

2012



# The LNG Industry



# The LNG Industry in 2012

## Editorial



The 2011 catastrophic tsunami in Japan continued its grip on LNG flows throughout 2012, causing massive shifts eastwards of Atlantic Basin and Middle East-sourced cargoes to satisfy the strong demand of Japan's power industry. Its commercial effects are likely to continue beyond the current year as well as beyond a mere diversion of product flows.

On the production side, capacity additions have been below expectations and insufficient to make up for the higher loss of capacity due to planned shutdowns and unscheduled production interruptions, mainly resulting from a shortfall of feed-gas. As a result, in 2012, LNG trade has seen the first decline (minus 1.9%) in the past thirty years.

The strong growth in spot and short term trade seen in recent years (up by 110% from 2009 to 2011) is no longer there, primarily, but not solely, in line with the lack of new supplies. Undoubtedly, the conversion of non-committed production and flexible supplies and of so-called wedge cargoes -especially from Qatar and Peru- into term volumes has reduced the overall short term liquidity. Until substantial new volumes become available, this phenomenon is likely to continue for the next couple of years as Asian importers have a growing appetite for (more) secure supplies.

Two events in 2012, albeit of a different nature, stand out among the highlights of the year: a significant rise in reloads, and the first final investment decision (FID) of exports from North America.

Reloading of cargoes in receiving terminals is generally presented as a demonstration of commercial innovation though sometimes simply allowing to overcome destination restrictions or difficult negotiations on profit sharing from cargo deviations. Considering operational cost efficiency and the environmental impact, it is doubtful that reloads will continue to be a growing feature in LNG trading, despite a total count in 2012 of 70 re-exported cargoes actually discharged in 2012 (up 60% from last year). It is noteworthy that Europe makes up more than three quarters of these reloads, nearly all attributable to Spain and Belgium, two of the countries in Europe with sufficient firm destination supplies to sustain regular reloads.

The hotly debated US LNG exports on the other hand are to be viewed as a far more important trend with profound commercial consequences, assuming that last year's pioneering

FID by Cheniere will have several followers in 2013. At the time of this writing however none of the twenty or so projects somewhere "in the pipeline" in the USA and Canada have reached this final stage yet. The commercial pricing principles will be groundbreaking if the Cheniere project is followed by other projects, eagerly awaited by many Asian importers, hoping that Henry Hub-based pricing can bring relief from crude price indexation in the future.

The outlook for LNG demand remains strong, particularly in Asia and in the new markets of Latin America and the Middle East. Unless there is a rapid and sizeable restart of nuclear capacity in Japan- generally not regarded as likely- LNG markets are expected to remain tight until 2015, when a wave of new production is to come on-stream. Over the next two to three years as little as 20 million tons p.a. of new capacity ( a mere 8% addition ) are likely to start up and redirections from the Atlantic Basin of flexible cargoes would continue to balance demand in Asia. In the second part of the decade and beyond, a wave of new projects, many already under construction in Australia, as well as possibly in North America and from the promising East African discoveries should satisfy market demand growth and sustain the confidence in our thriving industry.

GIIGNL had another rewarding year in 2012, the 41<sup>st</sup> of its existence. Total membership now stands at 70 worldwide and is made up of nearly all companies active in the import of LNG or the operation/ownership of LNG import terminals. The commercial and technical study groups have continued their study programme of selected topics of current interest to our members and to the industry in general, some of which have led to publications on the public domain of our website. A new addition in May 2012 has been the publication of a Master Voyage Charter Party tailored to single voyages and responding to an industry need resulting from the growth of spot and short-term cargo trading. Other publications which continue to draw industry interest had been updated in 2011, namely the Master Sales and Purchase Agreement for both ex-Ship and FOB LNG trade and the LNG Custody Transfer Handbook. In the LNG 17 conference in Houston, a paper on the third update of the LNG Incident study will be presented.

Safety is a primary focus at GIIGNL, as is the adherence to the highest standards. Open and voluntary information exchange in this domain is of paramount importance to maintaining the excellent safety record of our industry, in itself an absolute condition for its continued success.

**Domenico Dispenza**  
President

# 70 Member Companies in 21

GIIGNL (International Group of LNG Importers) is the worldwide association of the LNG importers. Founded in 1971, at the outset of the LNG industry, its membership has grown to 70 companies worldwide, comprising nearly all companies active in LNG imports or in the operation of LNG terminals. As a non profit organization, its resources come only 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. From a geographical point of view, GIIGNL members are coming from 21 countries and located in the main three important regions: Americas, 10 members, Asia, 30, Europe, 30. Every year, GIIGNL conducts a wide survey amongst its members in order to publish this global statistical report, "The LNG Industry".



## AMERICAS - 10 members

BG Group Plc.  
Cheniere Energy, Inc.  
Chevron Global Gas  
Freeport LNG Development, L.P.  
GDF SUEZ GAS NA  
GNL Quintero S.A.  
Repsol Energy Canada  
Sempra LNG  
Southern LNG Company, LLC  
YPF S.A.

# countries

## EUROPE - 30 members

BP Global LNG  
Botas  
Centrica LNG Company  
DEPA  
Distrigas S.A.  
Dragon LNG Limited  
Dunkerque LNG  
Edison S.p.A.  
Elengy S.A.  
EDF Trading Limited  
EDP Energias de Portugal, S.A.  
Enagas  
Enel Trade  
Eni S.p.A.  
E.ON Ruhrgas A.G.  
Fluxys LNG S.A.  
Gas Natural Fenosa  
Gate Terminal B.V.  
GDF SUEZ  
Iberdrola Generacion S.A.U.  
National Grid Grain LNG, Ltd.  
N.V. Nederlandse Gasunie  
O.M.V. Gas and Power GmbH  
Ren Atlântico, S.A.  
Shell Western LNG B.V.  
Sonatrach Gas Marketing UK Limited  
South Hook LNG Terminal Company, Ltd.  
Statoil ASA  
Total S.A.  
Vopak LNG Holding B.V.

## ASIA - 30 members

Chubu Electric Power Company, Inc.  
CNOOC Gas & Power Group  
CPC Corporation, Taiwan  
Gail India Limited  
Guangdong Dapeng LNG Company, Ltd.  
Gujarat State Petroleum Corp. Ltd. (G.S.P.C.)  
Hiroshima Gas Company, Ltd.  
Itochu Corporation  
JX Nippon Oil & Energy Corp  
Korea Gas Corporation  
Kyushu Electric Power Company, Inc.  
LNG Japan Corporation  
Marubeni Corporation  
Mitsubishi Corporation  
Mitsui & Company, Ltd.  
Nippon Gas Company, Ltd.  
Osaka Gas Company, Ltd.  
Petronet LNG Limited  
Posco  
Saibu Gas Company, Ltd.  
Shikoku Electric Power Company  
Shizuoka Gas Company, Ltd.  
SK E&S Company, Ltd.  
Sumitomo Corporation  
The Chugoku Electric Power Company, Inc.  
The Kansai Electric Power Company, Inc.  
The Tokyo Electric Power Company, Inc.  
Toho Gas Company, Ltd.  
Tohoku Electric Power Company, Inc.  
Tokyo Gas Company, Ltd.





# Contents

LNG contracts and trade	4
Contracts concluded in 2012	6
LNG imports - Sources of imports - Quantities received in 2012	8
<hr/>	
LNG Characteristics	10
LNG Tankers	11
Fleet list	13
<hr/>	
Liquefaction plants + tables	16
Regasification plants + tables	23
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Contracts in force in 2012	32
Sea transportation routes	36
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## Key figures 2012

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**236.3** million tons imported or a decrease of **-1.9%** vs.2011

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**59.2** million tons traded on a spot or short-term basis or **25%** of total trade

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**40%** of global LNG imports supplied from the Middle East

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**71%** of global LNG demand in Asia

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**20** million tons exported from the Atlantic to the Pacific Basin

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At year-end:

**93** LNG regasification terminals

**26** countries

**668** million tons p.a total capacity

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At year-end:

**89** liquefaction trains in operation

**18** countries

**282** million tons p.a total capacity



# LNG contracts and trade

In 2012, global LNG imports net of reloads reached 236.3 Mt, a 1.9% (4.5 Mt) decrease compared to the previous year.

Maintenance and unscheduled interruptions on existing liquefaction facilities, as well as lower than expected capacity additions, with only one new train – Pluto in Australia – coming into service in May, have limited the supply availability.

Increased demand, mainly in Japan, China, India and South America have contributed to the market tightness.

## A MARKET DOMINATED BY BIG PLAYERS

On the supply side, 6 countries joined the ranks of exporters over the last ten years. However, **8 countries out of a total of 18 made up 83% of global LNG exports** at the end of 2012. LNG supplies from the Pacific Basin declined by 2.7 Mt (- 3%), despite new volumes from Australia and the quick ramp-up of Pluto. Indonesia (- 13.3%) and Malaysia (- 4.8%) accounted for most of the production decline in the region.

In the Atlantic Basin, three suppliers (Nigeria, Norway, Trinidad & Tobago) increased their production levels but lower exports from Algeria, Egypt and Equatorial Guinea dragged the overall Atlantic Basin supply down by 2.2%.

Due to production shutdowns in Yemen, total exports from the Middle East were reduced by 0.5 Mt, despite 1 Mt additional supplies from Qatar. 63% of Qatari volumes were exported to Asian countries, with Japan retaining the lion's share. Between 2010 and 2012, Qatar doubled its LNG exports to Japan (15,7 Mt in 2012 vs 7,6 Mt in 2010). Qatari exports to South Korea jumped by 56% between 2010 and 2012, reaching 10.8 Mt or 29% of South Korea's LNG supplies.

On the demand side, 7 importing countries out of a total of 26 (Japan, South Korea, China, India, Taiwan, Spain, UK) attracted 81% of total LNG volumes. **Japan and South Korea's combined share was around 53%.**

## IMPORTS: FROM THE ATLANTIC BASIN TO THE PACIFIC BASIN

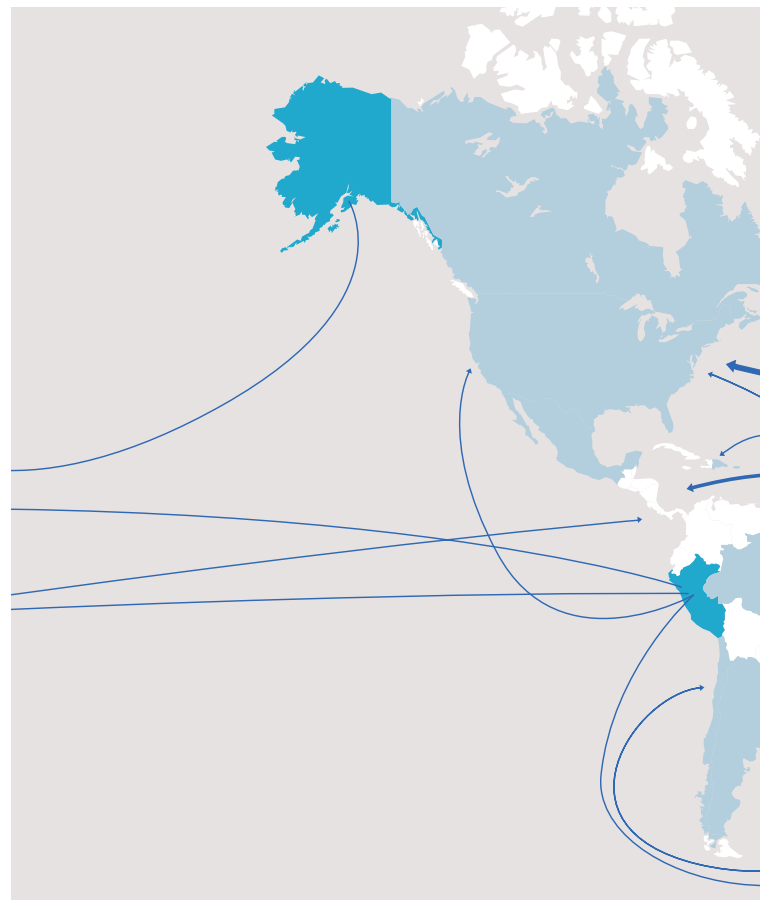
For the second year in a row, **all Asian countries without exception recorded a growth.** Resulting from a weak gas demand, lower imports into Europe provided for the swing between global supply and demand.

Asian countries imported 14.2 Mt of additional quantities, 9 Mt of which were received in Japanese terminals.

At the end of 2012, **Asia accounted for 71% of global LNG demand compared to 64% in 2011**, and Japan and South Korea together represented three quarters of Asia's LNG imports.

In the absence of nuclear restarts, Japan recorded indeed an 11.4% growth year-on-year. South Korean LNG imports increased by 3.4%, above the country's GDP growth rate of 2%.

The growing appetite for LNG in China and India resulted in 12.2% and 7.7% growth rates respectively over the previous year and both countries represented a combined 11.8% global market share in 2012.

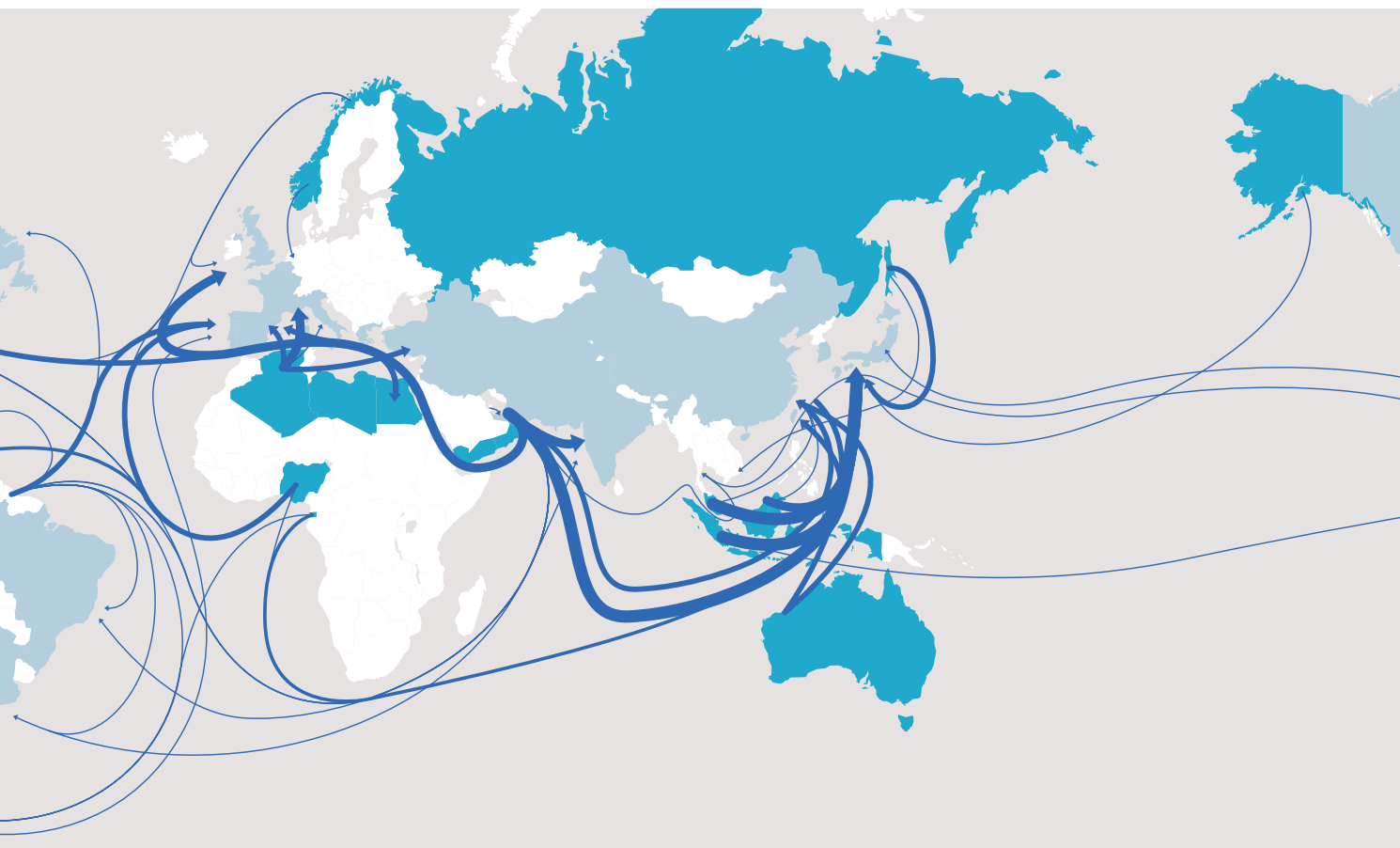


With the start-up of the Nusantara regasification terminal, Indonesia started receiving LNG in 2012 (0.7 Mt), becoming the 26th importing country and-after the USA-the second LNG producing country also importing LNG.

Noteworthy is Europe's decline by some 27% because of cargo redirections, reloads and sluggish gas demand, bringing the 2012 net LNG imports below the 2009 level. With net imports of 14.5 Mt - at the same level as the volume of LNG imports into China - Spain is back as Europe's number one LNG importer. In the UK, imports dropped to 10.4 Mt (- 44%). 98% of the country's LNG came from Qatar, with 72% of total imports delivered to the South Hook terminal.

As a consequence of the decline in Europe, **last year's contrasting trends between the two major basins have been even more apparent in 2012.** LNG deliveries to Asia increased by some 9% (with every single country showing a growth) whereas for the Atlantic Basin deliveries fell back 22% overall.

In the Americas, the LNG market of South America (Argentina, Brazil, Chile) recorded a 40% growth over 2011, reaching twice the size of North America's market. Following a year of low imports due to a large hydroelectricity production, LNG deliveries to Brazil more than tripled in 2012, reaching 2.7 Mt. LNG deliveries to Chile remained stable, around 2.8 Mt. Argentina's imports increased by almost 15% and reached 3.4 Mt in 2012, 2.3 Mt of which coming from



Trinidad & Tobago. Starting in 2013, Enarsa will purchase cargoes from GasNatural Fenosa under a 1.5 Mt one-year contract. In Brazil, Petrobras also signed a one-year contract with Iberdrola for 0.36 Mt.

In Mexico, annual imports increased by 23.8%, mainly due to the start-up of the Manzanillo regasification terminal and the reception of volumes from Peru under a term contract.

### SPOT AND SHORT-TERM LIQUIDITY: ASIA ON THE FRONT LINE AS A DESTINATION; QATAR AS A SOURCE

With 59 Mt, **the share of spot and short-term trades** (trades under contracts with a duration of four years or less) **remains unchanged, around 25% of total LNG trade.**

In terms of sourcing, spot and short-term volumes mainly came from the Middle East (43.7%), followed by the Atlantic Basin (39.6%) and the Pacific Basin (16.6%).

Qatar remains the number one supplier of spot and short-term LNG, with 35.5% of total spot and short-term volumes. It is followed by Nigeria (15.2%) and Trinidad (8.7%).

In 2012, Asia received 70% of total spot and short-term quantities, vs. 61% in 2011. European countries made up 12% of spot and short-term imports, vs. 20% in the previous year. Spot and short-term

deliveries to South America and Mexico reached a combined 12% of total spot and short-term trade, vs. 8% in 2011.

Contrasting with the stagnant spot and short-term total market, **the reloading of cargoes increased dramatically in 2012**, with a total of 75 cargoes re-loaded compared to 44 in 2011. Most cargoes were re-exported from Europe, the majority of which from Spain .

