2	360 000	Chevron (47.3%), ExxonMobil (25%), Shell (25%), Osaka Gas (1.25%), Tokyo Gas (1%), Chubu Electric (0.45%)	Chevron	BP, GS Caltex, JXTG Nippon Oil & Energy, Kyushu Electric, Osaka Gas, Petrochina, Petronet, SK Group, Tokyo Gas	2016
	Gorgon - T2	1	5.2						2016
	Gorgon - T3	1	5.2						2017
BRUNEI	Wheatstone - T1	1	4.45	2	300 000	Chevron (64.14%), KUFPEC (13.4%), Woodside (13%), JOGMEC (3.36%), Mitsubishi (3.17%), Kyushu Electric (1.46%), NYK (0.815%), JERA (0.65%)	Chevron	JERA, Kyushu Electric, Tohoku Electric	2017
	Lumut	5	7.2	3	195 000	Brunei gvt (50%), Shell (25%), Mitsubishi (25%)	Brunei LNG Sdn Bhd	JERA, KOGAS, Osaka Gas, Petronas, Shell, Tokyo Gas	1973
	Bontang - Badak E	1	11.5	6	630 000	Government of Indonesia (100%)	PT Badak NGL Pertamina (55%), VICO (20%), JILCO (15%), Total (10%)	CPC, ENI, JERA, Kansai Electric, KOGAS, Kyushu Electric, Nippon Steel, Nunsantara Regas, Osaka Gas, Pertamina, Toho Gas	1990
	Bontang - Badak F	1							1994
	Bontang - Badak G	1							1998
	Bontang - Badak H	1							1998
INDONESIA	Tangguh	2	7.6	2	340 000	Tangguh LNG (BP 40.26%, CNOOC 13.9%, JX Nippon 13.5%, Mitsubishi 9.9%, INPEX 7.8%, LNG Japan 7.4%, KG Berau 5%, Mitsui 2.3%)	Tangguh LNG	CNOOC, Kansai Electric, PLN, Posco, Sempra LNG, SKEPS, Tohoku Electric	2009
	Donggi-Senoro	1	2	1	170 000	Mitsubishi (45%), Pertamina (29%), KOGAS (15%), Medco (11%)	PT Donggi-Senoro LNG	JERA, KOGAS, Kyushu Electric	2015
	Bintulu MLNG 1 (Satu)	3	8.4	6	390 000	Petronas (90%), Mitsubishi (5%), Sarawak state gvt (5%)	Petronas	Hiroshima Gas, JERA, Saibu Gas, Shikoku Electric, Tokyo Gas	1983
MALAYSIA	Bintulu MLNG 2 (Dua)	3	9.6			Petronas (80%), Mitsubishi (10%), Sarawak state gvt (10%)		CPC, JERA, JXTG Nippon Oil & Energy, KOGAS, Sendai City Gas, Shizuoka Gas, Tohoku Electric, Tokyo Gas	1995
	Bintulu MLNG 3 (Tiga)	2	7.7			Petronas (60%), Shell (15%), JXTG Nippon Oil & Energy (10%), Sarawak state gvt (10%), Diamond Gas (5%)		CNOOC, JAPEX, KOGAS, Osaka Gas, Toho Gas, Tohoku Electric, Tokyo Gas	2003
	Bintulu MLNG T9	1	3.6			Petronas (80%), JXTG Nippon Oil & Energy (10%), PTT (10%)		Hokkaido Electric, Hokuriku Electric	2016
	PFLNG Satu	1	1.2			Petronas (100%)	Petronas		2017
PAPUA NEW GUINEA	PNG LNG	2	6.9	2	320 000	Exxon Mobil (33.2%), Oil Search (29%), Indep Public Business Corp (16.6%), Santos (13.5%), JXTG Nippon Oil & Energy (3.7%), MRDC (2.8%), Marubeni (1%), Petromin PNG (0.2%)	PNG LNG	CPC, JERA, Osaka Gas, Sinopec	2014
PERU	Peru LNG	1	4.5	2	260 000	Hunt Oil (50%), Shell (20%), SK Energy (20%), Marubeni (10%)	Hunt Oil	Shell	2010
RUSSIA	Sakhalin 2 - T1 & 2	2	10.8	2	200 000	Sakhalin Energy Invest Co, (Gazprom 50%, Shell 27.5%, Mitsui 12.5%, Mitsubishi 10%)	Sakhalin Energy Invest Co.	CPC, Gazprom, Hiroshima Gas, JERA, KOGAS, Kyushu Electric, Osaka Gas, Saibu Gas, Shell, Toho Gas, Tohoku Electric, Tokyo Gas	2009
USA	Kenai (mothballed)	1	1.5	3	108 000	ConocoPhillips	ConocoPhillips		1969
<b>PACIFIC BASIN TOTAL</b>			<b>152.1</b>		<b>5 021 000</b>				
<b>TOTAL</b>			<b>365</b>		<b>12 953 800</b>				

# LNG CHARACTERISTICS

The average composition is chosen as being representative among compositions reported by the different receiving terminals<sup>\*</sup>.

Origin	Nitrogen N2 %	Methane C1 %	Ethane C2 %	Propane C3 %	C4+ %	TOTAL	LNG Density kg/m <sup>3</sup> <sup>(1)</sup>	Gas Density kg/m <sup>3</sup> (n) <sup>(2)</sup>	Expansion ratio m <sup>3</sup> (n)/m <sup>3</sup> liq	Gas GCV (2) MJ/m <sup>3</sup> (n)	Wobbe Index (2) MJ/m <sup>3</sup> (n)
Australia - NWS	0.04	87.33	8.33	3.33	0.97	100	467.35	0.83	562.46	45.32	56.53
Australia - Darwin	0.10	87.64	9.97	1.96	0.33	100	461.05	0.81	567.73	44.39	56.01
Algeria - Skikda	0.63	91.40	7.35	0.57	0.05	100	446.65	0.78	575.95	42.30	54.62
Algeria - Bethioua	0.64	89.55	8.20	1.30	0.31	100	454.50	0.80	571.70	43.22	55.12
Algeria - Arzew	0.71	88.93	8.42	1.59	0.37	100	457.10	0.80	570.37	43.48	55.23
Brunei	0.04	90.12	5.34	3.02	1.48	100	461.63	0.82	564.48	44.68	56.18
Egypt - Idku	0.02	95.31	3.58	0.74	0.34	100	437.38	0.76	578.47	41.76	54.61
Egypt - Damietta	0.02	97.25	2.49	0.12	0.12	100	429.35	0.74	582.24	40.87	54.12
Equatorial Guinea	0.00	93.41	6.52	0.07	0.00	100	439.64	0.76	578.85	41.95	54.73
Indonesia - Arun	0.08	91.86	5.66	1.60	0.79	100	450.96	0.79	571.49	43.29	55.42
Indonesia - Badak	0.01	90.14	5.46	2.98	1.40	100	461.07	0.82	564.89	44.63	56.17
Indonesia - Tāngguh	0.13	96.91	2.37	0.44	0.15	100	431.22	0.74	581.47	41.00	54.14
Malaysia - Bintulu	0.14	91.69	4.64	2.60	0.93	100	454.19	0.80	569.15	43.67	55.59
Nigeria	0.03	91.70	5.52	2.17	0.58	100	451.66	0.79	571.14	43.41	55.50
Norway	0.46	92.03	5.75	1.31	0.45	100	448.39	0.78	573.75	42.69	54.91
Oman	0.20	90.68	5.75	2.12	1.24	100	457.27	0.81	567.76	43.99	55.73
Peru	0.57	89.07	10.26	0.10	0.01	100	451.80	0.79	574.30	42.90	55.00
Qatar	0.27	90.91	6.43	1.66	0.74	100	453.46	0.79	570.68	43.43	55.40
Russia - Sakhalin	0.07	92.53	4.47	1.97	0.95	100	450.67	0.79	571.05	43.30	55.43
Trinidad	0.01	96.78	2.78	0.37	0.06	100	431.03	0.74	581.77	41.05	54.23
USA - Alaska	0.17	99.71	0.09	0.03	0.01	100	421.39	0.72	585.75	39.91	53.51
Yemen	0.02	93.17	5.93	0.77	0.12	100	442.42	0.77	576.90	42.29	54.91

Last updated in 2012

Conversion table	Tonnes LNG	$m^3$ LNG (liquid) <sup>(1)</sup>	$m^3$ gas (n) <sup>(2)</sup>	$ft^3$ gas (n) <sup>(2)</sup>	$ft^3$ gas standard (scf) <sup>(3)</sup>	MMBtu
Tonnes LNG		2.21	$1.27 \times 10^{-3}$	44.96	47.53	51.02
$m^3$ LNG (liquid) <sup>(1)</sup>	0.45		571	20.17	21.31	23.12
$m^3$ gas (n) <sup>(2)</sup>	$7.85 \times 10^{-4}$	$1.75 \times 10^{-3}$		$3.53 \times 10^{-2}$	$3.73 \times 10^{-2}$	37.33
$ft^3$ gas (n) <sup>(2)</sup>	$2.22 \times 10^{-8}$	$4.96 \times 10^{-5}$	$2.83 \times 10^{-2}$		1.05	$1.15 \times 10^{-3}$
$ft^3$ gas standard (scf) <sup>(3)</sup>	$2.10 \times 10^{-8}$	$4.69 \times 10^{-5}$	$2.68 \times 10^{-2}$	$9.48 \times 10^{-1}$		$1.09 \times 10^{-3}$
MMBtu	16.00	16.00	16.00	16.00	16.00	16.00

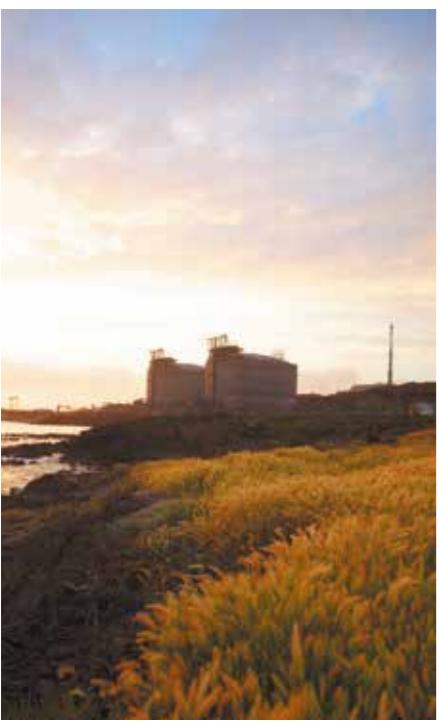
(1) Calculated according to ISO 6578 [ $T = -160^{\circ}\text{C}$ ]

(2) Calculated according to ISO 6976 [ $0^\circ\text{C} / 0^\circ\text{C}, 1.01325 \text{ bar}]$

(3) Standard conditions [15°C / 15°C, 1.01325 bar]







# REGASIFICATION TERMINALS

## In 2017, global regasification capacity reached 850 MTPA at year-end.

At year-end, **40 countries** were LNG importers. **Malta** is the only new country which joined the ranks of importers during the year.

**Five new terminals** were commissioned, adding a combined **11.5 MTPA** of new regasification capacity. Two of these terminals are based on floating solutions (in Malta and in Pakistan).

Two expansions were also completed in Singapore and in Thailand.

At the end of the year, 9 new offshore terminals and 15 new onshore terminals were reported to be under construction, 5 of which in China.

Eight expansion projects were also underway (1 in Belgium, 3 in China, 1 in Greece, 1 in India, 1 in Taiwan and 1 in Thailand) and 2 were planned to start in China in 2018.

Total regasification capacity under construction at year end reached **103.5 MTPA** of which 52.3% or 54.1 MTPA located in Asia.

In addition, several FSRU projects have been proposed in new markets including Australia, Bangladesh, Croatia, Cyprus, El Salvador, Ghana, Ireland, Ivory Coast, Lebanon, Myanmar, Philippines, South Africa, Sri Lanka and Vietnam.

Additional projects are being proposed in **Moheskali**, **Kutubdia**, in the port of **Chittagong** and in **Payra**.

### Belgium

Fluxys is building a fifth storage tank at the **Zeebrugge** terminal. With a capacity of 180,000 m<sup>3</sup>, the tank will support the transhipment of cargoes from Russia's Yamal LNG project. The tank is scheduled to be commissioned in mid-2019.

In April 2017, OMERS Infrastructure Holding became a shareholder of **GNL Quintero** S.A. after acquiring a 34.6% holding from Enagas. In turn, Enagas announced that it had acquired Oman Oil's 19.6% stake in Terminal de Valparaíso. After these transactions, GNL Quintero's shareholder structure is as follows: Terminal de Valparaíso S.A. (Enagas) (40%), OMERS Infrastructure Holdings (29.6%), ENAP (20%) and Terminal Bahía de Quintero (10.4%) (Enagas Chile – 5.4%, OMERS – 5%).

Fluxys has also decided to invest in the construction of a second truck loading station in Zeebrugge. The new truck loading station will enter in service in mid-2018 and will enhance the capacity from 4,000 to 8,000 loadings per year.

### Brazil

In the state of Sergipe, construction of the **Porto de Sergipe** project is ongoing. Sergipe is an 1.5 GW integrated gas-to-power project which is scheduled to start operating in 2019. The project leaders are CELSE and Golar Power (Golar, Stonepeak Infrastructure Partner). Golar Power will provide the *Golar Nanook* FSRU for 25 years for the project. The ship is under construction in Korea and is due to arrive in November 2018.

Another gas to power project is being developed at **Porto de Açu**. The project includes an FSRU with a capacity of 2.7 MTPA which would supply a 1.2 GW CCGT plant.

### Chile

The 4 MTPA **Penco-Lirquén** LNG import project – previously Octopus LNG – which will be located in Concepción Bay has been delayed in 2017 by up to 18 months. Start-up is now expected between late 2019 and the second quarter of 2020. The project is being developed by Biobiogenera, EDF and Cheniere. Höegh LNG will provide an FSRU for 20 years for the project.

In April 2017, OMERS Infrastructure Holding became a shareholder of **GNL Quintero** S.A. after acquiring a 34.6% holding from Enagas. In turn, Enagas announced that it had acquired Oman Oil's 19.6% stake in Terminal de Valparaíso. After these transactions, GNL Quintero's shareholder structure is as follows: Terminal de Valparaíso S.A. (Enagas) (40%), OMERS Infrastructure Holdings (29.6%), ENAP (20%) and Terminal Bahía de Quintero (10.4%) (Enagas Chile – 5.4%, OMERS – 5%).

### China

In 2017 two LNG terminals started operations:

- In Guangdong the 2 MTPA **Yuedong** LNG terminal owned and operated by CNOOC
- In Jiangsu, the 0.6 MTPA **Qidong** terminal developed by independent company Guanghui Energy

In Shenzhen, CNOOC **Diefu**'s 4 MTPA LNG terminal was completed in 2016 but commissioning has been delayed to 2018.

In **Tianjin**, the relet of *GDF Suez Cape Ann* as regasification terminal for CNOOC ended in January 2017. However, the vessel was again relet to **CNOOC** for the same service starting in October 2017. The FSRU has been chartered by H-Energy and is due to leave China to be relocated to India by the third quarter of 2018. An onshore terminal (3.5 MTPA) is being built to replace the FSRU and could start operations before the end of the year.

Three additional terminals were reported to be under construction at the end of 2017:

- In **Tianjin**, **Sinopec** announced in February 2018 it had received a first LNG cargo at its terminal.

The terminal will supply gas to Beijing, Tianjin, Hebei and Shandong areas, in order to meet demand in the region. The Tianjin LNG terminal has a 3 MTPA regasification capacity.

- In Zhejiang, the 3 MTPA **Zhoushan** LNG receiving and bunkering terminal developed by independent company ENN is expected to be commissioned in mid-2018.
- In Guangdong, Chaozhou Huafeng is converting its **Chaozhou** LPG terminal into an LNG terminal. The terminal will have a capacity of 3 MTPA, which could be expanded to 6 MTPA during a second phase. The terminal is expected to start operating in 2018.

Three expansions were also underway at CNOOC's **Fujian**, Guanghui's **Qidong** and CNPC's **Tangshan** LNG terminals.