It is to be noted that from the 75 cargoes re-loaded, only 70 were discharged, as 5 cargoes were still at sea at the end of the year: one was bound for Brazil, one for India (Dabhol), one for Israel (Hadera) and two for South Korea.

The world trade involved 158 “flows” (i.e. country-to-country trades) over 369 sea transportation routes (port-to-port routes). In 2012, there were 34 new country-to-country flows compared to 2011: ALGERIA/China, South Korea and Taiwan – ABU DHABI/ Dubai – BELGIUM/Argentina, Brazil, Greece, Portugal – BRAZIL/ Japan – FRANCE/Argentina, Brazil and Japan – SPAIN/Brazil, Greece, India, Japan, Portugal and Turkey - NIGERIA/Puerto Rico - NORWAY/ Turkey, Argentina, Brazil, Chile, Puerto Rico, South Korea and Kuwait – TRINIDAD & TOBAGO/Portugal, Mexico, Thailand and Kuwait – USA/ Argentina - OMAN/China - YEMEN/Thailand – QATAR/Dominican Republic.



# Contracts concluded in 2012

Origin	Export country/exporter	Buyer	Import country	Amount (mmtpa)	Duration (years)	Extra years	Start	Delivery format	
Long & medium term Sales	QATAR (Rasgas)	EDF Trading	BELGIUM	3.4	15		2012	DES	
	Endesa Energia portfolio	GNLQ	CHILE	spot cargoes	20		2012	DES	
	BG portfolio	GNLQ	CHILE	1.1	20		2013	DES	
	Gazprom	Gail	INDIA	2.5	20		2019	DES	
	QATAR (Qatargas)	The Tokyo Electric Power Co.	JAPAN	1.0	10		2012	DES	
	BP portfolio	Chubu Electric	JAPAN	0.5	16		2012	DES	
	QATAR (Qatargas)	Chubu Electric	JAPAN	1.0 (2013-2017) 0.7 (2018-2028)	15		2013	DES	
	QATAR (Qatargas)	Kansai Electric	JAPAN	0.5	15		2013	DES	
	ALGERIA (Eni Portfolio)	Chubu Electric	JAPAN	0.2	5		2013		
	Shell portfolio	JX Nippon Oil & Energy Corp.	JAPAN	0.2	17		2015	DES	
	AUSTRALIA (APLNG)	Kansai Electric	JAPAN	1.0			2016	FOB	
	AUSTRALIA (Ichthys)	Chubu Electric	JAPAN	0.5			2017	FOB	
	AUSTRALIA (Ichthys)	Toho Gas	JAPAN	0.3			2017	FOB	
	AUSTRALIA (Wheatstone)	The Tokyo Electric Power Co.	JAPAN	0.4	20		2017		
	AUSTRALIA (Wheatstone)	The Tokyo Electric Power Co.	JAPAN	0.7	20		2017		
	QATAR (Rasgas)	KOGAS	SOUTH KOREA	2.0	21		2012	DES	
	Shell portfolio	KOGAS	SOUTH KOREA	3.6	20		2013	DES	
	ALGERIA (Eni portfolio )	KOGAS	SOUTH KOREA	0.2	5		2013		
	Vitol	Korea Midland Power	SOUTH KOREA	0.4	10		2015		
	USA (Sabine Pass)	KOGAS	SOUTH KOREA	3.5	20	10 (option)	2017	FOB	
	AUSTRALIA (Ichthys)	CPC	TAIWAN	1.8	15		2017	DES	
	Shell portfolio	CPC	TAIWAN	2.0	20		2017	DES	
	QATAR (Qatargas)	PTT	THAILAND	2.0	20		2015	DES	
	USA (CHENIERE/Sabine Pass)	BG Group		5.5 (2 mmtpa added to the original SPA for 3.5 mmtpa)	20		2015	FOB	
	USA (KOGAS/Sabine Pass)	Total		0.7	20		2017	FOB	
	USA (CHENIERE/Sabine Pass Train 5)	Total		2.0	20	10 (option)	2018	FOB	
	Short Term Contracts (< 4 yrs)	Gas Natural Fenosa portfolio	Enarsa	ARGENTINA	1.5	1		2013	
		Iberdrola portfolio	Petrobras	BRAZIL	0.4	1		2013	FOB
GDF Suez portfolio		Gail	INDIA	0.4	2		2013	DES	
Gas Natural Fenosa portfolio		Gail	INDIA	0.8	3		2013		
Gas Natural Fenosa portfolio		Petronet LNG	INDIA	0.2	1		2013	DES	
Shell portfolio		Petronet LNG	INDIA	0.3	1		2013	DES	
Iberdrola portfolio		Marubeni	JAPAN	0.4	1		2013	FOB	
NORWAY (Statoil)		Petronas	MALAYSIA	0.7	3.5		2013		
Total portfolio		KOGAS	SOUTH KOREA	0.4	3		2012	DES	
GDF Suez portfolio		KOGAS	SOUTH KOREA	0.7	2		2013	DES	
Gazprom portfolio		KOGAS	SOUTH KOREA	0.5	2		2013	DES	
INDONESIA		KOGAS	SOUTH KOREA	0.5	4		2013	DES	
MALAYSIA (extension)		KOGAS	SOUTH KOREA	1.0	3		2015	FOB	
GDF Suez portfolio		PTT	THAILAND	0.2	1		2012	DES	

Origin	Export country/exporter	Purchaser	Import country	Amount (mmtpa)	Duration (years)	Extra years	Start	Delivery format
Heads of Agreement (H.O.As)	BG portfolio	CNOOC	CHINA	5.0	20		2015	DES
	BRUNEI	The Tokyo Electric Power Co.	JAPAN	2.0	10		2013	DES
	BRUNEI	Tokyo Gas	JAPAN	1.0	10		2013	DES
	BRUNEI	Osaka Gas	JAPAN	0.4	10		2013	DES
	MALAYSIA	Tokyo Gas	JAPAN	0.9	10		2015	DES
	MALAYSIA	Shizuoka Gas	JAPAN	0.3	10		2016	DES
	BRUNEI (extension)	KOGAS	SOUTH KOREA	1	5		2013	DES
Memorandums Of Understanding (M.O.U.s)	BP portfolio	Kansai Electric	JAPAN	0.5	15		2017	DES
Agreements on regasification (R)/liquefaction rights (L)	Unknown (R)	GSPC	INDIA (Dahej expansion)	1.3	20		Q2 2014	
	USA (Freeport Train 1) - (L)	Osaka Gas	JAPAN	2.2	20	4x5	2017	FOB
	USA (Freeport Train 1) - (L)	Chubu Electric	JAPAN	2.2	20	5x5	2017	FOB
	USA (Freeport Train 2) - (L)	BP (Signed in Feb. 2013)		4.4	20	10 (option)	2018	FOB
	USA (SEMPRA/Cameron)* - (L)	Mitsubishi Corporation		4.0				
	USA (SEMPRA/Cameron)* - (L)	Mitsui & Company, Ltd.		4.0				
	USA (SEMPRA/Cameron)* - (L)	GDF Suez S.A.		4.0				

\* Commercial Development Agreement

## Re-export of cargoes (\*)

Export country	Import country	Cargo count	Re-exported volumes (Mt)
BELGIUM	ARGENTINA	4	1.17
	BRAZIL	4	
	GREECE	0.5	
	JAPAN	2	
	PORTUGAL	1	
	SOUTH KOREA (**)	1	
	SPAIN	9.5	
FRANCE	ARGENTINA	1	0.16
	BRAZIL	1	
	JAPAN	1	
PORTUGAL	BRAZIL	1	0.06
SPAIN	ARGENTINA	5	1.27
	BRAZIL	1	
	GREECE	1	
	INDIA	3	
	ITALY (***)	6	
	JAPAN	8	
	PORTUGAL	1	
	TURKEY	3	
	TAIWAN	1	
<b>Europe</b>		<b>55</b>	<b>2.66</b>

(\*) Cargoes actually discharged in 2012

(\*\*) 2 ships re-exported to South Korea were still at sea at year-end

(\*\*\*) 1 ship re-exported in December 2011, discharged in 2012

Export country	Import country	Cargo count	Re-exported volumes (Mt)
BRAZIL	ARGENTINA	6	0.29
	JAPAN	1	
USA	ARGENTINA	0.5	0.42
	BRAZIL	3.5	
	INDIA	1	
	JAPAN	2	
	SOUTH KOREA (***)	1	
<b>Americas</b>		<b>15</b>	<b>0.71</b>
<b>World</b>		<b>70</b>	<b>3.37</b>





# LNG Trade

In 2012, the world LNG trade accounted for 522.08 10<sup>6</sup> m<sup>3</sup> in liquid form <sup>(1)</sup> or 236.31 10<sup>6</sup> t, as shown in the following table:

## LNG IMPORTS

	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. 2011 / 2012 (%)
Belgium	4.00	1.82	2.28	0.8	-55.3%
France	15.90	7.17	9.11	3.0	-31.9%
Greece	1.69	0.76	0.97	0.3	-16.6%
Italy	11.39	5.16	6.51	2.2	-17.8%
Netherlands	1.25	0.56	0.72	0.2	-3.5%
Portugal	3.37	1.52	1.93	0.6	-29.1%
Spain	32.24	14.46	18.49	6.1	-16.1%
Turkey	12.47	5.63	7.14	2.4	17.2%
U.K.	22.91	10.38	13.08	4.4	-43.6%
<b>Europe</b>	<b>105.23</b>	<b>47.47</b>	<b>60.22</b>	<b>20.1</b>	<b>-27.0%</b>
Argentina	7.70	3.36	4.46	1.4	14.7%
Brazil	6.08	2.70	3.49	1.1	346.0%
Chile	6.38	2.77	3.71	1.2	-0.4%
Dominican Rep	2.11	0.92	1.22	0.4	32.9%
Mexico	7.81	3.52	4.47	1.5	23.8%
Puerto Rico	2.23	0.97	1.30	0.4	47.8%
Canada	2.94	1.30	1.70	0.6	-46.8%
USA	7.10	3.09	4.12	1.3	-49.6%
<b>Americas</b>	<b>42.36</b>	<b>18.63</b>	<b>24.47</b>	<b>7.9</b>	<b>-2.4%</b>
China	32.20	14.65	18.35	6.2	12.2%
India	29.36	13.27	16.78	5.6	7.7%
Indonesia	1.61	0.72	0.92	0.3	N/A
Japan	192.95	88.08	108.87	37.3	11.4%
South Korea	81.39	36.77	47.35	15.6	3.4%
Taiwan	27.93	12.67	16.01	5.4	3.9%
Thailand	2.28	1.02	1.39	0.4	26.7%
<b>Asia</b>	<b>367.74</b>	<b>167.18</b>	<b>209.68</b>	<b>70.7</b>	<b>9.2%</b>
Kuwait	4.43	1.99	4.06	0.8	-23.6%
Dubai	2.32	1.05	1.33	0.4	-3.2%
<b>Middle East</b>	<b>6.75</b>	<b>3.04</b>	<b>3.86</b>	<b>1.3</b>	<b>-17.6%</b>
<b>Total</b>	<b>522.08</b>	<b>236.31</b>	<b>298.22</b>	<b>100.0</b>	<b>-1.9%</b>

## SOURCE OF IMPORTS

	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. 2011 / 2012 (%)
Algeria	24.76	11.21	14.18	4.7	-10.2%
Egypt	10.94	4.74	6.35	2.0	-25.1%
Equatorial Guinea	8.23	3.62	4.76	1.5	-8.3%
Nigeria	43.34	19.58	24.75	8.3	3.5%
Norway	7.38	3.31	4.24	1.4	31.7%
Trinidad & Tobago	31.27	13.48	18.19	5.7	3.8%
<b>Atlantic Basin</b>	<b>125.92</b>	<b>55.93</b>	<b>72.47</b>	<b>23.7</b>	<b>-2.2%</b>
Abu Dhabi	12.13	5.66	6.86	2.4	-2.7%
Oman	17.82	8.15	10.12	3.4	0.7%
Qatar	168.48	76.39	96.15	32.3	1.4%
Yemen	11.06	4.89	6.38	2.1	-23.0%
<b>Middle East</b>	<b>209.49</b>	<b>95.09</b>	<b>119.51</b>	<b>40.2</b>	<b>-0.6%</b>
Australia	44.99	20.88	25.43	8.8	6.9%
Brunei	14.76	6.82	8.33	2.9	-3.8%
USA (Alaska)	0.41	0.17	0.24	0.1	-45.6%
Indonesia	42.38	18.97	24.27	8.0	-13.3%
Malaysia	51.45	23.72	29.28	10.0	-4.8%
Peru	8.56	3.86	4.92	1.6	4.3%
Russia	24.11	10.86	13.77	4.6	2.8%
<b>Pacific Basin</b>	<b>186.67</b>	<b>85.29</b>	<b>106.24</b>	<b>36.1</b>	<b>-3.1%</b>
<b>Total</b>	<b>522.08</b>	<b>236.31</b>	<b>298.22</b>	<b>100.0</b>	<b>-1.9%</b>

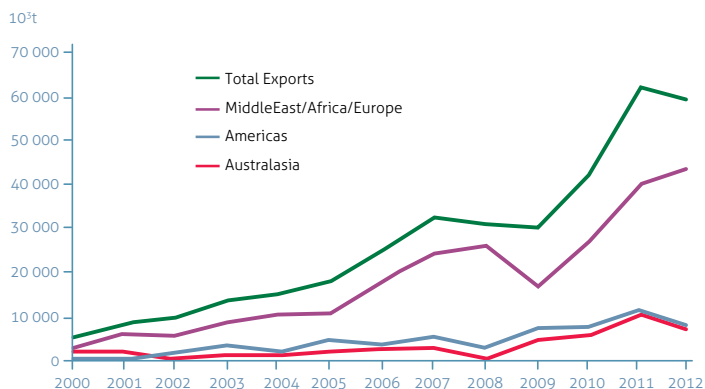
## QUANTITIES (IN 10<sup>6</sup> T) RECEIVED IN 2012 BY THE IMPORTING COUNTRIES FROM THE EXPORTING COUNTRIES

	Algeria	Egypt	Equ. Guin.	Nigeria	Norway	Peru	Trinidad & Tobago	Abu Dhabi	Oman	Qatar	Yemen	Australia	Brunei	USA (Alaska)	Indonesia	Malaysia	Russia	Re-exports received	Re-exports loaded	Net imports
Belgium	-	-	-	-	-	-	-	-	-	3.00	-	-	-	-	-	-	-	-	(1.17)	1.82
France	3.16	0.60	-	2.11	0.19	-	-	-	-	1.28	-	-	-	-	-	-	-	-	(0.16)	7.17
Greece	0.62	0.06	-	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	0.07	-	0.76
Italy	0.71	0.10	-	-	0.06	-	-	-	-	4.20	-	-	-	-	-	-	-	0.09	-	5.16
Netherlands	0.03	-	-	0.05	0.42	-	0.06	-	-	-	-	-	-	-	-	-	-	-	-	0.56
Portugal	-	0.06	-	1.28	-	-	0.06	-	-	0.12	-	-	-	-	-	-	-	0.06	(0.06)	1.52
Spain	2.76	0.47	-	3.95	1.29	1.88	1.80	-	-	3.10	-	-	-	-	-	-	-	0.48	(1.27)	14.46
Turkey	3.08	0.36	-	1.03	0.12	-	-	-	-	0.88	-	-	-	-	-	-	-	0.16	-	5.63
The U.K.	0.08	0.06	-	0.11	-	-	-	-	-	10.13	-	-	-	-	-	-	-	-	-	10.38
<b>Europe</b>	<b>10.43</b>	<b>1.70</b>	<b>-</b>	<b>8.55</b>	<b>2.09</b>	<b>1.88</b>	<b>1.91</b>	<b>-</b>	<b>-</b>	<b>22.71</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>0.85</b>	<b>(2.66)</b>	<b>47.47</b>
Argentina	-	0.06	-	-	0.18	-	2.32	-	-	0.07	-	-	-	-	-	-	-	0.74	-	3.36
Brazil	-	-	-	0.32	0.13	-	0.97	-	-	1.00	-	-	-	-	-	-	-	0.58	(0.29)	2.70
Chile	-	0.17	0.25	-	0.05	-	2.05	-	-	-	0.24	-	-	-	-	-	-	-	-	2.77
Dominican Rep	-	-	-	-	-	-	0.74	-	-	0.18	-	-	-	-	-	-	-	-	-	0.92
Mexico	-	-	-	0.75	-	0.90	0.11	-	-	1.29	0.23	-	-	-	0.25	-	-	-	-	3.52
Puerto Rico	-	-	-	0.05	0.06	-	0.86	-	-	-	-	-	-	-	-	-	-	-	-	0.97
Canada	-	-	-	-	-	-	0.61	-	-	0.70	-	-	-	-	-	-	-	-	-	1.30
USA	-	0.06	-	-	0.13	-	2.24	-	-	0.69	0.40	-	-	-	-	-	-	-	(0.42)	3.09
<b>Americas</b>	<b>-</b>	<b>0.28</b>	<b>0.25</b>	<b>1.11</b>	<b>0.55</b>	<b>0.90</b>	<b>9.88</b>	<b>-</b>	<b>-</b>	<b>3.92</b>	<b>0.87</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>0.25</b>	<b>-</b>	<b>-</b>	<b>1.32</b>	<b>(0.71)</b>	<b>18.63</b>
China	0.06	0.31	-	0.31	-	-	0.17	-	0.13	4.90	0.40	3.72	-	-	2.35	1.92	0.38	-	-	14.65
India	0.44	0.52	-	1.34	0.06	-	-	-	-	10.28	0.38	-	-	-	-	-	-	0.24	-	13.27
Indonesia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.72	-	-	-	-	0.72
Japan	0.16	1.03	2.81	4.72	0.36	0.77	0.28	5.63	3.97	15.73	0.30	16.00	5.97	0.17	6.07	14.94	8.39	0.78	-	88.08
South Korea	0.05	0.60	0.37	1.75	0.06	-	0.89	-	4.05	10.81	2.55	0.78	0.85	-	7.71	4.08	2.10	0.11	-	36.77
Taiwan	0.06	0.18	0.19	1.16	0.06	-	0.06	-	-	5.95	-	0.32	-	-	1.87	2.77	-	0.06	-	12.67
Thailand	-	-	-	0.07	-	0.31	0.05	-	-	0.19	0.40	-	-	-	-	-	-	-	-	1.02
<b>Asia</b>	<b>0.78</b>	<b>2.65</b>	<b>3.37</b>	<b>9.35</b>	<b>0.54</b>	<b>1.08</b>	<b>1.44</b>	<b>5.63</b>	<b>8.15</b>	<b>47.86</b>	<b>4.03</b>	<b>6.82</b>	<b>0.17</b>	<b>18.73</b>	<b>23.72</b>	<b>10.86</b>	<b>1.20</b>	<b>-</b>	<b>167.18</b>	
Kuwait	-	0.12	-	0.57	0.13	-	0.17	-	-	0.94	-	0.06	-	-	-	-	-	-	-	1.99
Dubai	-	-	-	-	-	-	0.06	0.04	-	0.95	-	-	-	-	-	-	-	-	-	1.05
<b>Middle East</b>	<b>-</b>	<b>0.12</b>	<b>-</b>	<b>0.57</b>	<b>0.13</b>	<b>-</b>	<b>0.23</b>	<b>0.04</b>	<b>-</b>	<b>1.89</b>	<b>-</b>	<b>0.06</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>3.04</b>
<b>Exports</b>	<b>11.21</b>	<b>4.74</b>	<b>3.62</b>	<b>19.58</b>	<b>3.31</b>	<b>3.86</b>	<b>13.48</b>	<b>5.66</b>	<b>8.15</b>	<b>76.39</b>	<b>4.89</b>	<b>20.88</b>	<b>6.82</b>	<b>0.17</b>	<b>18.97</b>	<b>23.72</b>	<b>10.86</b>	<b>3.37</b>	<b>(3.37)</b>	<b>236.31</b>