In 2017, CNPC and partners Guangdong Yudean Power-Pacific Oil & Gas announced that they plan to start construction of their terminals in **Shenzhen** (3 MTPA) and **Yangjiang** (2 MTPA) in 2018. Both terminals should be completed in 2021 and 2023 respectively.

In November 2017, CNOOC received regulatory approval from the National Development and Reform Commission for the first phase of the 3 MTPA **Zhangzhou** LNG terminal in Fujian province. The first phase is expected to be completed by the end of 2021 and start up in 2022. The project will include two 160,000 m<sup>3</sup> LNG storage tanks, and a third storage tank could be added in the future.

in 2018. EDP also expects to finalize financing in 2018 and to start terminal operations in late 2020. Shell has signed an LNG supply agreement with EDP regarding the project in 2017.

### Finland

The **Manga** LNG terminal in Finland received its first LNG commissioning cargo in 2017. The Manga LNG import terminal in Röyttä Harbor, Tornio, is a joint venture of Outokumpu, SSAB Europe, EPV Energy and Skangas. The terminal will have a capacity of 0.4 MTPA and will be completed in 2018.

### France

At **Dunkirk** LNG terminal, the net volume of storage of the terminal has been increased from 570,000 m<sup>3</sup> to 600,000 m<sup>3</sup>. A fast reloading facility with a loading rate of 8,800 m<sup>3</sup>/h is being built and should start operating at the end of 2018.

Dunkerque LNG took an FID for the construction of a truck loading facility which should start commercial operations at the end of 2018.

At **Montoir** LNG terminal, Engie has improved its facilities through the renovation of both berths and the installation of BOG compressors in order to accommodate calls of ice-breaking LNG carriers and to upgrade its LNG transshipment service.

At **Fos Tonkin**, a new LNG high pressure pump has been commissioned in order to operate at very low flow rates, and thus improve send-out profile performances.

At Montoir and at Fos Tonkin, the truck loading capacity has been increased by 50% in 2017.

Fosmax LNG has taken an FID regarding the construction of a new truck loading facility in **Fos Cavaou** which will allow to load up to 20 trucks per day from early 2019.

### Colombia

#### Colombia

#### Colombia

#### Colombia

#### Colombia

In November 2016, the first LNG import terminal (up to 3.75 MTPA) which uses an FSRU at the port of **Cartagena**, located on the country's Caribbean coast, started operations.

In October 2017, Columbian authorities have launched a feasibility study regarding a second LNG terminal which would be located at the port of **Buenaventura** on the country's Pacific coast.

### Croatia

LNG Croatia LLC is developing an LNG terminal project on the island of **Krk** in the Northern Adriatic sea. The project which is facing strong local opposition could be completed by the end of 2019 and start operating in early 2020. The European Union has committed to invest 101.4 million euros or 28% of the project's assessed value. The terminal's initial annual capacity is planned to be 1.9 MTPA.

### Cyprus

Cyprus is planning to construct an FSRU-based LNG import terminal at the Port of **Vasiliakos**. According to government plans, Cyprus should start importing LNG from year-end 2019 to generate electricity. The Cynergy project comprises a jetty and infrastructure for an FSRU.

### Egypt

In June 2017, the **BW Singapore** FSRU was moved to **Sumed** port, located approximately 10 km south of its previous location in Ain Sokhna.

### El Salvador

Energía del Pacífico (EDP) is developing an LNG-to-power project at the port of **Acajutla**. It will deploy an FSRU for the project which should be selected

### Gibraltar

In November 2017, the first two LNG storage tanks were delivered at the LNG terminal under construction in **Gibraltar**. Construction is progressing. Major civil works are complete and equipment is being installed. The small-scale LNG terminal will be commissioned in 2018.

### Greece

DEPA has entered into a cooperation agreement with Gastrade to develop jointly with BEH (Bulgarian Energy Holding) and the shipping company Gaslog a new project using an LNG vessel converted into an FSRU at **Alexandroupolis**, in Northern Greece. The terminal will have a capacity of 4.5 MTPA. The LNG facility will supply gas to Southeastern Europe through the planned new gas pipeline that will cross through Greece, the Interconnector Greece-Bulgaria (IGB). The IGB and the LNG terminal will also be connected to the Trans-Adriatic Pipeline system which has been under construction and will transport gas from Azerbaijan to European markets. Partners are expected to take an FID on the project in late 2018 and to start terminal operations in 2020. In 2017, the construction of a new tank of 95,000 m<sup>3</sup> and associated facilities continued at the existing **Revithoussa** terminal. Regasification capacity will be increased in June 2018 and the new tank will be completed by the end of 2018. The total storage capacity of the terminal will reach 225,000 m<sup>3</sup> and the terminal will be able to handle fully laden Q-flex vessels. Under the PoseidonMed II project, a pilot truck loading facility is planned on Revithoussa island by the end of 2019 and LNG bunkering possibilities are being studied.

### India

The **Dahej** terminal is being expanded to 17.5 MTPA from the current capacity of 15 MTPA, which was reached in 2016.

In **Ennore**, Indian Oil Corporation is constructing a 5 MTPA terminal which should start operations in 2018-2019.

In **Mundra**, in the state of Gujarat, GSPC LNG is constructing a terminal with a capacity of 5 MTPA expandable up to 10 MTPA. Mundra LNG terminal will feature several facilities including a loading berth for LNG vessels, two LNG storage tanks of 160,000 m<sup>3</sup> and a truck loading bay. The LNG terminal and the LNG truck loading facility should be commissioned in mid-2018.

In 2017, Swan Energy awarded the EPC contract on the proposed **Jafrrabad** regasification terminal to Black & Veatch. Black & Veatch will deliver the FSRU project's jetty topside and onshore infrastructure. Swan Energy has ordered a 180,000 m<sup>3</sup> FSRU from Hyundai Heavy Industries (HHI) shipyard for the project. Mitsui OSK Lines has an option to participate in the ownership of the FSRU and the project.

H-Energy signed an agreement with ENGIE for the charter of its FSRU **GDF SUEZ Cape Ann** for the **Jaigarh** LNG terminal. The FSRU has a storage capacity of 145,000 m<sup>3</sup> and is equipped with regasification capacity of approximately 4 MTPA. Work has started at Jaigarh port on the construction of the jetty. The FSRU has been chartered by H-Energy for a period of 5 years and will arrive at Jaigarh during the third quarter of 2018.



**Indonesia**

Samsung Heavy Industries (SHI) has won an order from Pertamina-Marubeni-Sojitz consortium to build a 170,000 m<sup>3</sup> FSRU for a gas-to-power project in Indonesia. The FSRU will support the Marubeni-led **Jawa 1** 1.8 GW integrated power project, which is expected to receive its first LNG in 2021.

**Ireland**

Two import terminals are proposed in Ireland:

- The **Shannon LNG** project (4.5 MTPA) was revived in 2017. The project won planning permission in 2008 for a proposed deepwater terminal to import LNG. The proposed venture comprised four storage tanks and infrastructure to accommodate the largest Q-max LNG carriers.
- NextDecade has signed a preliminary agreement with the **Port of Cork** to develop a 3 MTPA offshore import project. LNG would be sourced from NextDecade's planned Rio Grande LNG project in South Texas and Flex LNG could deploy the related FSRU.

**Italy**

GNL Italia decided to warm up one of the two LNG storage tanks of **Panigaglia** LNG terminal for an extraordinary maintenance. This decision was made after the discovery of the presence of ice between the inner and outer tank during a refilling of perlite operation. Maintenance operations will be completed in January 2020. In October 2017, Snam completed the acquisition from Edison of a 7.3% share of Terminale GNL Adriatico S.r.l. (Adriatic LNG), which owns and operates the **Rovigo** LNG terminal.

**Ivory Coast**

Total and its partners are expecting to take an FID on the **Vridi** (Abidjan area) LNG terminal during the second half of 2018. The project involves the construction of a floating terminal with a capacity of 3 MTPA.