## SPOT & SHORT-TERM VOLUMES (10<sup>3</sup> T) RECEIVED IN 2012 BY THE IMPORTING COUNTRIES FROM THE EXPORTING COUNTRIES

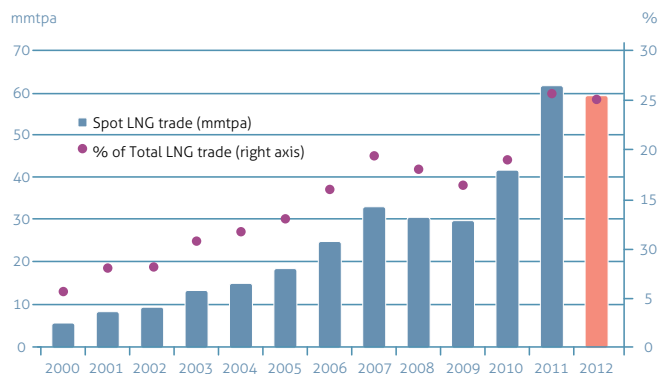
	Algeria	Egypt	Equ. Guin.	Nigeria	Norway	Peru	Trinidad & Tobago	Abu Dhabi	Oman	Qatar	Yemen	Australia	USA (Alaska)	Indonesia	Malaysia	Russia	Re-exports received	Re-exports loaded	Net Imports
Belgium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(1 174)	(1 174)
France	-	67	-	-	-	-	-	-	-	63	-	-	-	-	-	-	-	(164)	(34)
Greece	156	56	-	20	-	-	-	-	-	-	-	-	-	-	-	-	69	-	301
Italy	142	97	-	-	62	-	-	-	-	-	-	-	-	-	-	-	90	-	390
Netherlands	28	-	-	-	121	-	57	-	-	-	-	-	-	-	-	-	-	-	205
Portugal	-	57	-	-	-	-	56	-	-	123	-	-	-	-	-	-	56	(55)	237
Spain	-	58	-	481	439	1180	538	-	-	684	-	-	-	-	-	-	477	(1 269)	2 587
Turkey	-	361	-	-	121	-	-	-	-	877	-	-	-	-	-	-	158	-	1 518
U.K.	82	57	-	114	-	-	-	-	-	2 703	-	-	-	-	-	-	-	-	2 956
<b>Europe</b>	<b>408</b>	<b>753</b>	<b>-</b>	<b>615</b>	<b>742</b>	<b>1180</b>	<b>651</b>	<b>-</b>	<b>-</b>	<b>4 450</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>851</b>	<b>(2 662)</b>	<b>6 987</b>
Argentina	-	56	-	-	183	-	799	-	-	68	-	-	-	-	-	-	740	-	1 846
Brazil	-	-	-	315	128	-	967	-	-	996	-	-	-	-	-	-	581	(287)	2 700
Chile	-	173	180	-	54	-	280	-	-	-	235	-	-	-	-	-	-	-	921
Domin Rep	-	-	-	-	-	-	54	-	-	-	-	-	-	-	-	-	-	-	54
Mexico	-	-	-	-	-	135	109	-	-	1 107	-	-	-	-	-	-	-	-	1 352
Puerto Rico	-	-	-	50	61	-	344	-	-	-	-	-	-	-	-	-	-	-	455
Canada	-	-	-	-	-	-	-	-	-	696	-	-	-	-	-	-	-	-	696
U.S.A.	-	-	-	-	-	-	588	-	-	689	61	-	-	-	-	-	-	(422)	916
<b>Americas</b>	<b>-</b>	<b>229</b>	<b>180</b>	<b>365</b>	<b>426</b>	<b>135</b>	<b>3 140</b>	<b>-</b>	<b>-</b>	<b>3 557</b>	<b>296</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>1 320</b>	<b>(708)</b>	<b>8 940</b>
China	60	312	-	250	-	-	166	-	130	417	336	-	-	-	1 217	380	-	-	3 268
India	444	523	-	1 103	62	-	-	-	-	2 955	380	-	-	-	-	-	244	-	5 712
Indonesia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Japan	162	965	2 752	4 307	357	771	165	630	1 389	5 219	243	520	174	394	58	510	778	-	19 392
South Korea	54	120	-	1 069	60	-	678	-	66	2 275	942	298	-	3 152	-	443	112	-	9 270
Taiwan	58	178	187	1 156	56	-	62	-	-	809	-	189	-	62	-	-	65	-	2 822
Thailand	-	-	-	65	-	311	51	-	-	191	401	-	-	-	-	-	-	-	1 019
<b>Asia</b>	<b>779</b>	<b>2 099</b>	<b>2 939</b>	<b>7 951</b>	<b>535</b>	<b>1 082</b>	<b>1 122</b>	<b>630</b>	<b>1 585</b>	<b>11 864</b>	<b>2 302</b>	<b>1 006</b>	<b>174</b>	<b>3 608</b>	<b>1 275</b>	<b>1 332</b>	<b>1 200</b>	<b>-</b>	<b>41 483</b>
Kuwait	-	115	-	56	127	-	173	-	-	878	-	62	-	-	-	-	-	-	1 411
Dubai	-	-	-	-	-	-	62	36	-	277	-	-	-	-	-	-	-	-	375
<b>Middle East</b>	<b>-</b>	<b>115</b>	<b>-</b>	<b>56</b>	<b>127</b>	<b>-</b>	<b>235</b>	<b>36</b>	<b>-</b>	<b>1 155</b>	<b>-</b>	<b>62</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>1 786</b>
<b>Total exports</b>	<b>1 187</b>	<b>3 197</b>	<b>3 119</b>	<b>8 987</b>	<b>1 830</b>	<b>2 397</b>	<b>5 148</b>	<b>666</b>	<b>1 585</b>	<b>21 026</b>	<b>2 598</b>	<b>1 068</b>	<b>174</b>	<b>3 608</b>	<b>1 275</b>	<b>1 332</b>	<b>3 371</b>	<b>(3 371)</b>	<b>59 196</b>

### Spot and short-term LNG trade development since 2000

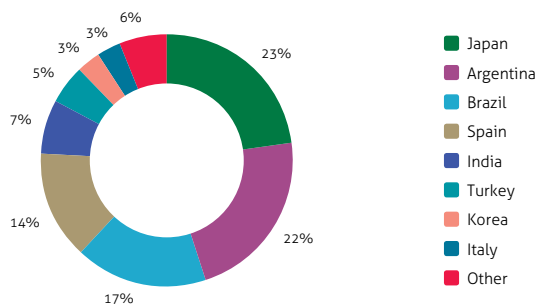


Note: Short-term trade denotes trades under contracts of a duration of 4 years or less.

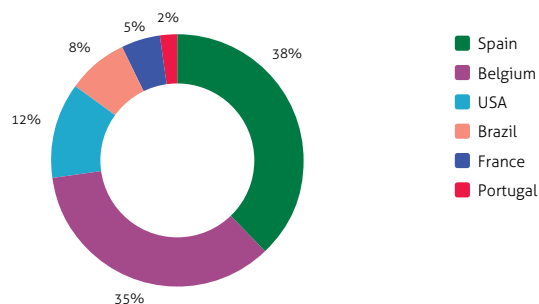
### Spot and Short-Term LNG Trade & Share of Total LNG Trade since 2000



### Re-exports received by receiving country (2012)



### Re-exports loaded by re-loading country (2012)





# LNG Characteristics

## LNG CHARACTERISTICS (2012 UPDATE)

The average composition is chosen as being representative among compositions reported by the different receiving terminals.

Origin	Nitrogen N2 %	Methane C1 %	Ethane C2 %	Propane C3 %	C4+ %	TOTAL	LNG Density <sup>(1)</sup> kg/m <sup>3</sup>	Gas Density <sup>(2)</sup> kg/m <sup>3</sup> (n)	Expansion ratio m <sup>3</sup> (n)/ m <sup>3</sup> liq	Gas GCV <sup>(2)</sup> MJ/m <sup>3</sup> (n)	Wobbe Index <sup>(2)</sup> MJ/m <sup>2</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 - Tangguh	0.13	96.91	2.37	0.44	0.15	100	431.22	0.74	581.47	41.00	54.14
Libya	0.59	82.57	12.62	3.56	0.65	100	478.72	0.86	558.08	46.24	56.77
Malaysia	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

<sup>(1)</sup> Calculated according to ISO 6578 [T = -160°C]. <sup>(2)</sup> Calculated according to ISO 6976 [0°C / 0°C, 1.01325 bar].



# LNG tankers

**The total LNG tanker fleet consisted of 378 vessels at the end of the year.**

It included 14 FSRUs\* and 14 ships of less than 18 000 m<sup>3</sup>.

In line with 2011, short-term and mid-term charter rates remained high in 2012 (around USD 120 000/day), with peaks around USD 150 000/day for conventional 155 000 m<sup>3</sup> vessels.

In October 2012, the "Ob River" LNG tanker (150 000 m<sup>3</sup>) achieved the first voyage through the Northern Sea Route. After cooling-down operations in Montoir-de-Bretagne, the LNG carrier was loaded in Norway and sailed to Tobata, Japan.

LNG bunkering projects and LNG as a marine fuel gained significant momentum during the year. In April 2012, there were 27 LNG-fuelled ships in operation, and 29 to be delivered.

- 2 LNG carriers were delivered in 2012 (compared with 16 ships in 2011):
  - Cubal (160 400 m<sup>3</sup>)
  - Shen Hai (147 200 m<sup>3</sup>)
- 3 ships were scrapped:
  - Elba
  - Palmaria
  - Sunrise (ex Transgas/Edouard L.D.)
- One LNG tanker was converted into an FSRU:
  - West Java (Nusantara Regas, delivered in 1977)

At the end of 2012, **the order book comprised 78 vessels**, including 2 small ships of less than 18 000 m<sup>3</sup>.

During the year, 27 new orders (2 Moss, 25 membrane) were placed:

- 23 LNG carriers
- 2 FSRUs
- 1 RV
- 1 FLNG

All vessels ordered in 2012 had an expected capacity ranging between 150 000 m<sup>3</sup> and 172 000 m<sup>3</sup>, except the FLNG (210 000 m<sup>3</sup>).

Currently, the "standard" size for ships is considered to be around 155 000 m<sup>3</sup>. A number of ship owners are also increasingly looking at 170 000 m<sup>3</sup> ships, which are compatible with most receiving terminals as well as with the Panama Canal.

<sup>(\*)</sup> Floating Storage and Regasification Unit



## LAI-UP SHIPS IN 2012

Name	Capacity (m <sup>3</sup> )	Delivery date	Containment
Galeomma	126 450	1978	Mark I
Koto	125 468	1984	Moss
Tenaga Dua	130 000	1981	NO 88
Tenaga Tiga	130 000	1981	NO 88
<b>TOTAL</b>	<b>511 918</b>		

Total shipping capacity available on the market at the end of 2012 reached 54.0 10<sup>6</sup> m<sup>3</sup>. The operational shipping capacity (without laid-ups) amounted to 53.5 10<sup>6</sup> m<sup>3</sup>.

In all, **3982 loaded voyages were completed in 2012**, compared to 4110 in 2011:

- 1 533** » to Japan (1 438 in 2011)
- 568** » to Korea (563 in 2011)
- 846** » to Europe (1 109 in 2011)
- 180** » to Argentina, Brazil and Chile (118 in 2011)
- 173** » to the United States, Puerto Rico, the Dominican Republic, Mexico, and Canada (228 in 2011)
- 207** » to China (194 in 2011)
- 206** » to Taiwan (198 in 2011)
- 205** » to India (195 in 2011)
- 14** » to Thailand
- 33** » to Kuwait (39 in 2011)
- 17** » to Dubai (17 in 2011)

Vessels made an average of 11 laden voyages in 2012, compared with 19 voyages in 2002. The average delivery volume remained stable compared to 2011, around 130 000 m<sup>3</sup> per cargo.

Since 1964, **over 70 000 cargoes** have been delivered without loss.



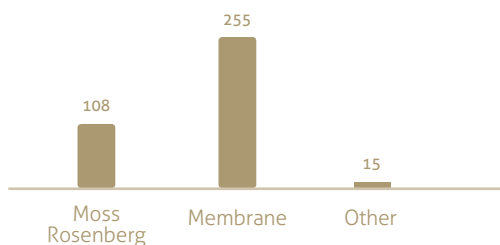
# LNG tankers (cont'd.)

## SHIPS DELIVERED IN 2012

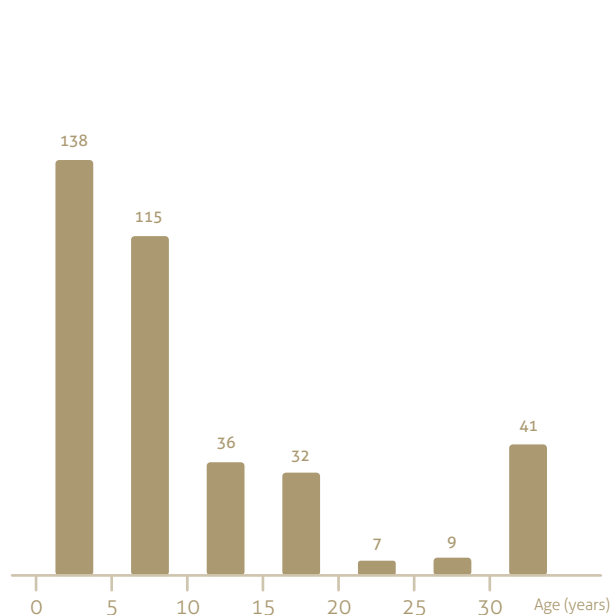
Official Delivery Date	Ship name	Capacity (m <sup>3</sup> )	Shipowner	Shipbuilder	Containment System	Hull number
January 2012	Cubal	160 400	Mitsui/NYK/Teekay	Samsung	Mark III	SHI 1813
September 2012	Shen Hai	147 200	China LNG Shipping	Hudong Zhonghua	NO 96	HZ1621A

### The vessels can be classified as follows (at the end of 2012):

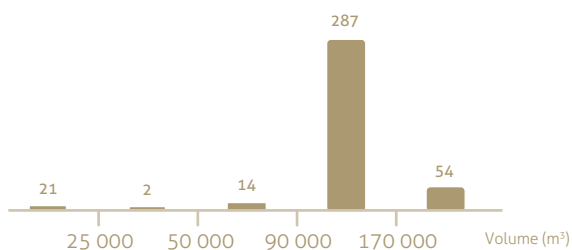
According to containment system



According to the delivery date or the age of the ships



According to cargo capacity



# Fleet list

Delivery date	Tanker name	Technique	Capacity
1969	SCF Arctic (ex Methane Arctic)	Membrane	71 500
	SCF Polar (ex Methane Polar)	Membrane	71 500
1972	Bebatik	Membrane	75 060
1973	Norman Lady	Moss	87 600
1975	Annabella	Membrane	35 500
	Belanak	Membrane	75 000
	Bilis	Membrane	77 731
	Bubuk	Membrane	77 670
	Hilli	Moss	126 227
1976	Isabella	Membrane	35 500
	Gimi	Moss	126 277
1977	Gandria	Moss	125 820
	Golar Freeze	Membrane	135 200
	Larbi Ben M'Hidi	Membrane	129 767
	LNG Aquarius	Moss	126 300
	LNG Aries	Moss	126 300
	LNG Lagos (ex Gastor)	Membrane	122 000
	LNG Port Harcourt	Membrane	122 000
	Mostefa Ben Boulaid	Membrane	125 260
1978	West Java (ex Khannur)	Moss	125 017
	Galeomma	Membrane	126 540
	LNG Capricorn	Moss	126 300
	LNG Delta (ex Southern)	Membrane	125 640
	LNG Gemini	Moss	126 300
1979	LNG Leo	Moss	126 400
	Methania	Membrane	131 235
	Bachir Chihani	Membrane	129 767
	LNG Libra	Moss	126 400
	LNG Taurus	Moss	126 300
1980	LNG Virgo	Moss	126 400
	Matthew (ex Gamma)	Membrane	126 540
	LNG Abuja (ex Louisiana)	Moss	126 530
1981	LNG Edo (ex Lake Charles)	Moss	126 530
	Mourad Didouche	Membrane	126 130
	Golar Spirit	Membrane	128 600
	Ramdane Abane	Membrane	126 130
	Tenaga Dua	Membrane	130 000
1982	Tenaga Empat	Membrane	130 000
	Tenaga Lima	Membrane	130 000
	Tenaga Tiga	Membrane	130 000
1983	Tenaga Satu	Membrane	130 000
	Banshu Maru	Moss	127 000
	Echigo Maru	Moss	125 568
1984	Wilpower (ex Bishu Maru)	Moss	125 542
	Koto (ex Kotowaka Maru)	Moss	125 454
	LNG Bonny	Membrane	135 293
	LNG Finima	Membrane	133 000
	Senshu Maru	Moss	125 835
1985	Wilgas (ex Dewa Maru)	Moss	125 877
1989	Wakaba Maru	Moss	125 877
	LNG Swift (ex NW Swift)	Moss	127 590
	NW Sanderling	Moss	127 525
1990	NW Swallow	Moss	127 708
	Ekaputra	Moss	136 400
1991	NW Snipe	Moss	127 747
1992	NW Shearwater	Moss	127 500
1993	NW Seaeagle	Moss	127 452
	Aman Bintulu	Membrane	18 928
	Arctic Spirit (ex Arctic Sun)	Other	89 880
	LNG Flora	Moss	127 705
	NW Sandpiper	Moss	127 500
1994	Polar Spirit (ex Polar Eagle)	Other	89 880
	Al Khaznah	Moss	135 496
1994	Dwiputra	Moss	127 386

Delivery date	Tanker name	Technique	Capacity
1994	Hyundai Utopia	Moss	125 182
	LNG Vesta	Moss	127 547
	NW Stormpetrel	Moss	127 606
	Puteri Delima	Membrane	130 405
	Puteri Intan	Membrane	130 405
	Shahamah	Moss	135 496
1995	YK Sovereign	Moss	127 125
	Ghasha	Moss	137 514
	Hanjin Pyeong-Taek	Membrane	130 600
	Ish	Moss	137 540
	Puteri Nilam	Membrane	130 405
1996	Al Khor	Moss	137 354
	Al Zubarah	Moss	137 573
	Hyundai Greenpia	Moss	125 000
	Mraweh	Moss	137 000
	Mubaraz	Moss	137 000
	Puteri Zamrud	Membrane	130 405
	Surya Aki	Moss	19 474
1997	Al Hamra	Moss	137 000
	Al Rayyan	Moss	135 358
	Al Wajbah	Moss	137 354
	Aman Sendai	Membrane	18 928
	LNG Portovenere	Membrane	65 000
	Puteri Firus	Membrane	130 405
	Umm Al Ashtan	Moss	137 000
1998	Al Wakrah	Moss	135 358
	Aman Hakata	Membrane	18 800
	Broog	Moss	135 466
	Kayoh Maru	Other	1 517
	LNG Lericci	Membrane	65 000
	Zekreet	Moss	135 420
1999	Al Bidda	Moss	135 279
	Doha	Moss	137 354
	Hanjin Muscat	Membrane	138 200
	Hyundai Technopia	Moss	135 000
	SK Summit	Membrane	138 000
	Al Jasra	Moss	137 100
2000	Golar Mazo	Moss	135 225
	Hanjin Ras Laffan	Membrane	138 214
	Hanjin Sur	Membrane	138 333
	Hyundai Aquapia	Moss	135 000
	Hyundai Cosmopia	Moss	135 000
	Hyundai Oceanpia	Moss	135 000
	K Acacia	Membrane	138 017
	K Freesia	Membrane	135 256
	LNG Jamal	Moss	135 333
	SK Splendor	Membrane	138 375
	SK Stellar	Membrane	138 375
	SK Supreme	Membrane	138 200
2001	Surya Satsuma	Membrane	23 096
	Sohar LNG (ex Lakshimi)	Moss	137 248
	Abadi	Moss	135 000
2002	British Trader	Membrane	138 000
	Excalibur	Membrane	138 000
	Galea	Moss	134 425
	Gallina	Moss	134 425
	Hispania Spirit (ex Fernando Tapias)	Membrane	140 500
	LNG Rivers	Moss	137 231
	LNG Sokoto	Moss	137 231
2003	Puteri Delima Satu	Membrane	137 100
	Puteri Intan Satu	Membrane	137 100
	British Innovator	Membrane	138 000
	British Merchant	Membrane	138 000
	BW Suez Boston (ex Berge Boston)	Membrane	138 059
	BW Suez Everett (ex Berge Everett)	Membrane	138 028
	Castillo de Villalba	Membrane	138 000
	Catalunya Spirit (ex Inigo Tapias)	Membrane	138 000
	Energy Frontier	Moss	147 599
	Excel	Membrane	138 106
1994	Golar Arctic (ex Granatina)	Membrane	140 648
	LNG Bayelsa	Moss	137 500

## Fleet list (cont'd.)

Delivery date	Tanker name	Technique	Capacity	
2003	Methane Princess	Membrane	138 000	
	Pacific Notus	Moss	137 006	
	Puteri Nilam Satu	Membrane	137 100	
	Shinju Maru 1	Other	2 513	
	SK Sunrise	Membrane	138 306	
	Berge Arzew	Membrane	138 088	
	Bilbao Knutsen	Membrane	138 000	
	Cadiz Knutsen	Membrane	138 826	
	Disha	Membrane	136 026	
	Dukhan	Moss	137 661	
2004	Fuji LNG (ex Muscat LNG)	Moss	149 172	
	Fuwairit	Membrane	138 000	
	Galicia Spirit	Membrane	140 624	
	Gemmata	Moss	138 104	
	Golar Winter	Membrane	138 000	
	Lala Fatma N'Soumer	Moss	147 845	
	LNG Akwa Ibom	Moss	141 038	
	LNG River Orashi	Membrane	145 914	
	Madrid Spirit	Membrane	145 000	
	Maersk Ras Laffan	Membrane	138 270	
	Methane Kari Elin	Membrane	138 209	
	NW Swan	Membrane	138 000	
	Pioneer Knutsen	Other	1 100	
	Puteri Firus Satu	Membrane	137 100	
	Puteri Zamrud Satu	Membrane	137 100	
	Raahi	Membrane	136 026	
	2005	Al Deebel	Membrane	145 130
		Al Thakhira	Membrane	145 130
		Energy Advance	Moss	147 624
		Excellence	Membrane	138 120
Excelsior		Membrane	138 087	
Golar Grand (ex Grandis)		Membrane	145 700	
Gracilis (ex Golar Viking)		Membrane	138 105	
LNG Adamawa		Moss	142 656	
LNG Cross River		Moss	141 000	
LNG Enugu		Membrane	145 914	
LNG Oyo		Membrane	145 842	
LNG Pioneer		Membrane	138 000	
Lusail		Membrane	145 000	
Nizwa LNG		Moss	147 684	
North Pioneer		Moss	2 512	
Puteri Mutiara Satu		Membrane	137 100	
Rasgas Asclepius (ex Maran Gas Asclepius)		Membrane	145 822	
Salalah LNG		Membrane	145 951	
Seri Alam		Membrane	145 572	
Umm Bab		Membrane	145 000	
2006	Al Marrouna	Membrane	149 539	
	Arctic Discoverer	Moss	142 612	
	Arctic Lady	Moss	147 208	
	Arctic Princess	Moss	147 835	
	Arctic Voyager	Moss	140 000	
	Energy Progress	Moss	147 558	
	Excelerate	Membrane	138 000	
	GDF SUEZ Global Energy (ex Gaz de France Energy)	Membrane	74 130	
	Golar Maria (ex Granosa)	Membrane	145 700	
	Iberica Knutsen	Membrane	148 000	
	Ibra LNG	Membrane	147 100	
	Ibri LNG	Moss	145 173	
	LNG Benue	Membrane	145 842	
	LNG Dream	Moss	145 000	
	LNG Lokoja	Membrane	149 600	
	LNG River Niger	Moss	141 000	
	Maersk Qatar	Membrane	145 130	
	Methane Jane Elizabeth	Membrane	145 000	
	Methane Lydon Volney	Membrane	145 000	
	Methane Rita Andrea	Membrane	145 000	
Pacific Eurus	Moss	135 000		
Provalys	Membrane	154 472		

Delivery date	Tanker name	Technique	Capacity
2006	Seri Amanah	Membrane	145 000
	Seri Anggun	Membrane	145 731
	Seri Angkasa	Membrane	145 000
	Simaisma	Membrane	145 700
	Stena BlueSky (ex Bluesky)	Membrane	145 819
	Al Areesh	Membrane	148 786
	Al Daayen	Membrane	148 853
	Al Gattara	Membrane	216 224
	Al Jassasiya	Membrane	145 700
	Al Ruwais	Membrane	210 100
2007	Al Saftiya	Membrane	210 100
	British Emerald	Membrane	154 983
	Cheikh El Mokrani	Membrane	74 365
	Clean Energy	Membrane	149 700
	Clean Power	Membrane	149 700
	Ejnan	Membrane	145 000
	Gaselys	Membrane	154 472
	Grace Acacia	Membrane	149 700
	Grace Barleria	Membrane	149 700
	Grand Elena	Moss	147 200
	LNG Borno	Membrane	149 600
	LNG Kano	Membrane	149 600
	LNG Ogun	Membrane	149 600
	LNG Ondo	Membrane	148 300
	Maran Gas Coronis	Membrane	145 700
	Methane Alison Victoria	Membrane	145 127
	Methane Heather Sally	Membrane	145 127
	Methane Nile Eagle	Membrane	145 144
	Methane Shirley Elisabeth	Membrane	145 127
	Neo Energy	Membrane	149 700
2008	Neva River (ex. Celestine River)	Moss	145 000
	Seri Ayu	Membrane	145 894
	Seri Bakti	Membrane	152 300
	Seri Begawan	Membrane	152 300
	Sestao Knutsen	Membrane	138 114
	Sun Arrows	Moss	19 100
	Tembek	Membrane	216 000
	Al Aamniya	Membrane	210 168
	Al Ghariya	Membrane	210 100
	Al Gharrafa	Membrane	216 224
	Al Ghuwairiya	Membrane	263 249
	Al Hamla	Membrane	216 000
	Al Huwaila	Membrane	217 000
	Al Kharsaah	Membrane	217 000
	Al Khuwair	Membrane	217 000
	Al Oraiq	Membrane	210 100
	Al Sahla	Membrane	216 200
	Al Shamal	Membrane	217 000
	Al Thumama	Membrane	216 200
	Al Utouriya	Membrane	215 000
Alto Acrux	Moss	147 798	
Arwa Spirit (ex Maersk Arwa)	Membrane	165 500	
British Diamond	Membrane	155 000	
British Ruby	Membrane	155 000	
British Sapphire	Membrane	155 000	
Bu Samra	Membrane	267 335	
Cheikh Bouamara	Membrane	75 558	
Clean Force	Membrane	149 700	
Dapeng Moon	Membrane	147 210	
Dapeng Sun	Membrane	147 000	
Duhail	Membrane	210 100	
Energy Navigator	Moss	147 558	
Explorer	Membrane	150 900	
Fraiha	Membrane	210 100	
Grace Cosmos	Membrane	149 700	
Grand Aniva	Moss	147 200	
Grand Mereya	Moss	145 964	
Hyundai Ecopia	Membrane	19 700	
K Jasmine	Membrane	145 877	
K Mugungwha	Membrane	151 812	
LNG Barka	Moss	155 982	



Delivery date	Tanker name	Technique	Capacity	
2008	LNG Ebisu (ex Ebisu)	Moss	147 546	
	LNG Imo	Membrane	148 300	
	Maersk Marib	Membrane	165 500	
	Maersk Methane	Membrane	165 500	
	Mozah	Membrane	267 335	
	Murwab	Membrane	210 100	
	Seri Balhaf	Membrane	152 300	
	Seri Bijaksana	Membrane	152 888	
	Shinju Maru 2	Other	2 536	
	STX Kolt	Membrane	145 700	
	Tanggung Batur	Membrane	145 700	
	Tanggung Foja	Membrane	155 641	
	Tanggung Hiri	Membrane	155 000	
	Tanggung Jaya	Membrane	155 641	
	Tanggung Towuti	Membrane	145 700	
	Trinity Arrow	Membrane	154 982	
	Umm Al Amad	Membrane	210 100	
	Umm Slal	Membrane	267 335	
	2009	Abdelkader	Membrane	155 000
		Al Dafna	Membrane	267 335
Al Ghashamiya		Membrane	217 000	
Al Kharaana		Membrane	210 100	
Al Kharaitiyat		Membrane	216 200	
Al Khattiya		Membrane	210 100	
Al Mafyar		Membrane	267 335	
Al Mayeda		Membrane	267 335	
Al Nuaman		Membrane	210 100	
Al Rekayyat		Membrane	216 200	
Al Sadd		Membrane	210 100	
Al Samriya		Membrane	261 700	
Al Sheehaniya		Membrane	210 166	
Aseem		Membrane	155 000	
Ben Badis		Membrane	173 010	
BW GDF SUEZ Brussels		Membrane	162 400	
BW GDF SUEZ Paris		Membrane	162 400	
Coral Methane		Other	7 500	
Cygnus Passage		Moss	145 400	
Dapeng Star		Membrane	147 210	
Energy Confidence		Moss	153 000	
Express		Membrane	150 900	
Exquisite		Membrane	151 035	
GDF SUEZ Neptune		Membrane	145 000	
Kakurei Maru		Other	2 536	
Lijmiliya		Membrane	261 700	
LNG Jupiter		Moss	153 659	
Maersk Magellan		Membrane	165 500	
Mekaines		Membrane	267 335	
Mesaimmeer		Membrane	216 200	
Min Lu		Membrane	147 210	
Min Rong		Membrane	147 000	
Onaiza		Membrane	210 100	
Pacific Enlighten		Moss	145 000	
Seri Balqis		Membrane	157 611	
Shagra		Membrane	267 335	
Taitar n°1		Moss	147 362	
Taitar n°2		Moss	147 500	
Tanggung Palung		Membrane	155 642	
Tanggung Sago		Membrane	154 971	
Trinity Glory	Membrane	154 999		
Woodside Donaldson	Membrane	165 936		
2010	Aamira	Membrane	267 335	
	Abdelkader	Membrane	155 000	
	Al Bahiya	Membrane	210 100	
	Barcelona Knutsen	Membrane	173 400	
	Castillo de Santisteban	Membrane	173 673	
	Exemplar	Membrane	151 072	
	Expedient	Membrane	151 035	
	GasLog Savannah	Membrane	155 000	
	GasLog Singapore	Membrane	155 000	
	GDF SUEZ Cape Ann	Membrane	145 000	
	GDF SUEZ Point Fortin	Membrane	154 914	
	Meridian Spirit (ex Maersk Meridian)	Membrane	165 772	

Delivery date	Tanker name	Technique	Capacity
2010	Methane Becki Anne	Membrane	170 678
	Methane Julia Louise	Membrane	170 000
	Methane Mickie Harper	Membrane	170 000
	Methane Patricia Camila	Membrane	170 000
	Norgas Creation	Other	10 030
	Norgas Innovation	Other	10 030
	Rasheeda	Membrane	267 335
	Ribera del Duero Knutsen	Membrane	173 400
	Sevilla Knutsen	Membrane	173 400
	STX Frontier	Membrane	153 000
	Taitar N°3	Moss	147 366
	Taitar N°4	Moss	147 546
	Valencia Knutsen	Membrane	173 400
	Zarga	Membrane	267 335
2011	Akebono Maru	Other	3 556
	Amali	Membrane	148 000
	Arkat	Membrane	147 228
	Bahrain Vision	Other	12 022
	Energy Horizon	Moss	177 441
	Lobito	Membrane	161 337
	Malanje	Membrane	160 400
	Norgas Conception	Other	10 030
	Norgas Invention	Other	10 030
	Norgas Unikum	Other	12 000
	Sonangol Benguela	Membrane	160 500
	Sonangol Etosha	Membrane	160 786
	Sonangol Sambizanga	Membrane	160 785
	Soyo	Membrane	161 337
2012	Stena ClearSky	Membrane	173 593
	Stena CrystalSky	Membrane	173 611
	Cubal	Membrane	160 400
	Shen Hai	Membrane	147 200

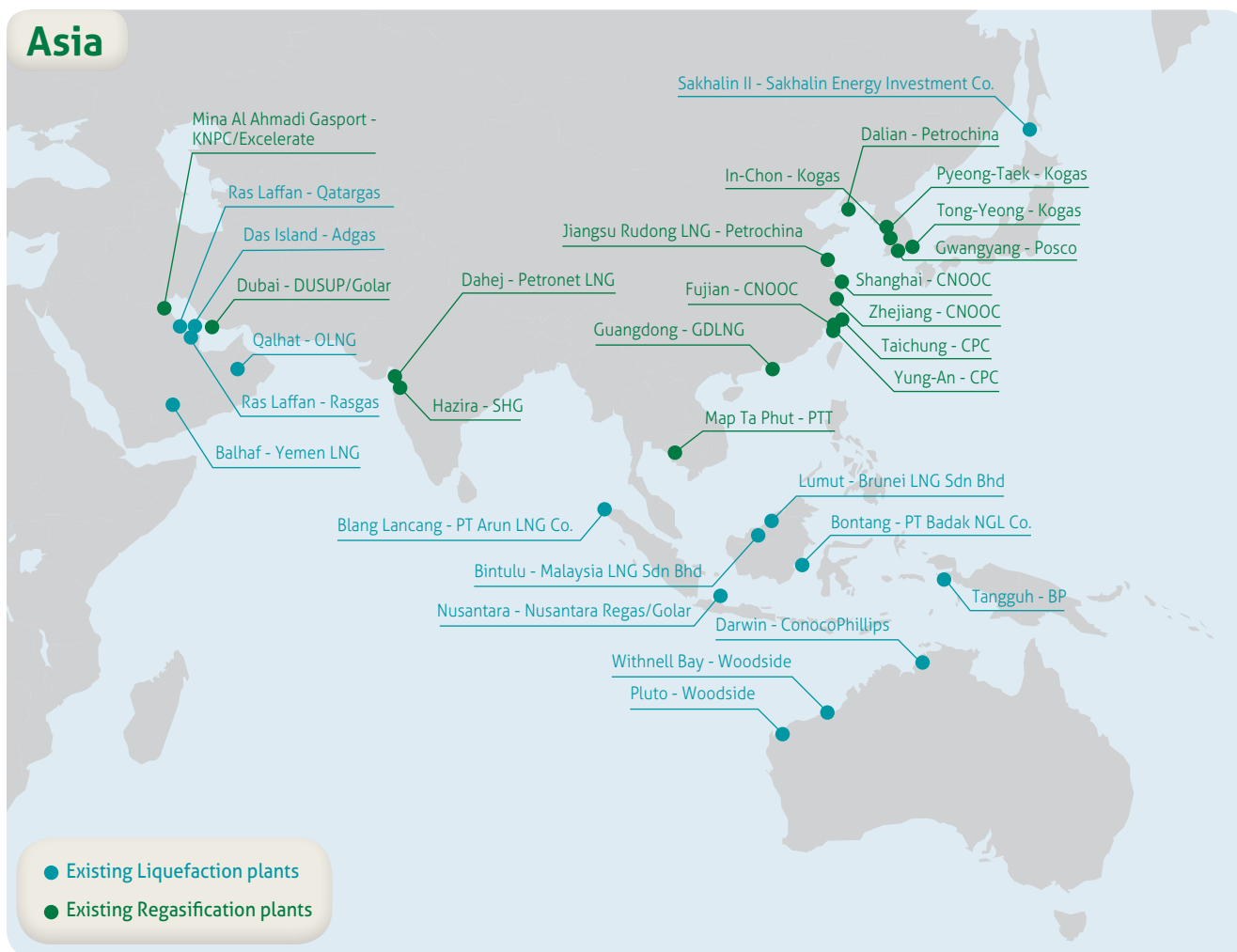
# Liquefaction plants

There were 89 liquefaction trains in operation in 18 exporting countries at the end of 2012.

One new facility came into service in Australia: Pluto LNG, with a capacity of 4.3 mmtpa.

The aggregate nominal capacity of all liquefaction plants reached 282 mmtpa, to be compared with a worldwide LNG consumption of 236 mmtpa.

Four FIDs were taken during the year, for a total output of 23.1 mmtpa: Ichthys (January), Malaysia FLNG (April), APLNG Train 2 (July) and Sabine Pass (August).



## Algeria

In Algeria, production was constrained mainly due to feedgas shortages. The new 4.7 mmtpa LNG train at Skikda was scheduled to be operational in 2012 but has been deferred to the summer of 2013.

## Angola

In Angola, due to technical issues, partners Sonangol, Chevron, BP, Total and ENI were obliged to delay the start-up of the 5.2 mmtpa train initially planned for 2012. The first cargoes are expected to be loaded in the first half of 2013.

## Australia

In Australia, the **Pluto** project led by Woodside was the only new LNG project to be commissioned in 2012. The first cargo was loaded in May and delivered to Kansai Electric. At the end of the year, the Pluto project was operating near its full capacity of 4.3 mmtpa.

In addition, seven projects are currently under construction, for a total capacity of 61.8 mmtpa:

## WEST COAST

- Off the north-western coast of Australia on Barrow Island, the Chevron-led **Gorgon** project announced significant cost overruns. Mainly due to rising labour costs, stringent regulation and weather-related issues, the initial project cost of around US\$ 37 billion is now estimated at around US\$ 52 billion. According to Chevron, each of the three Gorgon trains could produce 5.2 mmtpa instead of 5 mmtpa initially. First LNG deliveries are expected in 2015.
- South of Barrow Island in Ashburton North, Chevron and partners have started construction of the 8.9 mmtpa Wheatstone project. Owned by Chevron (64.14%), Apache (13%), Kuwait Petroleum (7%), Shell (6.4%) Kyushu Electric (1.46%) and PE Wheatstone Pty Ltd (8%, partly owned by TEPCO), Wheatstone has approval for exports of up to 25 mmtpa of LNG, with first deliveries expected in 2016. In August 2012, 79% of production were covered by long term SPA or HOA.
- Led by Inpex, Total and Japanese partners, the 8.4 mmtpa Ichthys LNG project has entered the construction phase after its FID in January 2012, representing an investment of US\$ 34 billion. In July 2012, Total signed an agreement with Inpex in order to increase its interest in the project from 24% to 30%. First deliveries are expected around the end of 2016.
- **Prelude FLNG:** Led by Shell, the Prelude floating LNG liquefaction facility is currently being built in South Korean shipyards. The facility will produce gas and condensates from the Bonaparte basin: LNG output will be 3.6 mmtpa for first deliveries in 2017. In 2010 and 2011, Shell agreed to sign portfolio supply deals with Osaka Gas, Kogas and CPC including Prelude LNG volumes.