**Jamaica**

In **Montego Bay**, New Fortress Energy which operates the Jamaica import project chartered the *Golar Arctic* LNG tanker for two years. The vessel is used as an FSU near Kingston to store and deliver LNG which is shuttled to Montego by the small-scale LNG carrier *Coral Anthelia* (6,500 m<sup>3</sup>). Commercial operations have started in November 2016. *Golar LNG* is said to have reached an agreement with New Fortress Energy for the 15-year charter of either the *Golar Spirit* or *Golar Freeze* FSRUs to replace the *Golar Arctic* from the fourth quarter of 2018.

**Japan**

In February 2017, Shizuoka Gas performed its first reloading operation at **Sodeshi** LNG Terminal. In June 2017, TEPCO Fuel & Power, Inc. and Chubu Electric concluded a joint-venture agreement with the aim of integrating their fuel receiving/storage and gas transportation businesses, and existing thermal power generation businesses in Japan into JERA. Both companies expect this integration to be finalized during the first half 2019.

In December 2017, **Soma** LNG terminal has received its first commissioning cargo. The Soma LNG terminal comprises two LNG storage tanks of 230,000 m<sup>3</sup>, two berths for ocean-going and

domestic vessels, LNG vaporization equipment and truck loading facilities. Commercial operations are scheduled for 2018.

Hokuriku Electric Power is building an LNG terminal at **Toyama Shinko** which will be completed in 2018. It will receive LNG under a 10-year 0.38 MTPA contract with Malaysia LNG which was signed in 2016. The terminal will have a 180,000 m<sup>3</sup> tank. In February 2018, Tokyo Gas Engineering, Shikoku Electric, Sumitomo Chemical, Sumitomo Joint Electric Power and Shikoku Gas announced that they would build a new LNG terminal at Sumitomo's Nihamaka chemical plant, located on **Shikoku island**. The terminal, which will be built by Tokyo Gas Engineering, should start operations in February 2022. The terminal will feature a 230,000 m<sup>3</sup> storage tank and will supply gas to the existing chemical plant and a new 150 MW gas-fired power plant to be built by Sumitomo Joint Electric.

**Kuwait**

KNPC, a subsidiary of Kuwait Petroleum Corporation is building an onshore LNG import terminal in **Al-Zour**. The terminal will have a capacity of 22 MTPA and start-up is expected in 2020-2021.

**Lebanon**

In October 2017, the Lebanese energy ministry revived the possibility of LNG imports in the country. It explained that the country is planning to launch a tender for three LNG import terminals in Selaata, Tripoli and Zahran but the project has yet to be sanctioned by the cabinet.

**Lithuania**

In Lithuania, Klaipedos Nafta launched reloading operations to small scale LNGCs from the FSRU Independence. The first re-load of 15,000 m<sup>3</sup> to a small scale LNGC (*Coral Energy*) took place in January 2017. Separately, a new facility in the port of Klaipeda now offers truck loading of LNG and LNG bunkering.

**Malaysia**

In November 2017, Petronas Gas (Petgas) received its first commercial LNG cargo at the newly-commissioned **Pengerang** LNG terminal in Johor. The terminal, called RGTP, will provide gas supply to the Pengerang Integrated Complex which includes refinery and petrochemical plants, as well as a cogeneration plant. The terminal will also supply the peninsular gas utilisation system to increase the availability of gas in the country. The terminal has a total capacity of 3.5 MTPA. It includes two 200,000 m<sup>3</sup> LNG storage tanks and a jetty which can accommodate Q-Max carriers. The facility is operated by PLNG2 Sdn Bhd (PetGas 65%, Dialog LNG Sdn Bhd 25%, Permodalan Darul Takzim 10%). The Pengerang terminal is PetGas' second regasification facility to start operation after its first

Consortium partners Engro, Shell and Fatima are developing a 4.5 MTPA terminal. Excelerate Energy will supply an FSRU for the project. Commercial operations are expected to start in 2019.

**Myanmar**

In Myanmar, three LNG-to-power projects are being developed:

- Total and Siemens are developing a project in **Kan Pauk** which will include a 1.2 GW plant as well as an FSRU from 2021.
- Zhefu Holding Group and Supreme Trading are developing a project which will include a 1.4 GW plant and an FSRU at **Mee Laung Gaing** in Ayeyarwady Region. The project is scheduled to be completed in mid-2021.
- TTCL is also developing a 356 MW project at **Ahlon** near Yangon which would use LNG. More players have proposed LNG terminal projects for the country:
- CNPC is proposing to build a terminal on **Made island**, in Rakhine state off the west coast of Myanmar.
- PTT has reportedly completed a feasibility study and is waiting for final approval from the Myanmar government to build a 3 MTPA LNG terminal near **Dawei**.
- Shell, Italian-Thai Development and LNG Plus have also proposed a 6 MTPA LNG terminal in **Dawei**.

**Netherlands**

In July 2017, the Gate terminal in **Rotterdam** started commercial operations of two additional truck loading bays. Shell took delivery of the *Cardissa* - an LNG bunker vessel with a capacity of around 6,500 m<sup>3</sup> - from STX shipyard in June. The vessel will supply LNG from GATE terminal, where it arrived at the end of July, to locations across Europe.

**Pakistan**

Pakistan GasPort's LNG import terminal at **Port Qasim** in Pakistan received its first cargo in November 2017. The terminal has been developed by a consortium which includes Pakistan GasPort, BW Group, Fauji Oil Terminal and Distribution Company Limited (FOTCO) and Trafigura. LNG is being imported through the 170,000 m<sup>3</sup> *BW Integrity* FSRU. The terminal has a 5 MTPA total capacity. The new terminal more than doubles Pakistan's current LNG regasification capacity (one offshore terminal also located in Port Qasim, 4.5 MTPA). Two additional FSRU projects are being proposed in Port Qasim:

• Consortium partners Engro, Shell and Fatima are developing a 4.5 MTPA terminal. Excelerate Energy will supply an FSRU for the project. Commercial operations are expected to start in 2019.

• Trafigura announced in November 2017 it will partner with Pakistan Gas Port to develop a new FSRU project.

In November 2017, Höegh LNG announced it has terminated its agreement to charter a FSRU to Global Energy Infrastructure (GEIL) for a fifth LNG terminal in Port Qasim. Project partners Qatar Petroleum, Total, Mitsubishi and ExxonMobil also withdrew from the project.

**Panama**

AES awarded a contract to BAM International and Iconsa to build an LNG jetty in Costa Norte, at the Caribbean entrance of the Panama Canal. The construction started in the first quarter of 2017, with completion expected in 2018. The **Costa Norte** LNG terminal will have a regasification capacity of

1.5 MTPA and will accommodate vessels ranging between 30,000 m<sup>3</sup> and 180,000 m<sup>3</sup>. AES and Inversiones Bahia each own 50% of the terminal.

**Philippines**

EWC has announced that the construction of the **Pagbilao** LNG hub terminal is progressing. The facility is expected to enter into service in 2019. The company also said it has started building the terminal's second 130,000 m<sup>3</sup> tank. With the completion of the first tank, the facility will have a capacity of 3 MTPA, to supply the 650 MW gas-fired power plant being built adjacent to the LNG terminal.

The Philippines is also planning the construction of another LNG terminal in **Batangas** province. The construction of the 5 MTPA facility would take around 30 months. Imported LNG will fuel nearby power plants.

**Poland**

In April 2017, GAZ-SYSTEM took FID on the expansion of the LNG terminal in **Swinoujście**. Once completed, the regasification capacity will increase from 3.7 MTPA to 5.5 MTPA.

At the same time, GAZ-SYSTEM is conducting an analysis connected with the expansion of the terminal to include new functionalities. The terminal operator is considering adding new facilities including a third LNG tank, a second berth which could accommodate small-scale vessels/LNG bunker vessels, a facility to load ISO cryogenic containers and railroad tank cars and the expansion of existing truck loading facilities.

**Puerto Rico**

FERC has agreed to expand the send-out from the **Peñuelas** LNG terminal which would increase the number of LNG tanker-loads received annually from 24 to about 40. The increase in send-out capacity will be accomplished by placing into service one of the two existing spare LNG vaporizers.

**Russia**

Gazprom is developing an FSRU project for the Russian enclave of **Kaliningrad**. Gazprom will take delivery of its 170,000 m<sup>3</sup> FSRU *Marshal Vasilevskiy* in 2018 and could deploy it for the project.