## EAST COAST

- On the East coast, the coal bed methane-to-LNG **Queensland Curtis LNG (QCLNG)** project led by BG is currently under construction. First LNG deliveries from the two 4.25 mmtpa trains are expected for the end of 2014 or the beginning of 2015. In October 2012, BG signed an HOA for the sale of a 20% stake in QCLNG upstream blocks and of a 40% stake in Train 1 to CNOOC. BG will retain ownership of the tanks and jetty. The HOA also includes a 5 mmtpa LNG supply contract for a duration of 20 years. Both companies also agreed to invest in the construction of two LNG carriers in China. The 5 mmtpa deal will represent a significant portion of BG's portfolio and will balance the company's off-take of 5.5 mmtpa from Sabine Pass.
- Also on Curtis Island, the CBM-based Australia Pacific LNG project (APLNG) led by ConocoPhillips, Origin Energy and Sinopec took FID on a second 4.5 mmtpa train in July, which will mostly supply Sinopec (3.3 mmtpa) and Kansai Electric (1 mmtpa). ConocoPhillips and Origin decided to reduce their interest in the project to 37.5% each, which will increase Sinopec's share from 15% to 25%.
- Led by Santos (30%), Total (27.5%), Petronas (27.5%) and Kogas (15%), the CBM-based Gladstone LNG project has started construction with the burial of the 420 km underground pipeline linking the gas fields to Curtis Island. For this two train project (2x3.9 mmtpa), Santos announced in 2012 a new estimated cost of US\$18.5 bn. First deliveries are expected around the end of 2015. In May 2012, APLNG's operator Origin Energy signed an agreement to supply feed gas to the Gladstone project.

## Canada

- In British Columbia, several large-scale LNG export projects are being considered sourced from unconventional gas in the form of LNG.



So far, three projects have been granted export licenses by the NEB (National Energy Board):

- Kitimat LNG
- LNG Export Co-op (Douglas Channel project)
- LNG Canada
- Initially launched by Apache (40%), EOG (30%) and Encana (30%), the Kitimat LNG project includes two trains with a total capacity of 8.9 mmtpa and a possible start-up in 2017. In December 2012, EOG and Encana sold their shares to Chevron.
- The Douglas Channel Project, developed by LNG Partners and the Haisla Nation, is a proposed liquefaction facility on the west bank of the Douglas Channel, within the District of Kitimat. The expected project output is 0.9 mtpa (with possible expansion to 1.8 mtpa). Regulatory permits are awaited. Deliveries could start in 2019.
- Led by Shell, Mitsubishi, Kogas and Petrochina and also located in the Kitimat district, the LNG Canada project comprises 4 trains for a total capacity of 24 mmtpa. Start-up is expected around 2019. Near Prince Rupert, BG Group is also studying the feasibility of an export plant which could be operational by the end of the decade.

## Colombia

- In Colombia, Exmar and Pacific Rubiales have started construction of a 0.5 mmtpa floating liquefaction plant, which could be operational in 2014. Plans involve building a small liquefaction barge and a pipeline from the company's La Creciente gas field to the Caribbean coast.



## Liquefaction plants 2012 (cont'd.)

### Egypt

- In Egypt, feedgas supply for exports has been reduced mainly because of rising domestic demand. The output from the Damietta plant was sharply curtailed and the plant did not ship out any cargo between the end of June and the beginning of November.
- On average, the liquefaction plants at Idku and Damietta operated at around 40% of the nameplate capacity. As a result, Egypt could become an LNG importer in 2013. Following a tender from the Egyptian Ministry of Petroleum and Resources, several fast-track projects to install a FSRU off the Egyptian coasts have been submitted. Among the front-runners, a joint-venture formed by Egyptian private equity firm Citadel Capital (49%) and Qatari partners (51%).

### Equatorial Guinea

- In Equatorial Guinea, new gas discoveries made by Marathon, Noble Energy and Ophir Energy could support the development of a second train by the end of the decade.

### Indonesia

- In Indonesia, Tangguh's LNG plant was hit by production outages, which reduced the country's annual output. In November, BP's project to construct a 3.8 mtpa third train at Tangguh LNG was approved by the government, provided that 40% of the train's production is dedicated to the domestic Indonesian domestic market. FID is expected by 2014 but the abolition of upstream regulator BPMigas at the end

of the year casts significant uncertainty on future LNG projects in the country.

- Still under construction, the Sengkang and Donggi-Senoro LNG projects (2 mtpa each) could come online in 2014.
- In Arun, Pertamina plans to convert the ageing liquefaction plant into a 4.13 Bcm import terminal by mid-2014.

### Israel

- In order to liquefy gas from the Tamar and Dalit fields, Pangea LNG's subsidiary, Levant LNG Marketing, and Tamar Partners decided to start a FEED study for a 3 mtpa floating liquefaction and storage vessel which would be moored 60 miles offshore Israel. FID is expected in the second half of 2013.

### Libya

- In Libya, the Marsa-El-Brega plant remained shut down as a consequence of the civil war.

### Malaysia

- In Malaysia, extended maintenance on the liquefaction facilities contributed to reduction of the LNG output. In April 2012, Petronas took FID on its 1.2 mtpa floating liquefaction project at Kanowit, 180 km offshore Bintulu. In addition, German company Linde will build a medium-scale liquefaction plant of around 670 000 tpa which could start operating in 2014.



## Mozambique

- In Mozambique, Eni and Anadarko signed an HOA for a joint development of onshore liquefaction facilities in Northern Mozambique. Currently in the FEED phase, the partners could take FID before the end of 2013. In its initial phase, the project includes 20 mmtpa of liquefaction capacity, with operational start-up targeted for 2018.

## Nigeria

In Nigeria, various sabotage actions on feedgas pipelines led to force majeure on deliveries in October and November. Prospects for a 7<sup>th</sup> train at NLNG facilities or for the development of the Brass project remain uncertain, both projects now being in competition with new projects in East Africa.

## Norway

- In Snohvit, the production level was higher than in 2011 when unplanned maintenance operations had to be undertaken. At the end of the year, the plant owners announced their decision to shelve their plans for a second train in Snohvit, due to insufficient gas reserves.

## Papua New Guinea

- In Papua New Guinea, the two-train PNG LNG project is currently under construction and should come on stream in 2014. PNG LNG will be operated by ExxonMobil and its total capacity should increase from 6.6 mmtpa to 6.9 mmtpa.

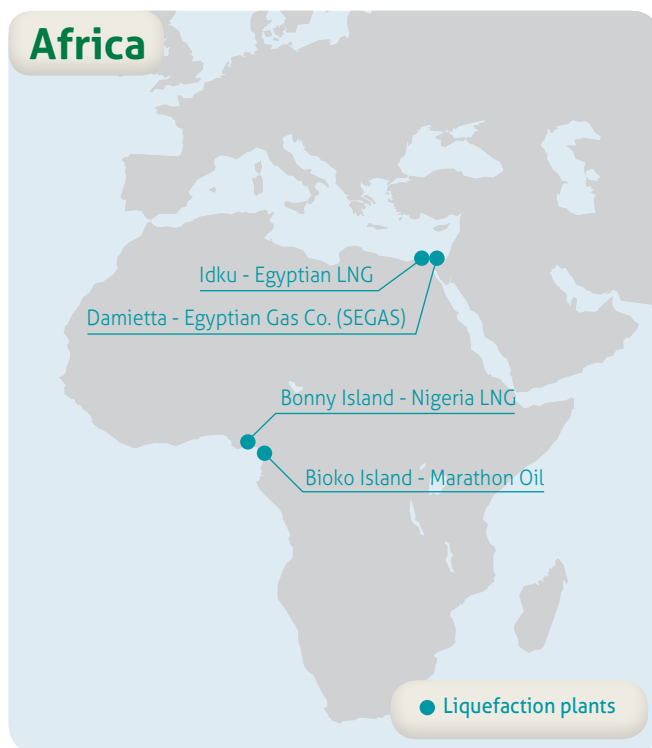
- Led by InterOil, the 8 mmtpa Gulf LNG Project had not reached FID yet at the end of 2012, but the government has approved a first train of 4 mmtpa and has decided to increase its stake in Gulf LNG to 50%. To move forward, it is considered that the project needs a proven LNG operator.

## Russia

- In Sakhalin, the production level was raised to 114% of the nameplate capacity. In August, the Shtokman project was deferred by Gazprom.



## Africa



## USA

- In the United States, FID was taken in August on the first phase of the Sabine Pass liquefaction project developed by Cheniere. The first phase includes two trains of 4.5 mmtpa each and FID for trains 3 and 4 was expected in the first half of 2013. So far, Sabine Pass is the only US export project holding a permit to export LNG to countries with which the United States do not have a free trade agreement.

- At the end of 2012, 17 large-scale projects had requested permits from the Department of Energy to export LNG to both FTA and non-FTA countries. In December, a report commissioned by the DoE endorsing the benefits of LNG exports from the US was released. The requests for export licenses will be examined after a preliminary consultation period.

- The timetable of US exports will also be greatly determined by the pace of the Federal Energy regulatory Commission (FERC) approval process. Sabine Pass is so far the only project which has received approval from the FERC.

## Yemen

- In Yemen, several sabotage attacks affected the feedgas pipeline to the Balhaf plant, causing severe supply disruptions and loss of output. Given the history of attacks, expanding the plant's capacity is not on the agenda.

# Liquefaction plants 2012

Country	Site	Liquefaction		Storage		Owner(s)	Operator	Buyer(s)	Start-up date
		Number of trains	Nominal capacity 10 <sup>6</sup> t per year	Number of tanks	Total capacity m <sup>3</sup>				
<b>Atlantic Basin</b>									
Algeria	Arzew GL 1Z	6	7.90	3	300 000	Sonatrach	Sonatrach	GDF Suez, Botaş, SNAM-Rete, Iberdrola, Depa, Cepsa Gas, Statoil, Endesa	1981
	Arzew GL 2Z	6	8.30	3	300 000	Sonatrach	Sonatrach	GDF Suez, Botaş, SNAM-Rete, Iberdrola, Depa, Cepsa Gas, Statoil, Endesa	1972
	Skikda - GL1K/GL2K	3	3.20	5	308 000	Sonatrach	Sonatrach	GDF Suez, Botaş, SNAM-Rete, Iberdrola, Depa, Cepsa Gas, Statoil, Endesa	1972/1981
Egypt	Damietta	1	5.00	2	300 000	Union Fenosa Gas (80%), EGPC (10%), EGAS (10%)	SEGAS SERVICES	Union Fenosa Gas, BP	2005
	Idku	2	7.20	2	280 000	T1: BG (35.5%), Petronas (35.5%), GDF SUEZ (5%), Egyptian LNG (EGPC (12%), EGAS (12%)) T2: BG (38%), Petronas (38%), EGAS (12%), EGPC (12%)	Egyptian LNG (EGPC, EGAS, BG, GDF SUEZ, Petronas)	GDF SUEZ (T1), BG (T2)	2005
Equatorial Guinea	Bioko Island	1	3.70	2	272 000	Marathon (60%), Sonagas (25%), Mitsui (8.5%), Marubeni (6.5%)	EG LNG	BG	2007
Libya (stopped)	Marsa-el-Brega	4	3.20	2	96 000	LNOC	LNOC	Gas Natural Fenosa	1970
Nigeria	Bonny Island (NLNG T1-3)	3	9.60	3	336 800	Nigeria LNG (NNPC 49%), Shell (25.6%), Total (15%), ENI 10.4%)	Shell	Enel, Gas Natural Fenosa, Botas, GDF SUEZ, GALP	1999-2002
	Bonny Island (NLNG T4 & 5)	2	8.10			Nigeria LNG (NNPC 49%), Shell (25.6%), Total (15%), ENI 10.4%)	Shell	BG, Shell, Iberdrola, Endesa, GALP, Total, ENI	2006
	Bonny Island (NLNG T6)	1	4.10	1	84 200	Nigeria LNG (NNPC 49%), Shell (25.6%), Total (15%), ENI 10.4%)	Shell	Total, Shell	2008
Norway	Hammerfest	1	4.30	2	250 000	Statoil (36.79%), Petoro (30%), TOTAL (18.4%), GDF SUEZ (12%), RWE (2.81%)	Statoil	Total, Statoil, GDF SUEZ, Iberdrola	2007
Trinidad & Tobago	Point Fortin	4	15.50	4	524 000		Atlantic LNG	GDF SUEZ, Gas Natural Fenosa (T1) Naturgas, Repsol, BP, BG (T2-3), Repsol, BP, BG (T4)	1999
	Atlantic LNG T1	1	3.30	2	204 000	BP (34%), BG (26%), Repsol (20%), CIC (10%), NGC Trinidad (10%)	Atlantic LNG		1999
	Atlantic LNG T2 & 3	2	7.00	1	160 000	BP (42.5%), BG (32.5%), Repsol (25%)	Atlantic LNG		2002-2003
	Atlantic LNG T4	1	5.20	1	160 000	BP (37.8%), BG (28.9%), Repsol (22.2%) NGC Trinidad (11.1%)	Atlantic LNG		2006
<b>Middle-East</b>									
Abu Dhabi	Das Island	3	5.80	3	240 000	ADNOC (70%), Mitsui (15%), BP (10%), Total (5%)	Adgas	The Tokyo Electric Power Co.	1977
Oman	Qalhat	2	7.10	2	240 000	Omani gvt (51%), Shell (30%), Total (5.5%), Korea LNG (5%), Mitsubishi (2.8%), Mitsui (2.8%), Partex (2.0%), Itochu (0.9%),	Oman LNG	KOGAS, Shell, Osaka Gas, BP, Itochu	2000
		1	3.60			Omani gvt (46.8%), Oman LNG (36.8%), Union Fenosa Gas (7.4%), Osaka Gas (3%), Mitsubishi (3%), Itochu (3%)	Qalhat LNG	Mitsubishi, Osaka Gas, Union Fenosa Gas, Itochu	2006



Country	Site	Liquefaction		Storage		Owner(s)	Operator	Buyer(s)	Start-up date
		Number of trains	Nominal capacity 10 <sup>6</sup> t per year	Number of tanks	Total capacity m <sup>3</sup>				
Qatar	Ras Laffan (Qatargas 1 T1 & 2)	2	6.40	4	340 000	Qatar Petroleum (65%), ExxonMobil (10%), Total (10%), Marubeni (7.5%), Mitsui (7.5%)	Qatargas I	Chubu Electric, The Chugoku Electric, The Kansai Electric, Osaka Gas, Toho Gas, Tohoku Electric, Tokyo Gas, The Tokyo Electric Power Co., Gas Natural Fenosa, PTT	1999
	Ras Laffan (Qatargas 1 - T3)	1	3.10			Qatar Petroleum (65%), ExxonMobil (10%), Total (10%), Marubeni (7.5%), Mitsui (7.5%)	Qatargas I	Tokyo Gas	1999
	Ras Laffan (Qatargas 2 - T1)	1	7.80	8	1 160 000	Qatar Petroleum (70%), ExxonMobil (30%)	Qatargas II	ExxonMobil, Chubu	2009
	Ras Laffan (Qatargas 2 - T2)	1	7.80			Qatar Petroleum (65%), ExxonMobil (18.3%), Total (16.7%)	Qatargas II	ExxonMobil, Total, CNOOC	2009
	Ras Laffan (Qatargas 3 - T1)	1	7.80			Qatar Petroleum (68.5%), ConocoPhillips (30%), Mitsui (1.5%)	Qatargas III	ConocoPhillips, Repsol, Centrica	2010
	Ras Laffan (Qatargas 4 - T1)	1	7.80			Qatar Petroleum (70%), Shell (30%)	Qatargas IV	Shell, Petrochina, Marubeni	2011
	Ras Laffan (Rasgas 1 T1 & 2)	2	6.60			Qatar Petroleum (63%), ExxonMobil (25%), KOGAS (5%), Itochu (4%), LNG Japan (3%)	RasGas I	KOGAS, ENI	1999-2000
	Ras Laffan (Rasgas 2 - T1)	1	4.70			Qatar Petroleum (70%), ExxonMobil (30%)	RasGas II	Petronet LNG	2004
	Ras Laffan (Rasgas 2 - T2)	1	4.70	Qatar Petroleum (70%), ExxonMobil (30%)	RasGas II	Endesa, Edison	2005		
	Ras Laffan (RasGas 2- T3)	1	4.70	Qatar Petroleum (70%), ExxonMobil (30%)	RasGas II	Petronet, EDF, ENI-Distrigas, CPC	March 2007		
	Ras Laffan (Rasgas 3 - T1)	1	7.80	Qatar Petroleum (70%), ExxonMobil (30%)	RasGas III	Petronet, KOGAS	August 2009		
	Ras Laffan (Rasgas 3 - T2)	1	7.80	Qatar Petroleum (70%), ExxonMobil (30%)	RasGas III	ExxonMobil	April 2010		
Yemen	Balhaf - T1 & 2	2	6.70	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%, GASSP 5%)	Yemen LNG	KOGAS, GDF SUEZ, Total	October 2009 & April 2010

### Pacific Basin

Australia	Withnell Bay - Trains 1-4	4	12.10	4	260 000	Woodside, Shell, BHP, BP Australia, Chevron (17% each) Mitsubishi, Mitsui (8% each)	Woodside	The Tokyo Electric Power Co., Chubu Electric, The Kansai Electric, The Chugoku Electric, Kyushu Electric, Tokyo Gas, Osaka Gas, Shizuoka Gas, Tohoku Electric, Nippon Gas, KOGAS, Shell Hazira Gas, DPLNG	Trains 1 & 2: 1989; Train 3: 1992; Train 4: 2004
	Withnell Bay - Train 5	1	4.30	1	65 000	Woodside, Shell, BHP, BP Australia, Chevron (17% each) Mitsubishi, Mitsui (8% each)	Woodside	The Tokyo Electric Power Co., Chubu Electric, The Kansai Electric, The Chugoku Electric, Kyushu Electric, Tokyo Gas, Osaka Gas, Shizuoka Gas, Tohoku Electric, Nippon Gas, KOGAS, Shell Hazira Gas, DPLNG	2008
	Darwin	1	3.40	1	188 000	ConocoPhillips (57%), ENI, Santos, Inpex (11% each) The Tokyo Electric Power Co. (6%), Tokyo Gas (3%)	ConocoPhillips	The Tokyo Electric Power Co., Tokyo Gas	2006
	Pluto	1	4.30	2	240 000	Woodside (90%), The Kansai Electric (5%), Tokyo Gas (5%)	Woodside	The Kansai Electric, Tokyo Gas, Petronas	2012