**Singapore**

In August 2014, SLNG awarded an EPC contract for the expansion of the Singapore LNG terminal facilities. The expansion includes the addition of a fourth tank (260,000 m<sup>3</sup>) and nitrogen facilities to reduce the calorific value of regasified LNG. In September 2017, the regasification capacity of the terminal was increased to around 11 MTPA and the fourth tank will be completed in 2018.

In December 2017, SLNG carried out its first jetty-to-jetty LNG transfer. This involved simultaneous transfer of LNG from a vessel berthed at one jetty, to a second vessel berthed at the other jetty.

In 2017, SLNG has awarded contracts to modify its secondary jetty for accommodation of smaller vessels. In June 2017, SLNG carried out a cooling down and reload service for the 6,500 m<sup>3</sup> *Cardissa* LNG bunker vessel. In April 2017, SLNG officially launched the country's first LNG truck loading facility. SLNG terminal's masterplan provides for another four truck loading bays to be built

**Spain**

Enagás has carried out alterations to make tanker loading logistics more flexible at the **Cartagena** LNG Terminal, boosting the loading flow rate to 7,222 m<sup>3</sup>/h since January 2017. In October the first reloading operation after the improvements took place.

In April 2017, a vessel was directly bunkered from the terminal. This was a first European terminal-to-ship bunkering operation, as previous bunkering operations were truck-to-ship operations. The ship *Damia Desgagnés* received 370 m<sup>3</sup> of LNG.

During the year the **Bilbao** LNG terminal finalized the adaptation of its jetty, that is now compatible with large scale and small scale reloading/bunkering operations. The Bahía de Bizkaia Gas terminal is now able to receive vessels with a capacity from 600 m<sup>3</sup> to 270,000 m<sup>3</sup>.

**Sri Lanka**

In Sri Lanka, several projects are being proposed:

- A consortium led by Petronet LNG, Mitsubishi and Sojitz is proposing a 2.6-2.7 MTPA FSRU project to be located near **Colombo** on Sri Lanka's west coast. The LNG import project could be completed in 2020.

- SK is proposing to supply an FSRU free of charge if Sri Lanka government agrees to sign a 20-year take or pay LNG supply contract for up to 1 MTPA.
- China Machinery Engineering Corporation is proposing an LNG import and power project at **Hambantota** on the South Coast.

**South Africa**

The country has three potential LNG import projects – one in **Richards Bay** in KwaZulu-Natal Province, another in **Ngqura** (Coega) in the Eastern Province and a third in **Saldanha Bay**.

**South Korea**

The 3 MTPA **Boryeong** terminal jointly developed by GS Energy and SK E&S received its first cargo in November 2016 and started commercial operations at the beginning of 2017.

KOGAS awarded to POSCO consortium the EPC contract to build two 45,000-ton LNG tanks and associated facilities in Aewol on **Jeju Island**. The completion of construction is scheduled for August 2019.

KOGAS has also entered into time-charter agreement with K Line to operate a pair of small scale 7,500 m<sup>3</sup> LNG carriers to deliver LNG sourced from its Tongyeong terminal to Jeju Island for a 20-year period commencing in mid-2019.

**Taiwan**

Three new tanks and regasification facilities at **Taichung** terminal are under construction and are scheduled to be completed by the end of 2018. A third receiving terminal located off the coast of **Datan Borough Taoyuan**, northern Taiwan is being developed and could commence operations in 2025.

**Thailand**

The **Map Ta Phut** LNG terminal Expansion Phase 2 was completed in 2017. Total capacity was increased from 5 to 10 MTPA. A 1.5 MTPA capacity expansion is expected to be completed by the end of 2018.

Additional projects are being proposed by PTT in **Nong Fab** (onshore, 7.5 MTPA) in Rayong province

close to the existing Map ta Phut terminal and by EGAT in the **Gulf of Thailand** (offshore, 5 MTPA).

**Turkey**

Turkey's second FSRU has arrived at a port in the **Dörtyol** district, located in the Hatay province in 2017. The **MOL FSRU Challenger**, the world's largest FSRU (263,000 m<sup>3</sup>), has a 20 Mcm/d send-out capacity and will be chartered to BOTAS for 3 years. The FSRU started commissioning operations in February 2018. The country is also planning to build a terminal in **Saros Bay** on the Gallipoli peninsula.

**United Arab Emirates**

Sharjah National Oil Corporation (SNOC) is developing an LNG terminal using a FSRU off the west coast port of **Hamriyah**. The company is planning to charter a 180,000 m<sup>3</sup> FSRU to import up to 4 MTPA from late 2019. SNOC and Uniper have formed a joint venture to develop the project and FID is expected in 2018.

**United Kingdom**

In addition to truck loading services offered since 2015, **Grain LNG** started to distribute LNG by rail using ISO containers in July 2017. Grain terminal is also planning to develop an adapter barge in order to load small-scale vessels (1,000 m<sup>3</sup> to 20,000 m<sup>3</sup>). It plans to offer this new service to the market by the end of 2019-beginning of 2020.

In February 2017, Trafigura announced its plan to revive **Teesside** LNG terminal which was closed in 2015. The facility will include an FSRU. Trafigura has taken a long-term lease from PD Ports on the LNG terminal site. The two companies are working to obtain the necessary regulatory approvals for the project. Trafigura aims to start operations at the facility in mid-2018.

**Uruguay**

Uruguay had suspended its plan to install an FSRU. The **MOL FSRU Challenger** (263,000 m<sup>3</sup>) was delivered in 2017 was originally contracted to Gas Sayago and was to be anchored near **Montevideo** for 20 years.

**Vietnam**

PetroVietnam Gas is developing the 1 MTPA **Thi Vai** terminal in the southern province of Ba Ria Vung Tau. Commercial operations are expected around 2020-2021.

PetroVietnam is also developing a second LNG terminal project, the **Son My** terminal in the central province of Binh Thuan. The terminal would have a capacity of 1 to 3 MTPA and could start operating between 2023 and 2025.