## Liquefaction plants 2012 (cont'd.)

Country	Site	Liquefaction		Storage		Owner(s)	Operator	Buyer(s)	Start-up date				
		Number of trains	Nominal capacity 10 <sup>6</sup> t per year	Number of tanks	Total capacity m <sup>3</sup>								
Brunei	Lumut	5	7.10	3	195 000	Brunei gvt (50%), Shell (25%), Mitsubishi (25%)	Brunei LNG Sdn Bhd	Tokyo Gas, The Tokyo Electric Power Co., Osaka Gas, KOGAS	1973				
U.S.A.	Kenai	1	1.40	3	108 000	ConocoPhillips	ConocoPhillips	Tokyo Gas, The Tokyo Electric Power Co.	1969				
Indonesia	Blang Lancang - Arun	2	4.20	6	636 000	Pertamina	PT Arun NGL Co. (Pertamina 55%, ExxonMobil 30%, JILCO 15%)	KOGAS	1978-1979				
	Bontang - Badak	8	22.30										
	Badak A & B	2								The Kansai Electric, Chubu Electric, Kyushu Electric, Osaka Gas, Toho Gas, Nippon Steel Co.	1977		
	Badak C & D	2								The Kansai Electric, Chubu Electric, Osaka Gas, Toho Gas	1983		
	Badak E	1								CPC	1990		
	Badak F	1								Tokyo Gas, Osaka Gas, Toho Gas, Hiroshima Gas, Nippon Gas	1994		
	Badak G	1								KOGAS	1998		
	Badak H	1								CPC	1998		
	Tangguh	2	7.60	2	340 000	Tangguh LNG (BP 37.16%, CNOOC 13.9%, JX Nippon 13.5%, Mitsubishi 9.9%, INPEX 7.8%, LNG Japan 7.4%, KG Berau 5%, Talisman 3.1%, Mitsui 2.3%)	Tangguh LNG	KOGAS, Posco, SK Energy Co., CNOOC, Chubu Electric, Tohoku Electric, Semptra LNG,	2009				
Malaysia	Bintulu MLNG 1 (Satu)	3	8.10	6	390 000	Petronas (90%), Mitsubishi (5%), Sarawak state gvt (5%)	Petronas	Tokyo Gas, The Tokyo Electric Power co., Saibu Gas, Shikoku Electric, Hiroshima Gas	1983				
	Bintulu MLNG 2 (Dua)	3	7.80							Petronas (60%), Shell (15%), Mitsubishi (15%), Sarawak state gvt (10%)	Malaysia LNG Dua	Chubu Electric, Tokyo Gas, Osaka Gas, Toho Gas, The Kansai Electric, Shizuoka Gas, Tohoku Electric, Sendai City Gas, KOGAS, CPC	1995
	Bintulu MLNG 2 (Dua) - debottleneck	1	1.50							Petronas (60%), Shell (15%), Mitsubishi (15%), Sarawak state gvt (10%)	Malaysia LNG Dua	Chubu Electric, Tokyo Gas, Osaka Gas, Toho Gas, The Kansai Electric, Shizuoka Gas, Tohoku Electric, Sendai City Gas, KOGAS, CPC	2010
	Bintulu MLNG 3 (Tiga)	2	6.80							Petronas (60%), Shell (15%), JX Nippon Oil (10%), Sarawak state gvt (10%), Mitsubishi (5%)	Malaysia LNG Tiga	Tokyo Gas, Osaka Gas, Toho Gas, Tohoku Electric, Japex, KOGAS, CNOOC	2003
Peru	Peru LNG	1	4.45	2	260 000	Hunt Oil (50%), Repsol (20%), SK Energy (20%), Marubeni (10%)	Hunt Oil	Repsol	2010				
Russia	Sakhalin 2	2	9.55	2	200 000	Sakhalin Energy Invest Co. (Gazprom 50%, Shell 27.5%, Mitsui 12.5%, Mitsubishi 10%)	Sakhalin Energy Invest Co. (Gazprom 50%, Shell 27.5%, Mitsui 12.5%, Mitsubishi 10%)	Gazprom, Shell, KOGAS, Chubu Electric, Hiroshima Gas, Kyushu Electric, Osaka Gas, Saibu Gas, Toho Gas, Tohoku Elec, The Tokyo Electric Power Co., Tokyo Gas	2009				
<b>Total</b>		<b>89</b>	<b>282.00</b>		<b>9 567 000</b>								

# Regasification plants

93 LNG regasification terminals - including 11 floating facilities - were in operation at the end of 2012. Indonesia became the 26<sup>th</sup> importing country. At the end of the year, the combined nominal send-out capacity of the facilities reached 668 mmtpa (902 bcm/y). With 406 tanks, total storage capacity was close to 46 10<sup>6</sup> m<sup>3</sup> of LNG (liquid).

Half of the world's regasification capacity was located in Asia.

Based on an annual LNG consumption of 236.3 mmtpa, the global average utilization rate of receiving installations slightly decreased to 36%. While the utilization rate of Asian terminals remained stable (around 46%), the European rate decreased to 31%. In the Americas, the average terminal utilization rate was around 10% but only 2% in U.S terminals.

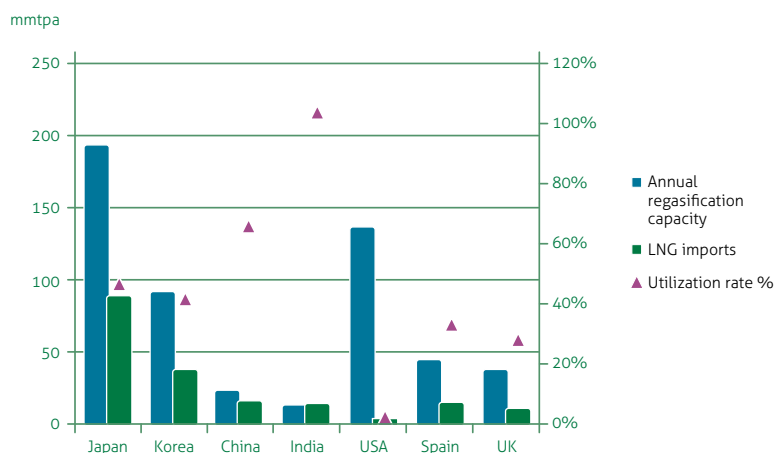
## Four new regasification terminals were commissioned in 2012, adding an 11.5 mmtpa regasification capacity:

- Manzanillo (Mexico, 3.8 mmtpa)
- Nusantara (Indonesia, FSRU, 3 mmtpa)
- Zhejiang (China, 3 mmtpa)
- Ishikari (Japan, 1.7 mmtpa)

## Five LNG terminals initially expected to be commissioned in 2012 were delayed into 2013:

- Dabhol (India, 2 mmtpa with possible expansion to 5 mmtpa when a breakwater will be installed)
- Kochi (India, 2.5 mmtpa)
- Melaka (Malaysia, 2 FSRUs, 3.8 mmtpa)
- Livorno (Italy, FSRU, 2.7 mmtpa)
- Hadera (Israel, FSRU, 3 mmtpa)

Regasification capacity vs LNG imports in 2012





## Regasification plants (cont'd.)

### Belgium

• In **Zeebrugge**, a second jetty is currently under construction and should be commissioned in 2015. In order to further reduce fuel gas consumption, in addition to the existing CHP plant, an open-rack vaporizer is also being constructed. In late 2012, for the first time in Belgium, LNG was loaded as bunker fuel onto a ship (the "Argonon") in the nearby harbor of Antwerp. The LNG was transported from the Fluxys Zeebrugge LNG terminal by truck to Antwerp.

### Brazil

• In Brazil, Petrobras decided to permanently relocate the "Golar Winter" FSRU from **Guanabara Bay** to Bahia. In addition, Petrobras plans to install another FSRU in **Bahia**. The ship will have a capacity of 3.8 mtpa and should start operating in 2013. In Guanabara Bay, the company projects to install a new vessel named "VT3", a 5.3 mtpa FSRU currently developed by Exceletrate and aiming to start operations in May of 2014 under a 15 year charter. Meanwhile, Exceletrate's FSRU "Exquisite" began regasification operations for Petrobras in Guanabara Bay in December 2012.

### Chile

• In September 2012, Enagas bought a 20% stake from BG in the **Quintero** terminal. Enagas intends to buy the remaining 20% still owned by BG.

Two floating terminals are currently under construction:

- Colbun (3.8 mtpa), dedicated to supply LNG to power plants owned by Colbun and AES
- GasAtacama (1.1 mtpa), which will be located in the Bay of Mejillones and will be connected to the GasAtacama power plant.

The FSRUs could start commercial operations respectively in 2015 and 2016.

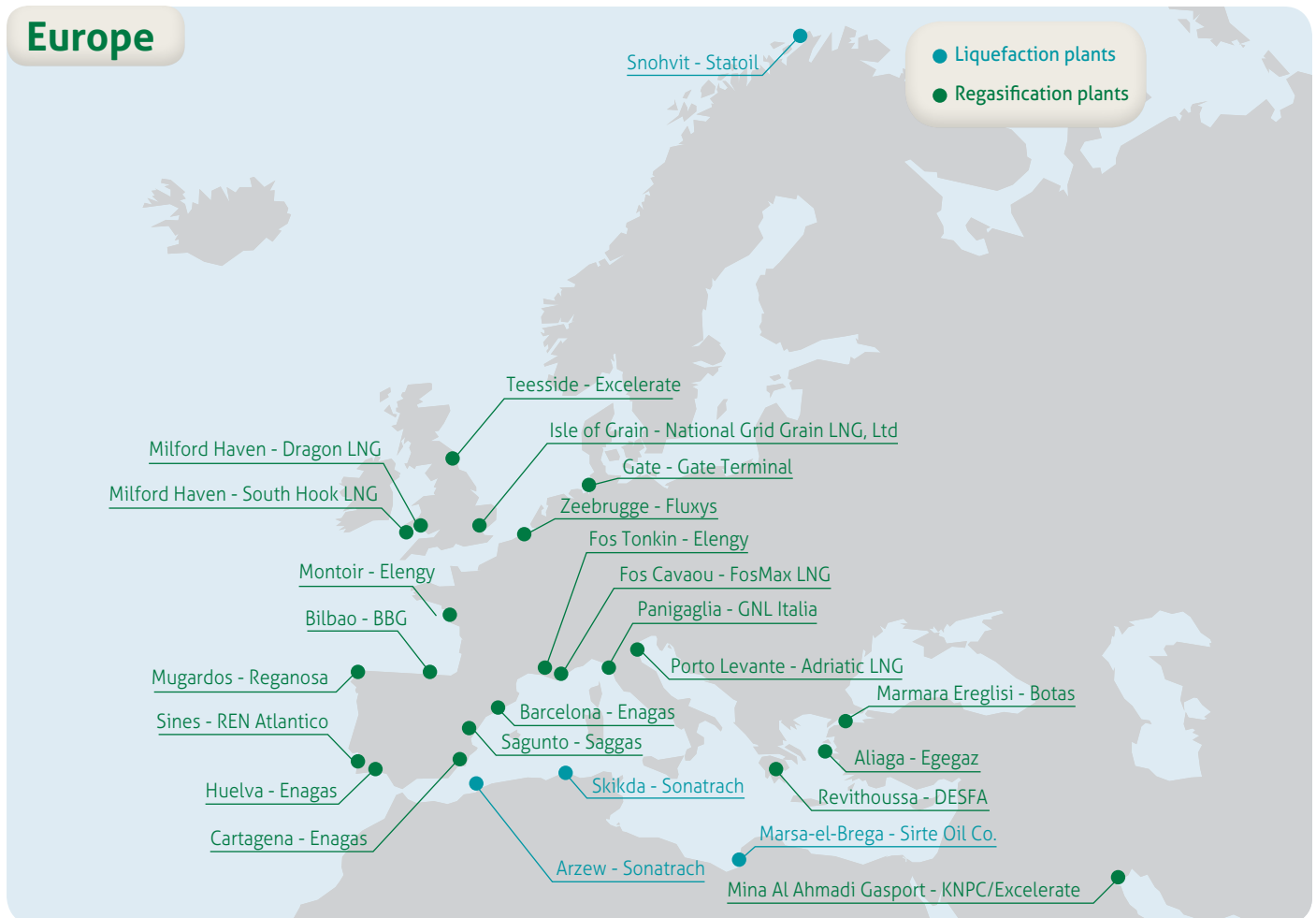
### China

• Developed by CNOOC, the 3 mtpa **Zhejiang** (Ningbo) terminal received a commissioning cargo from Qatar in September 2012.

CNOOC is also building two other terminals and plans to create a local LNG distribution hub with recently commissioned Zhejiang LNG:

- Hainan LNG, with a capacity of 2 mtpa and expected start-up in 2014
- Zhuhai, with an initial capacity of 3.5 mtpa and possible start-up of commercial operations in 2013.

• In addition, CNOOC owns 70% of a 4 mtpa LNG terminal project in **Shenzen (Diefu)**. Dedicated to supply gas to power plants in Dongbu, the terminal is currently under construction and should come online around 2015. It will have four tanks with a storage capacity of 160 000 m<sup>3</sup> each.



- In **Guangdong**, construction work on the 4<sup>th</sup> storage tank at GDLNG terminal started in December 2012. The tank is expected to be in operation in 2015.
- In **Dalian**, Petrochina inaugurated a third storage tank which increases the terminal's storage capacity to 480 000 m<sup>3</sup>. Petrochina is also building a 3.5 mmtpa receiving terminal in Tangshan (Caofeidian), with projected start-up in 2013.
- In **Qingdao**, Sinopec is currently building a 3 mmtpa receiving terminal with possible start-up in 2015.

## France

- In France, Elengy launched a ship reloading service at Montoir and **Fos Cavaou** in February 2012. As of 31<sup>st</sup> December 2012, 4 operations had been performed. In Montoir, an LNG truck loading service will also be launched in July 2013.
- In Dunkirk, the construction of the new LNG terminal began in May 2012: the 9.4 mmtpa regasification unit –the largest in Continental Europe - is expected to be operational in 2015.

## India

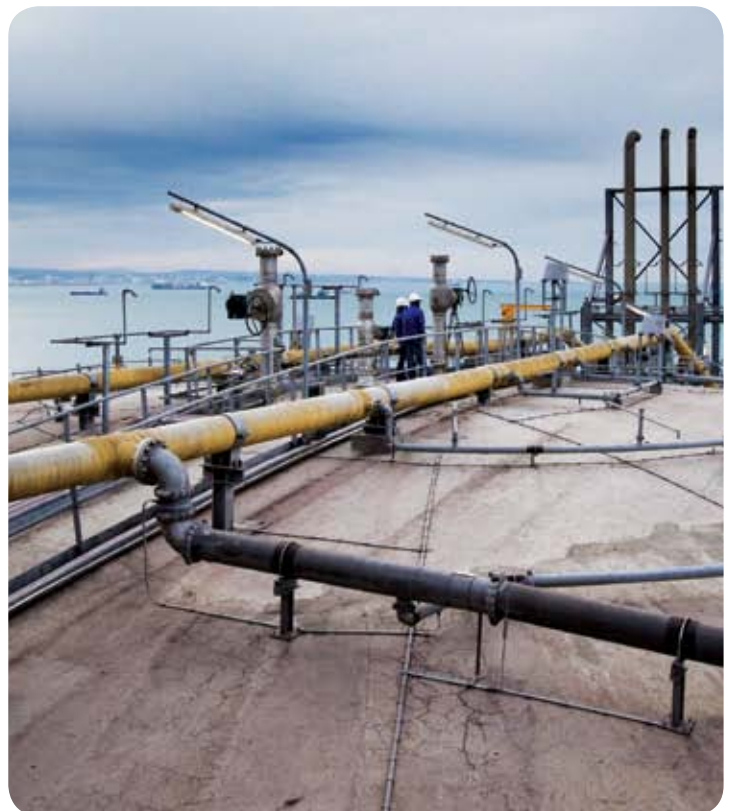
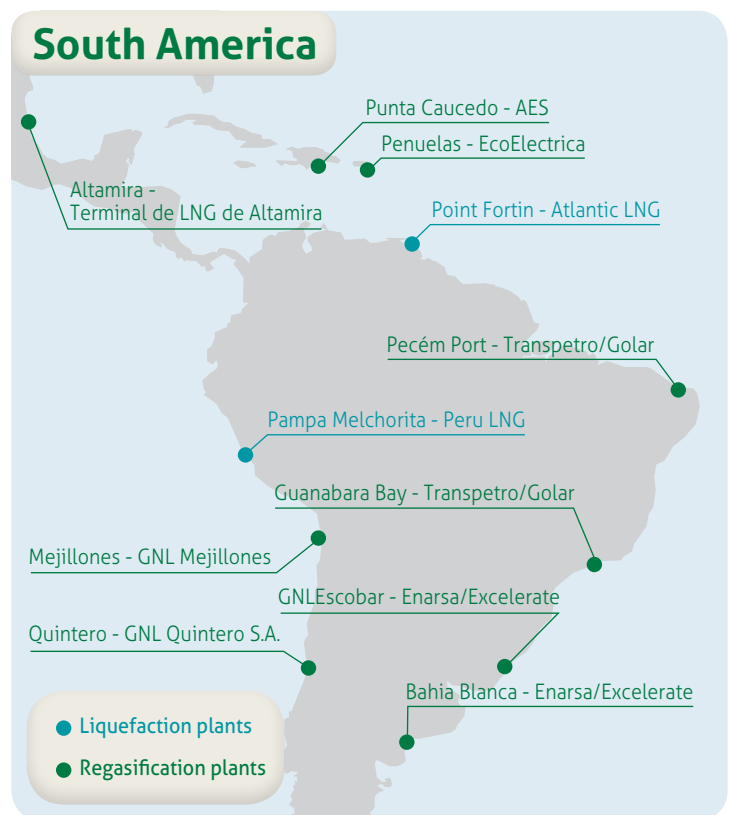
- In **Dahej**, a second jetty is currently being added to the existing terminal. The jetty will increase capacity from 10 mmtpa to 12.5 mmtpa.
- In India, the start-up of two terminals was delayed to 2013:
  - Due to shallow waters, the 5 mmtpa **Dabhol LNG terminal** will only be able to operate at full capacity once a breakwater is installed. Largest owners are Gail (32%) and NTPC (32%). The terminal operated by Gail experienced technical issues when receiving its first commissioning cargo in March 2012. It received a second cargo in December and was scheduled for start-up in the first half of 2013, with an initial capacity of 2 mmtpa.
  - Developed by Petronet LNG on the western coast of India, the **Kochi LNG terminal** was delayed to the first quarter of 2013. Due to pipeline issues, the planned 5 mmtpa regasification capacity will initially be limited to 1 mmtpa.

## Indonesia

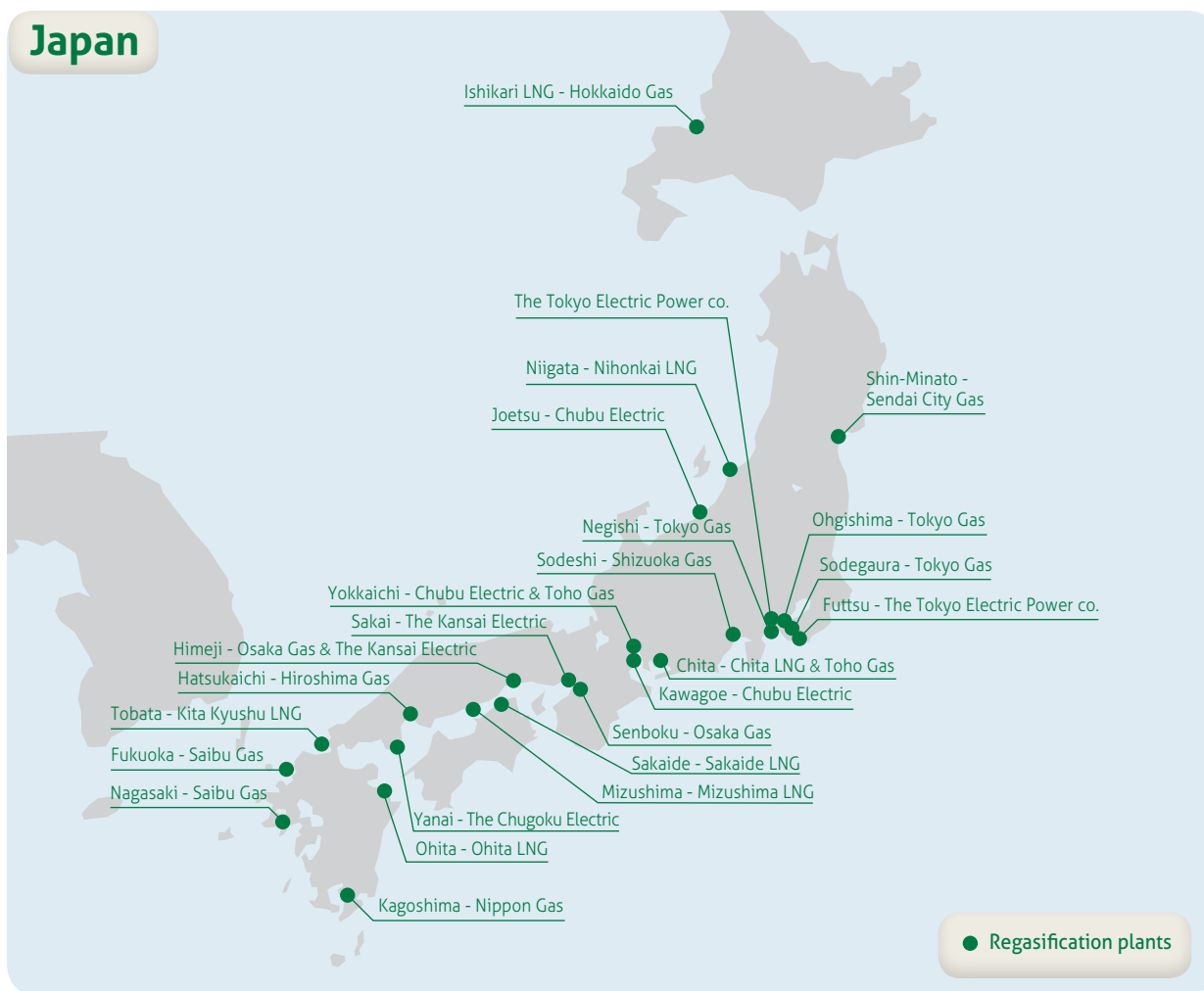
- Following the conversion of the "Khannur LNG" tanker, Pertamina and PGN started receiving LNG through the 5.2 Bcm/y **Nusantara Regas project**. Located 15 kilometers off the northern coast of Jakarta, the FSRU was commissioned in May and began commercial operations in August.
- The ageing Arun liquefaction plant will be converted into a regasification terminal, using the plant's existing tanks. In its first phase, the terminal will have a capacity of 1.5 mmtpa and will use a FSRU which will be linked by pipeline to the city of Belawan.

## Israel

- In order to offset the disruption of gas supplies from Egypt, Israel Natural Gas Lines finished the construction of an LNG discharge buoy offshore the port of **Hadera**. Excelerate supplied a regasification and storage vessel which was expected to be commissioned in December.



## Regasification plants (cont'd.)



### Italy

• At the end of 2012, the **Offshore LNG Toscana (OLT) FSRU** was expected to arrive off the coasts of Livorno to start commercial operations in the third quarter of 2013. The OLT project is owned by E.ON (46.79%), IREN Group (46.79%), OLT Energy Toscana (3.73%) and GOLAR LNG (2.69%). The terminal will have a 2.7 mmtpa regasification capacity.

### Japan

• In Hokkaido, the **Ishikari LNG terminal** developed by Hokkaido Gas received a commissioning cargo in October and came online in December 2012. The terminal has one tank of 180 000 m<sup>3</sup> and a total regasification capacity of 1.7 mmtpa.

Five other LNG terminals are currently under construction:

- **Naoetsu**, a 1.5 mmtpa terminal developed by Inpex which could start commercial operations in 2014.
- **Hachinohe**, developed by JX Nippon Oil, with a capacity of 1.5 mmtpa and planned start-up in 2015.

- **Hibiki**, developed by Saibu Gas, with a capacity of 3.5 mmtpa and expected start-up in 2014.

- **Hitachi**, developed by Tokyo gas, expected to come online in 2016.

- **Kushiro LNG**, a 0.5 mmtpa satellite terminal developed by JX Nippon Oil on Hokkaido Island and which will receive deliveries from the Hachinohe terminal, starting in 2015.

### Lithuania

• Hoegh LNG has secured financing for a 2.2 mmtpa FSRU which will be leased by Lithuanian gas company Klaipėdos Nafta. The FSRU is expected to be delivered at the beginning of 2014 with possible start-up of commercial operations in the fall.

### Malaysia

• In **Melaka**, jetty issues prevented the 3.8 mmtpa receiving terminal to come online in 2012. The terminal is comprised of two 130 000 m<sup>3</sup> floating storage units (Tenaga Empat and Tenaga Satu) linked to a JRU (Jetty Regasification Unit). At the end of the year, Melaka was expected to come online in the first half of 2013.



## Mexico

• After a commissioning cargo was received in March, the 3.8 mmtpa **Manzanillo terminal** started operating in May 2012. The terminal is jointly owned by Samsung (37.5%), Kogas (25%) and Mitsui (37.5%).

## Poland

• The 5 Bcm/y **Polskie LNG terminal** is currently under construction in Swinoujscie, on the Baltic coast, with expected start-up in the second half of 2014. Polish gas transmission operator GAZ-SYSTEM S.A. owns the Polskie LNG company and supervises the construction of the LNG terminal, while Polish Oil and Gas Company PGNiG as capacity holder will handle the supply and transport of liquefied natural gas to the terminal.

## Portugal

• In **Sines**, Ren Atlântico completed the terminal expansion. A third tank was installed, which increases the terminal's storage capacity to 390 000 m<sup>3</sup>. Peak send-out capacity was brought to 1.350.000 m<sup>3</sup>(n)/h. The terminal can receive ships up to 216 000 m<sup>3</sup> and has the ability to load 4500 trucks/year.

## Singapore

• At the end of 2012, the 3.5 mmtpa **Singapore LNG (SLNG) terminal** was scheduled for start-up in the second quarter of 2013. Located on Jurong Island, the project is owned by the Singapore Energy Market Authority,

who plans to expand the capacity of the terminal to 6 mmtpa in 2014, and possibly 9 mmtpa later with the addition of a fourth tank. BG was granted an exclusive license to aggregate LNG demand from end-users and to supply LNG to SLNG.

## South Korea

• In South Korea, SK E&S and GS Caltex are planning to revive an import terminal project in **Boryeong**, on the western coast of Korea. The project is based on a previous 1.5 mmtpa project launched in 2006 by GS Caltex.

## Spain

• In **Bilbao**, a new 150.000m<sup>3</sup> tank is currently under construction. It allows for a 50% increase in the actual storage capacity of the plant. The new installation is expected to be operational by July 14<sup>th</sup>.

In Gijón, the construction of Enagas' **El Musel** terminal was completed in 2012. Due to the general regasification overcapacity in Spain, the plant was mothballed.

## Ukraine

• In November 2012, Ukraine's state investment and national projects agency announced the creation of a consortium to install a 3.6 mmtpa FSRU in the **Port of Yuzhny**. The FSRU could start-up around 2016.



# Regasification Terminals in 2012

Country	Site	Storage		Send-out		Owner	Operator	T.P.A.	Main source(s) of import	Start-up date
		Number of tanks	Total capacity in liq m <sup>3</sup>	Number of vaporizers	Nominal capacity in NG bcm/y					
<b>AMERICAS</b>										
Argentina	Bahia Blanca <sup>*(F)</sup>	1	151 000	6	5.1	Enarsa	Bahia Blanca GasPort	No	Trinidad & Tobago	2008
	Escobar <sup>*(F)</sup>	1	151 000	6	5.1	Enarsa	GNL Escobar GasPort	No	Trinidad & Tobago	2011
Brazil	Guanabara Bay <sup>*(F)</sup>	1	151 000	6	5.0	Petrobras	Transpetro	No	Trinidad & Tobago, Nigeria, Qatar	2009
	Pecem <sup>*(F)</sup>	1	129 000	2	2.5	Petrobras	Transpetro	No	Trinidad & Tobago, Nigeria	2009
Canada	Canaport LNG	3	160 000	8	10.0	Repsol Energy Canada Ltd (74.25%), Irving Canaport LP Co. Ltd (24.75%), Repsol Canada Ltd (0.75%), Irving Canaport GP Co. (0.25%)	Repsol Canada Ltd	Yes (but no RTPA)	Trinidad & Tobago, Qatar	2009
Chile	Mejillones	1	154 500	3	2.0	Codelco (37%), GDF SUEZ (63%)	GNLM	Yes	Yemen, Egypt, Trinidad	2010
	Quintero	3	334 000	3	3.7	BG (20%), Enagas (20%), ENAP (20%), Endesa (20%), Metrogas (20%)	GNL Quintero S.A.	Yes	Trinidad & Tobago, Equatorial Guinea	2009
Dominican Rep.	Punta Caucedo	1	160 000	2	2.3	AES	AES	No	Trinidad & Tobago	2003
Mexico	Altamira	2	300 000	5	7.8	Terminal de LNG de Altamira (Vopak 60%, Enagas 40%)	Terminal de LNG de Altamira (Vopak 60%, Enagas 40%)	Yes	Nigeria, Qatar, Trinidad & Tobago	2006
	Energia Costa Azul	2	320 000	6	10.3	Energia Costa Azul (100% Sempra LNG)	Energia Costa Azul	Yes	Indonesia	2008
	Manzanillo	2	300 000		5.2	Samsung (37.5%), Kogas (25%), Mitsui (37.5%)	Kogas		Peru	2012
Puerto Rico	Penuelas	1	160 000	2	3.8	Gas Natural Fenosa (47.5%), IP (25%), Mitsui (25%), GE (2.5%)	Eco Electrica		Trinidad & Tobago	2000
U.S.A.	Cameron LNG	3	480 000	10	15.5	Sempra	Sempra	Yes	Trinidad & Tobago	2009
	Cove Point	5	380 000	10	10.7	Dominion Cove Point LNG	Dominion Cove Point LNG	Shell, BP, Statoil, Peakers 1/4 each	Trinidad & Tobago, Egypt	1978, restarted 2003
	Cove Point Expansion	2	320 000	15	8.0	Dominion Cove Point LNG	Dominion Cove Point LNG	Statoil	Norway	2008
	Elba Island	5	535 000	11	16.3	Southern LNG (Kinder Morgan)	Southern LNG	Yes	Trinidad & Tobago, Qatar	1978, restarted 2001, expanded 2006, expanded 2010
	Everett	2	155 000	4	6.9	GDF SUEZ	GDF SUEZ	Yes	Trinidad & Tobago, Yemen	1971
	Freeport LNG	2	320 000	7	18.0	Freeport LNG Development, L.P.	Freeport LNG Development, L.P.	Yes	Trinidad & Tobago, Yemen	2008
	Golden Pass	5	775 000		21.4	QP (70%) Exxon (17.6%), Conoco Phillips (12.4%)	Golden Pass LNG		Qatar	2010
	Gulf LNG Energy	2	320 000		12.0	GE (30%), Kinder Morgan (50%), Sonangol (20%)	Gulf LNG Energy	No	Angola	2011
	Lake Charles	4	425 000	14	24.3	Trunkline LNG	Trunkline LNG	Yes	Egypt, Equatorial Guinea, Trinidad & Tobago	1982, Infrastructure enhancement project completed March 2010
	Neptune LNG <sup>*(F)</sup>	2	290 000		3.9	GDF SUEZ	GDF SUEZ			2010
	Northeast Gateway <sup>*(F)</sup>	1	150 000		4.6	Excelerate Energy	Excelerate Energy		Trinidad & Tobago	2008
	Sabine Pass	5	800 000	16	41.4	Cheniere Energy	Cheniere Energy	Total, Chevron, CMI	Trinidad & Tobago, Norway	2008
		<b>57</b>	<b>7 420 500</b>		<b>245.7</b>					

<sup>\*(F)</sup>: Floating

Country	Site	Storage		Send-out		Owner	Operator	T.P.A.	Main source(s) of import	Start-up date
		Number of tanks	Total capacity in liq m <sup>3</sup>	Number of vaporizers	Nominal capacity in NG bcm/y					

### ASIA

China	Dalian	3	480 000	3	4.1	Petrochina (75%), other companies	Petrochina	No	Qatar	2011
	Dapeng, Shenzhen	3	480 000	7	9.2	CNOOC (33%), BP (30%), other companies	GDLNG	No	Australia, Egypt, Qatar, Russia, Oman, Yemen	2006
	Fujian	2	320 000		3.6	Fujian LNG (CNOOC 60%, Fujian Inv. & Dev.Co. 40%)	CNOOC	No	Indonesia	2008
	Rudong, Jiangsu	2	320 000	3	4.8	Petrochina (55%), other companies	Petrochina	No	Qatar, Egypt	
	Shanghai, Mengtougou	3	120 000		0.2	Shanghai Gas Group	Shanghai Gas Group	No	Malaysia	2008
	Shanghai LNG	3	495 000		4.1	Shanghai LNG (CNOOC 45%, Shenergy Group Ltd 55%)	CNOOC	No	Malaysia	2009
	Zhejiang, Ningbo	3	480 000		4.1	CNOOC (51%), other companies	CNOOC	No	Qatar	2012
India	Dahej	4	592 000	19	12.5	Petronet LNG	Petronet LNG	Yes (on a cargo by cargo basis)	Algeria, Egypt, Nigeria, Qatar	2004, expansion in July 2009
	Hazira	2	320 000	5	4.9	Hazira LNG Private Ltd (Shell 74%, Total 26%)	Hazira LNG Private Ltd	No	Nigeria, Egypt, Qatar, Yemen	2005
Indonesia	Nusantara <sup>*(F)</sup>	1			4.1	Pertamina (60%), PGN (40%)	Nusantara Regas	No	Indonesia	2012
Japan	Chita	7	640 000	11	14.8	Chita LNG	Chita LNG	Yes	Indonesia, Malaysia, Australia, Qatar, Algeria	1983
	Chita Kyodo	4	300 000	14	9.9	Toho Gas / Chubu Electric	Toho Gas	Yes	Indonesia, Malaysia, Australia, Qatar, Russia	1978
	Chita-Midorihamma Works	2	400 000	7	9.2	Toho Gas	Toho Gas	Yes	Indonesia, Malaysia, Australia, Qatar, Russia	2001
	Fukuoka	2	70 000	7	1.1	Saibu Gas	Saibu Gas	Yes	Malaysia	1993
	Futtsu	10	1 110 000	13	26.0	The Tokyo Electric Power co.	The Tokyo Electric Power co.	Yes	Malaysia, Qatar, Australia, Oman, Abu Dhabi, Russia	1985
	Hatsukaichi	2	170 000	4	1.2	Hiroshima Gas	Hiroshima Gas	No	Indonesia, Malaysia, Russia	1996
	Higashi-Ohgishima	9	540 000	9	18.0	The Tokyo Electric Power co.	The Tokyo Electric Power co.	Yes	Malaysia, Qatar, Australia, Oman, Abu Dhabi, Brunei, Russia	1984
	Himeji	8	740 000	6	6.4	Osaka Gas	Osaka Gas	Yes	Indonesia, Malaysia, Australia, Qatar, Oman, Brunei	1984
	Himeji LNG	7	520 000	8	11.0	The Kansai Electric	The Kansai Electric	Yes	Indonesia, Malaysia, Qatar, Australia	1979
	Ishikari LNG	1	180 000	3	2.3	Hokkaido Gas	Hokkaido Gas		Russia, Australia (ligne Ishikari)	2012
	Joetsu	2	360 000	6	3.2	Chubu Electric	Chubu Electric		Indonesia, Malaysia, Australia, Qatar, Russia	2011
	Kagoshima	2	86 000	3	0.3	Nippon Gas	Nippon Gas	No	Indonesia, Australia	1996
	Kawagoe	4	480 000	4	6.7	Chubu Electric	Chubu Electric	Yes	Indonesia, Malaysia, Australia, Qatar, Russia	1997
	Mizushima	2	320 000	6	5.8	Mizushima LNG	Mizushima LNG	Yes	Australia, Qatar, Oman	2006
	Nagasaki	1	35 000	3	0.2	Saibu Gas	Saibu Gas	Yes	Malaysia, Russia	2003
	Negishi	14	1 180 000	13	13.8	Tokyo Gas/The Tokyo Electric Power co.	Tokyo Gas/The Tokyo Electric Power co.	Negotiated T.P.A	Indonesia, Malaysia, Australia, Qatar, Brunei, Russia	1969
	Niigata	8	720 000	14	11.6	Nihonkai LNG	Nihonkai LNG	Yes	Indonesia, Malaysia, Qatar, Australia, Russia	1984
Ohgishima	3	600 000	11	14.6	Tokyo Gas	Tokyo Gas	Negotiated T.P.A	Indonesia, Malaysia, Australia, Qatar, Brunei, Russia	1998	
Oita	5	460 000	6	6.3	Oita LNG	Oita LNG	Yes	Indonesia, Australia, Russia	1990	

\*(F) : Floating



## Regasification Terminals in 2012 (cont'd.)

Country	Site	Storage		Send-out		Owner	Operator	T.P.A.	Main source(s) of import	Start-up date
		Number of tanks	Total capacity in liq m <sup>3</sup>	Number of vaporizers	Nominal capacity in NG bcm/y					
Japan	Sakai	3	420 000	6	8.7	The Kansai Electric	The Kansai Electric	Yes	Indonesia, Malaysia, Australia, Qatar	2006
	Sakaide	1	180 000	3	1.6	Sakaide LNG	Sakaide LNG	Yes	Malaysia	2010
	Senboku I	4	180 000	5	2.9	Osaka Gas	Osaka Gas	Yes	Brunei	1972
	Senboku II	18	1 585 000	15	15.7	Osaka Gas	Osaka Gas	Yes	Indonesia, Malaysia, Australia, Qatar, Oman, Brunei, Russia	1977
	Shin-Minato	1	80 000	3	0.4	Gas Bureau, City of Sendai	Gas Bureau, City of Sendai	No	Malaysia	1997
	Sodegaura	35	2 660 000	35	40.3	Tokyo Gas / The Tokyo Electric	Tokyo Gas / The Tokyo Electric	Negotiated TPA	Indonesia, Malaysia, Australia, Qatar, Brunei, Russia	1973
	Sodeshi	3	337 200	8	3.9	Shimizu LNG	Shimizu LNG	No	Malaysia, Australia, Nigeria, Russia, Egypt, Equatorial Guinea	1996
	Tobata	8	480 000	9	10.3	Kita Kyushu LNG	Kita Kyushu LNG	Yes	Indonesia, Australia, Russia	1977
	Yanai	6	480 000	5	3.1	The Chugoku Electric	The Chugoku Electric	Yes	Australia, Qatar, Oman	1990
	Yokkaichi LNG Centre	4	320 000	8	8.7	Chubu Electric	Chubu Electric	Yes	Indonesia, Malaysia, Australia, Qatar, Russia	1988
Yokkaichi Works	2	160 000	4	1.5	Toho Gas	Toho Gas	Yes	Indonesia	1991	
Korea	Gwangyang	3	365 000	2	2.3	Posco	Posco	No	Indonesia	2005
	Incheon	20	2 880 000	38	48.3	Kogas	Kogas	No	Australia, Algeria, Brunei, Egypt, Equatorial Guinea, Indonesia, Malaysia, Nigeria, Oman, Qatar, Trinidad & Tobago	1996
	Pyeong-Taek	21	2 960 000	34	47.3	Kogas	Kogas	No	Australia, Algeria, Brunei, Egypt, Equatorial Guinea, Indonesia, Malaysia, Nigeria, Oman, Qatar, Trinidad & Tobago	1986
	Tong-Yeong	16	2 480 000	14	23.4	Kogas	Kogas	No	Australia, Algeria, Brunei, Egypt, Equatorial Guinea, Indonesia, Malaysia, Nigeria, Oman, Qatar, Trinidad & Tobago	2002
Taiwan	Taichung	3	480 000	8	5.4	CPC	CPC	No	Qatar	2009
	Yung-An	6	690 000	18	9.5	CPC	CPC	No	Indonesia, Malaysia, Qatar	1990
Thailand	Map Ta Phut	2	320 000		6.5	Electricity Generating Authority of Thailand (25%), Electricity Generating Company (25%), PTT (50%)	PTT LNG		Peru, Qatar, Yemen	2011
		<b>275</b>	<b>29 575 200</b>		<b>453.8</b>					
<b>MIDDLE EAST</b>										
Dubai	Jebel Ali *(F)	1	125 850		4.1	Golar	Golar	No	Qatar	2010
Kuwait	Mina Al Ahmadi *(F)	1	150 000		5.2	Excelerate Energy	Excelerate Energy		Nigeria, Qatar, Trinidad & Tobago	2009
		<b>2</b>	<b>275 850</b>		<b>9.3</b>					