# REGASIFICATION TERMINALS AT THE END OF 2017

Country	Site	Storage Number of tanks	Storage Total capacity in liqm³	Send-out Number of vaporizers	Send-out Nominal capacity in Bcm/y	Owner	Operator	Third Party Access	Additional Services offered	Start-up date
<b>AMERICAS</b>										
ARGENTINA	Bahia Blanca GasPort <sup>(OFFSHORE)</sup> Excelerate Exemplar	151 000	6	5.1	Owner: Excelerate Energy / Charterer: YPF	YPF	No			2008
	GNL Escobar <sup>(OFFSHORE)</sup> Excelerate Expedient	151 000	6	6.1	Owner: Excelerate Energy / Charterer: UTE Escobar (50% Enarsa, 50% YPF)	YPF	No			2011
BRAZIL	Bahia <sup>(OFFSHORE)</sup> Golar Winter	137 000		5.2	Owner: Golar / Charterer: Petrobras	Petrobras	No			2013
	Guanabara Bay <sup>(OFFSHORE)</sup> Excelerate Experience	173 400	6	8.1	Owner: Excelerate Energy / Charterer: Petrobras	Excelerate Energy	No	Reloading		2009
	Pecem <sup>(OFFSHORE)</sup> Golar Spirit	129 000	2	2.5	Owner: Golar / Charterer: Petrobras	Petrobras	No	Reloading		2009
CANADA	Canaport LNG	3	480 000	8	10	Repsol (75%), Irving Oil (25%)	Repsol Canada Ltd	Yes		2009
CHILE	Mejillones	1	175 000	3	2	CodeLco (37%), ENGIE (63%)	GNLM	Yes		2010
	Quintero	3	334 000	4	5.5	Terminal Bahia Quintero SpA S.A. [Enagas Chile (51.9%) Omers (48.1%)] (10.4%) ENAP (20%)	GNL Quintero S.A.	Yes	Truck loading	2009
						Terminal de Valparaíso GNL Quintero S.A. SA (Enagas Chile (100%) (40%), Omers Infraestructure Chile Holdings I SpA (29.6%)				
COLOMBIA	Cartagena <sup>(OFFSHORE)</sup> Höegh Grace	4	170 000	4	4	Owner: Höegh LNG / Charterer: Sociedad Portuaria El Cayao (SPEC)	Höegh LNG	No	Reloading Transshipment	2016
DOM. REP.	Punta Caucedo	1	160 000	3	2.3	AES	AES	No	Reloading Truck loading	2003
JAMAICA	Montego Bay <sup>(OFFSHORE)</sup> FSU Golar Arctic	140 600		0.5	Owner: Golar / Charterer: New Fortress Golar Energy					2016
MEXICO	Altamira	2	300 000	5	7.8	Terminal de LNG de Altamira (Vopak 60%, Enagas 40%)	Terminal de LNG	Yes		2006
	Energia Costa Azul	2	320 000	6	10.3	IEnova (Sempra)	IEnova (Sempra)	Yes	Reloading	2008
	Manzanillo	2	300 000		5.2	Samsung (37.5%), Kogas (25%), Mitsui (37.5%)	Kogas			2012
PUERTO RICO	Penuelas	1	160 000	2	2.1	Gas Natural Fenosa (47.5%), ENGIE (35%), Mitsui (15%), GE (2.5%)	Eco Electrica			2000
	Cameron LNG	3	480 000	10	15.5	Sempra (50.2%), ENGIE (16.6%), Mitsubishi (16.6%), Mitsui (16.6%)	Cameron LNG LLC	Yes	Reloading	2009
	Cove Point	5	380 000	10	10.7	Dominion Cove Point LNG	Dominion Cove Point LNG	Shell, BP, Statoil, Peakers 1/4 each		1978, restarted 2003
USA	Cove Point Expansion	2	320 000	15	8	Dominion Cove Point LNG	Dominion Cove Point LNG	Statoil		2008
	Elba Island	5	535 000	11	16.3	Southern LNG (Kinder Morgan)	Southern LNG	Yes		1978, expanded 2001, expanded 2006, expanded 2010
	Everett	2	155 000	4	6.9	ENGIE	ENGIE	Yes	Truck loading	1971
	Freeport LNG	2	320 000	7	18	Freeport LNG Development, L.P.	Freeport LNG Development, L.P.	Yes	Reloading	2008
	Golden Pass	5	775 000	8	21.4	QP (70%), Exxon (17.6%), Conoco Philips (12.4%)	Golden Pass LNG	No		2010
	GulfLNG Energy	2	320 000		12	Kinder Morgan (50%), GE (40%), AES (10%)	GulfLNG Energy	No		2011
	Lake Charles	4	425 000	14	24.3	Trunkline LNG	Trunkline LNG	Yes		1982, Infrastructure enhancement project completed March 2010
	Northeast Gateway <sup>(OFFSHORE)</sup>	151 000	6	4.1	Excelerate Energy	Excelerate Energy				2008
	Sabine Pass	5	800 000	24	41.4	Sabine Pass LNG	Cheniere	Yes	Reloading	2008
<b>AMERICAS TOTAL</b>		<b>7 942 000</b>		<b>255.4</b>						

Country	Site	Storage Number of tanks	Storage Total capacity in liqm³	Send-out Number of vaporizers	Send-out Nominal capacity in Bcm/y	Owner	Operator	Third Party Access	Additional Services offered	Start-up date
<b>ASIA</b>										
CHINA	Beihai, Guangxi	3	480 000		4	Sinopec	Sinopec			2016
	Dalian	4	640 000	3	7.8	Petrochina (75%), other companies	Petrochina	Yes	Reloading	2011
	Guangdong Dapeng, Shenzhen	4	640 000	7	9.2	CNOOC (33%), BP (30%), other companies	GDLNG	No	Truck loading	2006
	Dongguan, Guangdong province	2	160 000		1.4	Jovo Group				2013
	Fujian	4	640 000		6.9	Fujian LNG (CNOOC 60%, Fujian Inv. & Dev. Co. 40%)	CNOOC	No		2008
	Hainan	3	480 000		4.1	CNOOC (65%), other companies	CNOOC	No	Reloading	2014
	Qidong, Jiangsu	2	100 000		0.8	Guanghui Energy				2017
	Shandong Qingdao	4	480 000		4.2	Sinopec	Sinopec			2014
	Rudong, Jiangsu	4	680 000	3	8.5	Petrochina (55%), other companies	Petrochina	Yes		2011
	Shanghai, Mengtougou	3	120 000		0.2	Shanghai Gas Group	Shanghai Gas Group	No		2008
INDIA	Shanghai LNG	3	495 000		4.1	Shanghai LNG (CNOOC 45%, Shenergy Group Ltd 55%)	CNOOC	No		2009
	Tangshan (Caofeidian)	3	480 000		4.8	Petrochina (51%), Beijing Entreprises (29%), Hebei Natural Gas (20%)	Petrochina	Yes		2013
	Tianjin <sup>(OFFSHORE)</sup> GDF SUEZ Cape Ann	4	145 130	3	3	Owner: Höegh LNG (50%), MOL (48.5%), Tokyo LNG Tanker Co. Ltd. (1.5%) / Charterer: ENGIE - relet to CNOOC for 3.5 years until Jan 2017 and again for the Oct 2017-March 2018 period	Höegh LNG	No	Truck loading	2013, 2017
	Yuedong, Guangdong	3	480 000		2.7	CNOOC	CNOOC	No		2017
	Zhejiang, Ningbo	3	480 000		4.1	CNOOC (51%), other companies	CNOOC	No		2012
	Zhuhai (Gaolan)	3	480 000		4.8	CNOOC (25%), other companies	CNOOC		Reloading	2013
	Dabhol	2	320 000	6	2.4	Ratnagiri Gas & Power Ltd (GAIL, NTPC)	Gail	No		2013
	Dahej	6	932 000	19	18.8	Petronet LNG	Petronet LNG	Yes	Truck loading	2004, expansion in July 2009 and 2016
	Hazira	2	320 000	5	6.7	Hazira LNG Private Ltd (Shell 74%, Total 26%)	Hazira LNG Private Ltd	No		2005
	Kochi	2	368 000	6	6.3	Petronet LNG	Petronet LNG	Yes	Reloading, Truck loading	2013
INDONESIA	Arun Regas	2	220 000	1	2.1	PT Perta Arun Gas	PT Perta Arun Gas	Yes		2015
	Benoa <sup>(OFFSHORE)</sup> FRU+FSU				0.4	JSK Group (50%), PT Pelindo III (50%)	PT Pelindo Energi Logistik (PEL)			2016
	Lampung LNG <sup>(OFFSHORE)</sup> PGN/FSRU Lampung	4	170 000	3	2.4	Owner: Höegh LNG / Charterer: PGN LNG	Höegh LNG	No		2014
	Nusantara Regas Satu <sup>(OFFSHORE)</sup> Jawa Barat	6	125 016	6	4.1	Owner: Golar LNG / Charterer: Nusantara Regas	PT Nusantara Regas (JV Pertamina & PGN)	No		2012
	Chita	7	640 000	11	14.8	Chita LNG	Chita LNG	Yes	Truck loading	1983
JAPAN	Chita Kyodo	4	300 000	14	10.2	Toho Gas / Chubu Electric	Toho Gas	Yes	Truck loading	1978
	Chita-Midorihama Works	3	620 000	8	10.5	Toho Gas	Toho Gas	Yes	Truck loading	2001
	Futtsu	10	1 110 000	13	26	TEPCO Fuel & Power	TEPCO Fuel & Power	Yes	Truck loading	1985
	Hachinohe	2	280 000	5	1.4	JXTG Nippon Oil & Energy	JX Nippon LNG Service	Yes	Truck loading	2015
	Hatsukaichi	2	170 000	4	1.2	Hiroshima Gas	Hiroshima Gas	No		1996
	Hibiki	2	360 000	5	3.2	Hibiki LNG (Saibu Gas 90%, Kyushu Electric 10%)	Hibiki LNG	Yes	Cool-down services, Gas test services, Truck loading	2014
	Higashi-Ogishima	9	540 000	9	18	TEPCO Fuel & Power	TEPCO Fuel & Power	Yes		1984
	Himeji	8	740 000	7	8	Osaka Gas	Osaka Gas	Yes	Truckloading	1984
	Himeji LNG	7	520 000	8	1					

Country	Site	Storage		Send-out		Owner	Operator	Third Party Access	Additional Services offered	Start-up date
		Number of tanks	Total capacity in $\text{m}^3$	Number of vaporizers	Nominal capacity in $\text{Bcm}/\text{y}$					
<b>ASIA</b>										
	Shin-Minato	1	80 000	3	0.4	Gas Bureau, City of Sendai	Gas Bureau, City of Sendai	No		1997
	Shin-Sendai	2	320 000	3	1.1	Tohoku Electric	Tohoku Electric	No		2015
	Sodegaura	34	2 600 000	36	40.4	Tokyo Gas / TEPCO Fuel & Power	Tokyo Gas	Yes	Reloading, Truck loading	1973
<b>JAPAN</b>	Sodeshi	3	337 200	8	3.9	Shimizu LNG (Shizuoka Gas 65%, Tosen General Sekiyu 35%)	Shimizu LNG	Yes	Reloading, Truck loading	1996
	Tobata	8	480 000	9	10.3	Kita Kyushu LNG	Kita Kyushu LNG	Yes		1977
	Yanai	6	480 000	5	3.1	The Chugoku Electric	The Chugoku Electric	No	Truck loading	1990
	Yokkaichi LNG Center	4	320 000	8	8.7	Chubu Electric	Chubu Electric	Yes		1987
	Yokkaichi Works	2	160 000	6	2.9	Toho Gas	Toho Gas	Yes	Truck loading	1991
	Melaka (OFFSHORE) FSU Tenaga Empat and Tenaga Satu	260 000	3	5.2	Petronas	Petronas Gas (65%), Dialog Group (25%) and Johor State (10%)	No			2013
	RGTP, Pengerang	2	400 000		4.8	Petronas (65%), Dialog Group (25%) and Johor Government (10%)	Petronas Gas			2017
<b>PAKISTAN</b>	Port Qasim (OFFSHORE) Excelerate Exquisite	150 900	6	6.5	Owner: Excelerate Energy / Charterer: Engro Corp,	Excelerate Energy	No			2015
	Port Qasim (OFFSHORE) BW Integrity	170 000		6.8	Owner: BW / Charterer: Pakistan GasPort	Pakistan GasPort Consortium				2017
<b>SINGAPORE</b>	Jurong	3	540 000	5	16	SLNG	SLNG	Yes but sale of regasified LNG limited to licensed LNG importers	Cool-down services, Jetty to Jetty Transhipment, Reloading, Storage, truck loading(pilot facility)	2013
	Boryeong	4	400 000		4.1	GS Energy (50%), SK E&S (50%)				2016
	Gwangyang	4	530 000	2	2.3	Posco	Posco	No	Reloading	2005
	Incheon	20	2 880 000	43	56.8	KOGAS	KOGAS	No		1996
	Pyeong-Taek	23	3 360 000	39	51.9	KOGAS	KOGAS	No	Truck loading	1986
	Samcheok	12	2 610 000	8	14.8	KOGAS	KOGAS	No		2014
	Tong-Yeong	17	2 620 000	20	33.9	KOGAS	KOGAS	No	Truck loading	2002
<b>TAIWAN</b>	Taichung	3	480 000	8	3.9	CPC	CPC	No		2009
	Yung-An	6	690 000	18	9.8	CPC	CPC	No		1990
<b>THAILAND</b>	Map Ta Phut	4	640 000	9	14.6	PTT	PTT LNG	Yes		2011
<b>ASIA TOTAL</b>		<b>43 824 246</b>		<b>620.7</b>						
<b>EUROPE</b>										
<b>BELGIUM</b>	Zeebrugge	4	386 000	12	9	Fluxys LNG	Fluxys LNG	Yes	Bunkering, Reloading, Transhipment, Truck loading	1987
<b>FINLAND</b>	Pori	1	30 000		0.1	Skangas	Skangas	Yes	Bunkering, Truckloading	2016
	Dunkerque LNG	3	600 000	10	13	Dunkerque LNG (EDF (65.01%), Fluxys (25%), Total (9.99%))	Dunkerque LNG	Yes	Reloading	2016
<b>FRANCE</b>	Fos Cavaou	3	330 000	4	8.3	Fosmax LNG (Engy 72.5%, Total 27.5%)	Fosmax LNG	Yes	Bunkering, Cool-down services, Reloading, Transhipment, Truck loading through Fos Tonkin	2010
	Fos Tonkin	1	80 000	6	3	Engy	Engy	Yes	Bunkering, Cool-down services, Reloading, Truck loading	1972
	Montoir-de-Bretagne	3	360 000	11	10	Engy	Engy	Yes	Bunkering, Cool-down services, Reloading, Transhipment, Truck loading	1980
	Revithoussa	2	130 000	6	5	DESFA S.A.	DESFA S.A.	Yes		2000
<b>ITALY</b>	OLT LNG Toscana (OFFSHORE) FSRU Toscana	4	137 500	3	3.8	OLT (Uniper 48.24%, IREN Group 49.07%, Golar 2.69%)	OLT Offshore LNG Toscana	Yes		2013
	Panigaglia	2	100 000	4	3.4	GNL Italia S.p.A.	GNL Italia S.p.A.	Yes		1971
	Rovigo (OFFSHORE)	2	250 000	5	7.6	ExxonMobil (70.7%), Qatar Petroleum (22%), SNAM (7.3%)	Adriatic LNG (ExxonMobil, Qatar Petroleum, SNAM)	Yes		2009
<b>LITHUANIA</b>	Klaipeda (OFFSHORE) Independence	4	170 000	4	4	Owner: Höegh LNG / Charterer: Klaipedos Nafta	Höegh LNG	Yes	Bunkering, Re-loading, and Truck loading	2014
<b>MALTA</b>	Delimara (OFFSHORE) Armada LNG Mediterranea	5	125 000		0.7	Owner: BumiArmada Charterer: Electrogas Malta (GEM Holdings Limited (33.34%), Siemens (33.33%), SOCAR (33.33%))	Regasosa			2017

Country	Site	Storage		Send-out		Owner	Operator	Third Party Access	Additional Services offered	Start-up date
		Number of tanks	Total capacity in $\text{m}^3$	Number of vaporizers	Nominal capacity in $\text{Bcm}/\text{y}$					
<b>NETHERLANDS</b>	Rotterdam	3	540 000	8	12	Gasunie (50%), Vopak (50%)	Gate Terminal	Yes	Bunkering, Cool-Down services, Reloading, Transhipment, Truckloading	2011
<b>NORWAY</b>	Fredrikstad	9	6 500		0.1	Skangas	Skangas	Yes	Bunkering, Truckloading	2011
<b>POLAND</b>	Mosjøen		6 500	2		Gasnor	Gasnor			2007
<b>PORTUGAL</b>	Świnoujście	2	320 000	5	5	Polskie LNG	Polskie LNG	Yes	Truck loading	2016
	Sines	3	390 000	7	7.9	Ren Atlântico	Ren Atlântico	Yes	Reloading, Truck loading	2004
	Barcelona	6	760 000	13	17.1	Enagas	Enagas	Yes	Bunkering, Reloading, Transhipment, Truck loading	1968
	Bilbao	3	450 000	4	8.8	Enagas (50%), EVE (50%)	Bahia de Bizkaia Gas, SL (BBG)	Yes	Bunkering, Reloading, Truck loading	2003
	Cartagena	5	587 000	9	11.8	Enagas	Enagas	Yes	Bunkering, Reloading, Transhipment, Truck loading	1989
<b>SPAIN</b>	El Musel	2	300 000	4	7	Enagas	Enagas	Yes	Reloading, Truck loading	Construction completed in 2013 but mothballed
	Huelva	5	619 500	9	11.8	Enagas	Enagas	Yes	Reloading, Truck loading	1988
	Mugardos	2	300 000	3	3.6	Tojeiro Group (51%), Xunta Galicia (24%), First State Investment (15%), Sonatrach (10%)	Reganosa	Yes	Bunkering, Reloading, Truck loading	2007
	Sagunto	4	600 000	5	8.8	Infraestructuras de Gas [Enagas and Oman Oil Company S.A.O.C.] (50%), Iniciativas de Gas [Enagas and Osaka Gas] (50%)	Saggas	Yes	Reloading, Truck loading	2006
<b>SWEDEN</b>	Lysekil	1	30 000		0.3	Skangas	Skangas		Bunkering, Truck loading	2014
	Nysahamn LNG	1	20 000		0.5	AGA Gas	AGA Gas		Bunkering, Truck loading	2011
<b>TURKEY</b>	Aliaga/Izmir	2	280 000	5	6	Egegaz	Egegaz	No	Truck loading	2006
	Aliaga - Etki Liman Neptune	4	145 130	3	5	Owner: Höegh LNG (50%), MOL (48.5%), Tokyo LNG Tanker Co. Ltd. (1.5%) / Charterer: ENGIE - relet to Kolin/Kalyon for 3+ years	Höegh LNG	Yes		2016
	Marmara Ereğlisi	3	255 000	7	6.2	Botas	Botas	No	Truck loading	1994
	Dragon	2	320 000	6	7.6	Shell (50%), Petronas (50%)	Dragon LNG	Yes		2009
<b>UK</b>	Isle of Grain	8	1 000 000	14	19.5	National Grid	Grain LNG	Yes	Cool-Down services, Reloading, Transhipment, Truck loading	2005
	South Hook LNG	5	775 000	15	21	Qatar Petroleum International (67.5%), Exxon Mobil (24.15%), Total (8.35%)	South Hook LNG Terminal Company Ltd	Yes		2009
	Teeside GasPort (OFFSHORE)					Trafigura				2007
<b>EUROPE TOTAL</b>		<b>10 403 130</b>		<b>227.8</b>						
<b>MIDDLE EAST</b>										
<b>EGYPT</b>	Ain-Sokhna (OFFSHORE) Höegh Gallant	4	170 000	4	5.2	Owner: Höegh LNG / Charterer: Engas	Höegh LNG	No		2015
	Sumed (OFFSHORE) BW Singapore		170 000	4	7.8	Owner: BW / Charterer: Engas	BW	No		2015
<b>ISRAEL</b>	Hadera Gateway (OFFSHORE)	138 000	6	4.8	Owner: Excelerate Energy / Charterer: INGL	Excelerate Energy	No			2013
<b>JORDAN</b>	Aqaba LNG (OFFSHORE) Golar Esk									

# RETAIL LNG

The development of retail LNG is gaining momentum.

The uptake of **LNG as a fuel for ships** is accelerating, with more than 220 ships in service and under construction worldwide at the end of 2017.

The distribution of **LNG by trucks** is also growing. A number of receiving terminals have developed truck loading capabilities in order to support LNG distribution for retail applications, including transport, power and industrial uses.

GIIGNL estimates for LNG trucking in 2017 are as follows:

## Truck loading of LNG in receiving terminals in 2017 (in thousands of tonnes)

### AMERICAS

CHILE	218.9
DOM. REP.	98.8
USA	57.4
<b>ASIA</b>	
CHINA	10194.9
INDIA	44.0
INDONESIA	1.1
JAPAN	1500.4
SOUTH KOREA	178.1

### EUROPE

BELGIUM	25.0
FRANCE	76.5
LITHUANIA	0.2
NETHERLANDS	29.5
POLAND	27.6
PORTUGAL	99.0
SPAIN	758.4
TURKEY	490.8
UK	37.6

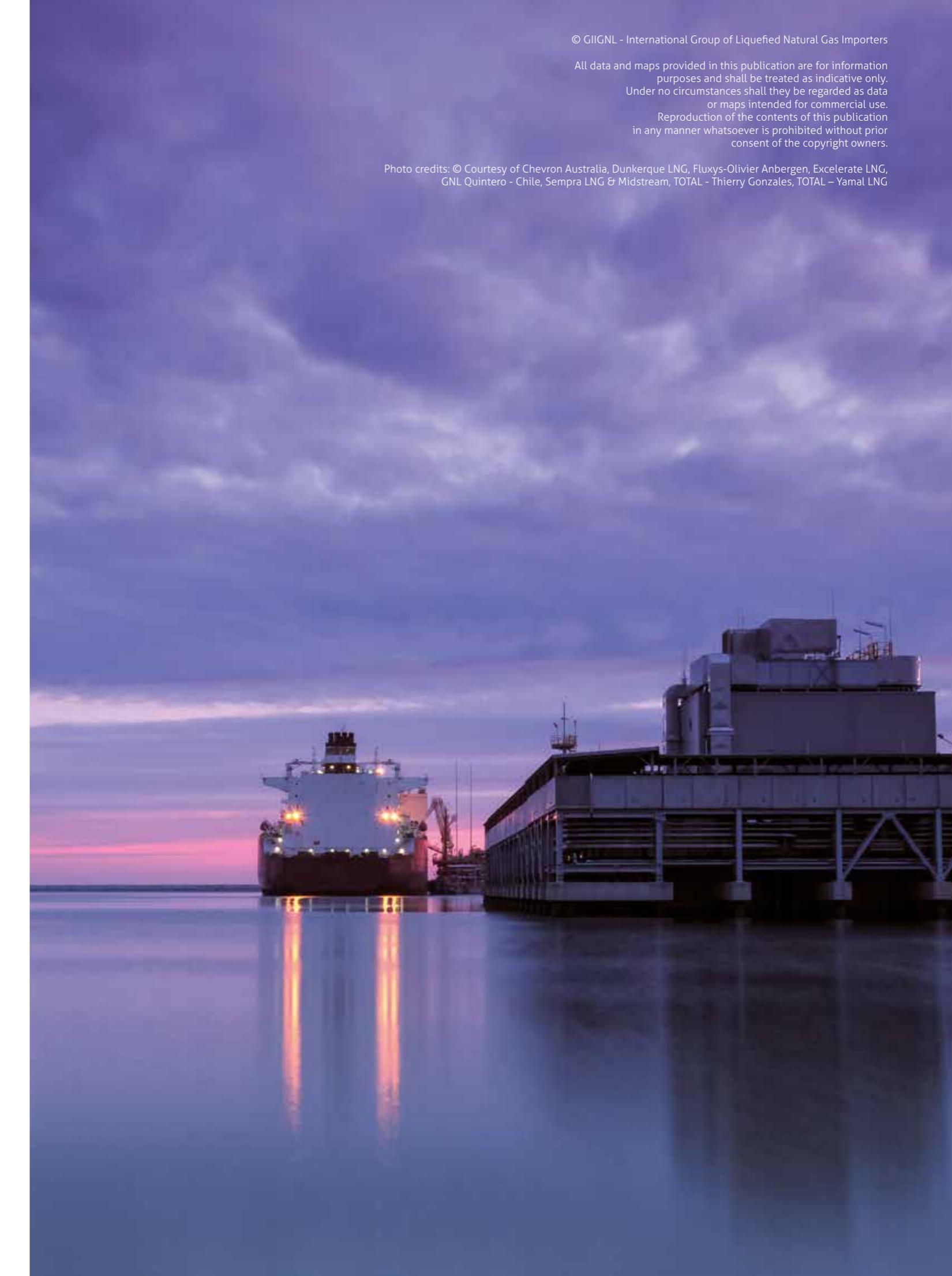
Source: GIIGNL member companies



© GIIGNL - International Group of Liquefied Natural Gas Importers

All data and maps provided in this publication are for information purposes and shall be treated as indicative only. Under no circumstances shall they be regarded as data or maps intended for commercial use. Reproduction of the contents of this publication in any manner whatsoever is prohibited without prior consent of the copyright owners.

Photo credits: © Courtesy of Chevron Australia, Dunkerque LNG, Fluxys-Olivier Anbergen, Excelerate LNG, GNL Quintero - Chile, Sempra LNG & Midstream, TOTAL - Thierry Gonzales, TOTAL - Yamal LNG



**International Group of Liquefied Natural Gas Importers**  
**Groupe International des Importateurs de Gaz Naturel Liquéfié**  
**(GIIGNL)**

8, rue de l'Hôtel de Ville  
92200 Neuilly-sur-Seine - France  
Tel: + 33 1 56 65 51 60  
E-mail: central-office@giignl.org  
Website: www.giignl.org