\*(F): Floating

Country	Site	Storage		Send-out		Owner	Operator	T.P.A.	Main source(s) of import	Start-up date
		Number of tanks	Total capacity in liq m <sup>3</sup>	Number of vaporizers	Nominal capacity in NG bcm/y					
<b>EUROPE</b>										
<b>Belgium</b>	Zeebrugge	4	380 000	11	9.0	Fluxys LNG	Fluxys LNG	Yes	Qatar	1987
<b>France</b>	Fos-Cavaou	3	330 000	4	8.3	FosMax LNG (Elengy, Total)	FosMax LNG	Yes	Algeria, Egypt, Nigeria, Norway, Qatar, Yemen	2009 (commercial operation from April 2010)
	Fos-sur-Mer	3	150 000	12	5.5	Elengy	Elengy	Yes	Algeria, Egypt	1972
	Montoir-de-Bretagne	3	360 000	11	10.0	Elengy	Elengy	Yes	Algeria, Nigeria	1980
<b>Greece</b>	Revithoussa	2	130 000	6	5.0	DESFA S.A.	DESFA S.A.	Yes	Algeria, Egypt, Trinidad & Tobago, Qatar	2000
<b>Italy</b>	Panigaglia	2	100 000	4	3.3	GNL Italia S.p.A.	GNL Italia S.p.A.	Yes	Algeria	1971
	Porto Levante *(F)	2	250 000	5	8.0	Adriatic LNG : ExxonMobil Italiana Gas (70.7%), Qatar Terminal Company, Ltd. (22%), Edison (7.3%)	Adriatic LNG (Qatar Terminal Company, Ltd., Edison, Exxon)	Yes (20%)	Qatar	2009
<b>Netherlands</b>	Gate LNG	3	540 000		12.0	Gasunie (45%), Vopak (45%), Dong (5%), OMV (5%)	Gate LNG	Yes	Norway, Nigeria, Trinidad & Tobago	2011
<b>Portugal</b>	Sines	3	390 000	7	7.6	Ren Atlântico	Ren Atlântico	Yes	Nigeria, Qatar	2004
<b>Spain</b>	Barcelona	8	840 000	13	17.1	Enagas	Enagas	Regulated T.P.A.	Algeria, Nigeria, Qatar	1969
	Bilbao	2	300 000	4	7.0	Enagas, Infrastructure Arzak 2, BV, EVE	Bahia de Bizkaia Gas, SL (BBG)	Regulated T.P.A.	Nigeria, Norway, Peru, Trinidad & Tobago	2003
	Cartagena	5	587 000	9	11.8	Enagas	Enagas	Regulated T.P.A.	Algeria, Nigeria, Qatar, Peru, Trinidad & Tobago	1989
	Huelva	5	619 500	9	11.8	Enagas	Enagas	Regulated T.P.A.	Algeria, Nigeria, Qatar, Trinidad & Tobago	1988
	Mugardos	2	300 000	3	3.6	Gas Natural Fenosa, Endesa, Xunta Galicia, Sonatrach, Tojeiro Group, Galicia Government, Caixa Galicia, Pastor, Caixanova	Reganosa	Regulated T.P.A.	Nigeria, Peru, Trinidad & Tobago	2007
	Sagunto	4	600 000	5	8.8	ENI (21%) Gas Natural Fenosa (21%), Osaka Gas (20%), RREEF Alternative Investments (30%), Oman Oil (8%)	Saggas	Regulated T.P.A.	Algeria, Egypt, Nigeria, Peru, Qatar	2006
<b>Turkey</b>	Aliaga/Izmir	2	280 000	5	6.0	Egegaz	Egegaz	No	Algeria, Egypt, Nigeria, Qatar	2006
	Marmara Ereglisi	3	255 000	7	6.2	Botas	Botas	No	Nigeria	1994
<b>United-Kingdom</b>	Dragon	2	320 000	6	6.0	BG Group (50%), Petronas (30%), 4Gas (20%)	Dragon LNG	Yes (but no R.T.P.A)	Egypt, Nigeria	2009
	Isle of Grain	8	1 000 000	14	20.5	National Grid	Grain LNG	Yes (but no R.T.P.A)	Algeria, Qatar	2005
	South Hook	5	775 000	15	21.2	Qatar Petroleum (68%), Exxon Mobil (24%), Total (8%)	South Hook LNG Terminal Company Ltd	Yes	Qatar	2009
	Teesside *(F)	1	138 000		4.2	Excelerate Energy	Excelerate Energy			2007
		<b>72</b>	<b>8 644 500</b>		<b>192.9</b>					
	<b>TOTAL WORLD</b>	<b>406</b>	<b>45 916 050</b>		<b>901.7</b>					

\*(F) : Floating

# Long-term and medium-term contracts in force in 2012<sup>(\*)</sup>

Export Country	Loading Point	Seller	Buyer	Nominal quantity ACQ 10 <sup>6</sup> t/year	Duration	Type of contract	Comments
<b>ATLANTIC BASIN</b>							
Algeria	Skikda-Bethioua	Sonatrach	GDF SUEZ	3.7	1976/2013	F.O.B.	Extension to 2019
			GDF SUEZ	2.5	1972/2013	F.O.B.	Extension to 2019
			GDF SUEZ	1.3	1992/2013	F.O.B.	Extension to 2019
			Eni	1.33	1997/2014	F.O.B.	
			Iberdrola	1.15	2002/2021	D.E.S.	
			Botas	3	1994/2014	D.E.S.	
			Enel	1.15	1999/2022	D.E.S.	Part of GDF SUEZ/Enel swap
			Cepsa	0.77	2002/2022	D.E.S.	
			Statoil	0.75	2003/2009	D.E.S.	Extension to 2014
		Endesa	0.75	2002/2017	D.E.S.		
		DEPA S.A.	0.5	2000/2021	D.E.S.		
Egypt	Idku	ELNG T1	GDF SUEZ	3.6	2005/2025	F.O.B.	
		ELNG T2	BGGM	3.6	2005/2025	F.O.B.	
	Damietta	SEGAS	BP	1	2005/2025	F.O.B.	
		SEGAS	Union Fenosa gas	3.3	2005/2030	F.O.B.	
Equatorial Guinea	Punta Europa	EGLNG	BGGM	3.4	2007/2023	F.O.B.	
Libya	Marsa-el-Brega	LNOC	Gas Natural Aprovevisionamientos	1.3	1981/2012	F.O.B.	Extension to 31/12/2012
Nigeria	Bonny Island	Nigeria LNG T1 & 2	Enel	2.5	1999/2022	D.E.S.	GDF SUEZ/Enel swap
			Gas Natural Aprovevisionamientos	1.17	1999/2021	D.E.S.	
			Botas	0.9	1999/2021	D.E.S.	
			GDF SUEZ	0.33	1999/2022	D.E.S.	
			Galp Energia	0.26	1999/2022	D.E.S.	
		Nigeria LNG T3	Gas Natural sdg	1.99	2002/2024	D.E.S.	
			Galp Energia	0.73	2002/2022	D.E.S.	
		Nigeria LNG T4	Eni	1.15	2006/2026	D.E.S.	
			Iberdrola	0.38	2006/2026	D.E.S.	
		Nigeria LNG T4 & 5	BGLS	2.3	2006/2026	D.E.S.	
			Galp Energia	1.42	2006/2026	D.E.S.	
			Shell Western LNG	1.13	2006/2026	D.E.S.	
			Endesa	0.75	2006/2026	D.E.S.	
		Nigeria LNG T6	Total	0.23	2006/2026	D.E.S.	
			Total	0.9	2008/2027	D.E.S.	
Shell Western LNG	3.1		2008/2027	D.E.S.			
Norway	Hammerfest	Snohvit LNG	Statoil	-1.75	2007/2021	D.E.S.	
			Iberdrola	1.13	2006/2025	D.E.S.	
		Total	Total	0.7	2007/depletion	F.O.B.	
		GDF SUEZ	GDF SUEZ	0.5	2007/depletion	F.O.B.	
Trinidad & Tobago	Point Fortin	Atlantic LNG T1	GDF SUEZ	1.98	1999/2018	F.O.B.	
			Gas Natural Aprovevisionamientos	1.32	1999/2018	F.O.B.	
		Atlantic LNG T2 & 3	BG	2.63	2004/2024	F.O.B.	
			Repsol	2.05	2006/2023	F.O.B.	
			BP Gas Marketing	0.85	2002/2021	F.O.B.	
			Naturgas Energia	0.7	2003/2023	F.O.B.	
		Atlantic LNG T4	Gas Natural sdg	0.65	2002/2023	F.O.B.	
			BP	2.5	2006/2025	F.O.B.	
			BG	1.5	2006/2025	F.O.B.	
		BP	Repsol	1.15	2009/2027	D.E.S.	
			AES	0.75	2003/2023	D.E.S.	Related to BP/ALNG T2 & 3 contract
GDF SUEZ	Ecoelectrica	0.6	2000/2020	D.E.S.	Related to GDF SUEZ/ALNG T1 contract		

(\*) Duration above four years



Export Country	Loading Point	Seller	Buyer	Nominal quantity ACQ 10 <sup>6</sup> t/year	Duration	Type of contract	Comments	
<b>PACIFIC BASIN</b>								
<b>Australia</b>	Withnell Bay	Woodside, Shell, BHP Billiton, BP, Chevron, Japan Australia LNG Pty Ltd (Mitsubishi & Mitsui)	The Chugoku Electric	1.43	2009/2021	D.E.S.		
			Tokyo Gas, Toho Gas	1.37	2004/2029	F.O.B.		
			Kyushu Electric	1.05	2009/2023	F.O.B.		
			Osaka Gas	1	2004/2033	F.O.B.		
			Tohoku Electric	1	2010/2019	D.E.S.		
			Toho Gas	0.76	2009/2019	D.E.S.		
			Chubu Electric	0.6	2009/2029	D.E.S.		
			Tokyo Gas	0.5	2009/2017	D.E.S.		
			Osaka Gas	0.5	2009/2015	D.E.S.		
			The Kansai Electric	0.5	2009/2015	D.E.S.		
			Chubu Electric	0.5	2009/2016	D.E.S.		
			Kansai Electric	0.4	2009/2017	D.E.S.		
			The Tokyo Electric Power co.	0.3	2009/2017	D.E.S.		
	Kyushu Electric	0.18	2006/2021	D.E.S.				
	Shizuoka Gas	0.13	2004/2029	F.O.B.				
KOGAS	0.5	2003/2016	D.E.S.					
GDLNG	3.3	2006/2030	F.O.B.					
	Darwin	Conocophillips, ENI, Santos, Inpex, TTSR	Tokyo Electric	2	2006/2022	F.O.B.		
			Tokyo Gas	1	2006/2022	F.O.B.		
	Pluto	Pluto LNG	The Kansai Electric	1.75	2011/2025	F.O.B.		
		Pluto LNG	Tokyo Gas	1.5-1.75	2011/2025	F.O.B.		
<b>Brunei</b>	Lumut	Brunei LNG	Tokyo Gas, Osaka Gas, The Tokyo Electric Power co.	6.01	1993/2013	D.E.S.	Extended to 2022 with lower volumes	
			KOGAS	1	1997/2018	D.E.S.		
<b>Indonesia</b>	Bontang	Pertamina	The Kansai Electric, Chubu Electric, Kyushu Electric, Osaka Gas, Toho Gas, Nippon Steel	3	2011/2020	F.O.B/D.E.S.	Contract not finalized	
			Osaka Gas, Tokyo Gas, Toho Gas	2.31	1994/2013	D.E.S.		
			Hiroshima Gas, Nippon Gas, Osaka Gas	0.39	1996/2015	D.E.S.		
			KOGAS	2	1994/2014	F.O.B.		
			KOGAS	1	1998/2017	F.O.B.		
		Tangguh	Tangguh PSC Contractor Parties	Sempra LNG	3.7	2008/2029	D.E.S.	1.7 mtpa divertible
	CNOOC			2.6	2009/2033	F.O.B.		
	SK			0.6	2006/2026	D.E.S.		
	Posco			0.55	2005/2024	D.E.S.		
	Tohoku Electric			0.12	2010/2024	D.E.S.		
<b>Malaysia</b>	Bintulu	Malaysia LNG Satu	Tokyo Gas, The Tokyo Electric Power co.	7.4	1983/2003	1.8 Mtpa F.O.B./ 5.6 Mtpa D.E.S.	Extended to 2018	
			Saibu Gas	0.39	1993/2013	D.E.S.	Extended to 2028	
			Shikoku Electric	0.36	2010/2025	D.E.S.		
			Hiroshima Gas	0.008-0.016	2005/2012	D.E.S.		
		Malaysia LNG Dua	The Kansai Electric, Toho Gas, Tokyo Gas, Osaka Gas	2.1	1995/2015	D.E.S.		
			Gas Bureau, City of Sendai	0.15	1997/2016	D.E.S.		
			Chubu Electric	-0.54	2011/2031	D.E.S.		
			Tohoku Electric	0.5	1996/2016	D.E.S.		
			Shizuoka Gas	0.45	1996/2016	D.E.S.		
			KOGAS	1.0-2.0	1995/2018	F.O.B.		
CPC	2.25	1995/2015	D.E.S.					

## Long-term and medium-term contracts in force in 2012<sup>(\*)</sup> (cont'd.)

Export Country	Loading Point	Seller	Buyer	Nominal quantity ACQ 10 <sup>6</sup> t/year	Duration	Type of contract	Comments
Malaysia	Bintulu	Malaysia LNG Tiga	Tokyo Gas, Toho Gas, Osaka Gas	0.68	2004/2024	D.E.S.	
			Toho Gas	0.52	2007/2027	D.E.S.	
			Tohoku Electric	0.5	2005/2025	F.O.B.	
			Japan Petroleum Exploration co.	0.48	2002/2021	D.E.S.	
			CNOOC	3	2009/2029	D.E.S.	
			KOGAS	2	2008/2028	D.E.S.	
Russia	Prigorodnoye	Sakhalin Energy Investment	The Tokyo Electric Power co.	1.5	2007/2029	F.O.B.	
			Tokyo Gas	1.1	2007/2031	F.O.B.	
			Kyushu Electric	0.5	2009/2031	D.E.S.	
			Toho Gas	0.5	2009/2033	D.E.S.	
			Chubu Electric	0.5	2011/2026	D.E.S.	
			Tohoku Electric	0.42	2010/2030	F.O.B.	
			Hiroshima Gas	0.21	2008/2028	F.O.B.	
			Osaka Gas	0.2	2008/2031	F.O.B.	
			Saibu Gas	0.008	2010/2028	F.O.B.	
			KOGAS	1.5	2008/2028	F.O.B.	Option for an additional 0.5 mmtpa
			Shell	1.6	2009/2028	D.E.S.	Initially linked to Costa Azul / Destination flexible
Gazprom Global LNG	1	2009/2028	D.E.S.	Initially linked to Costa Azul / Destination flexible			

### MIDDLE EAST

Abu Dhabi	Das Island	Adgas	The Tokyo Electric Power co.	4.7	1994/2019	D.E.S.		
Qatar	Ras Laffan	Qatargas I	Chubu Electric	4	1997/2021	F.O.B.		
			Tohoku Electric, Tokyo Gas, Osaka Gas, The Kansai Electric, The Tokyo Electric Power co., Toho Gas, The Chugoku Electric	2	1998/2021	D.E.S.		
			Gas Natural Aproveisionamentos	0.66	2001/2009	F.O.B.	Extended to mid-2012	
			Gas Natural Aproveisionamentos	0.66	2002/2007	D.E.S.	Extended to mid-2012	
			Gas Natural sdg	0.75	2005/2024	D.E.S.		
			Gas Natural sdg	0.75	2006/2025	F.O.B.		
			The Tokyo Electric Power co.	1	2012/2021	D.E.S.		
			Qatargas II T1	ExxonMobil	7.8	2009/2034	D.E.S.	
			Qatargas II T2	CNOOC	2	2009/2034	D.E.S.	
				Total	1.85	2009/2034	D.E.S.	
		Total		1.5	2009/2034	D.E.S.		
		Total		1.15	2009/2034	D.E.S.		
		Total		0.7	2009/2034	D.E.S.		
		Qatargas III	ExxonMobil	0.6	2009/2033	D.E.S.		
		Qatargas IV	ConocoPhillips	7.8	2010/2035	D.E.S.		
			Shell	3.8	2011/2041	D.E.S.		
		RasGas I	Petrochina	3	2011/2036	D.E.S.		
			Marubeni	1	2011/2031	D.E.S.		
			KOGAS	4.92	1999/2024	F.O.B.		
		RasGas II T1	ENI	0.73	2004/2024	D.E.S.		
Petronet LNG	5		2004/2028	F.O.B.				
RasGas II T2	Edison	4.6	2009/2034	D.E.S.				
	Endesa	0.74	2005/2025	D.E.S.				
RasGas II T3	EDF Trading	3.4	2007/2012	D.E.S.	Extended to 2027			
	CPC	3.08	2008/2032	F.O.B.				
	ENI	2.05	2007/2027	D.E.S.	Former Distrigas contract			

(\*) Duration above four years

Export Country	Loading Point	Seller	Buyer	Nominal quantity ACO 10 ° t/ year	Duration	Type of contract	Comments
Qatar	Ras Laffan	RasGas III T1	ExxonMobil	7.8	2009/2034	D.E.S.	
			Petronet LNG	2.5	2009/2029	F.O.B.	
			KOGAS	2.1	2007/2026	D.E.S.	
		RasGas III T2	KOGAS	2	2012/2032	D.E.S.	New LT contract
Oman	Qalhat	Oman LNG	ExxonMobil	7.8	2010/2035	D.E.S.	
			KOGAS	4.06	2000/2024	F.O.B.	
		Qalhat LNG	Osaka Gas	0.66	2000/2024	F.O.B.	
			Union Fenosa Gas	1.65	2006/2025	D.E.S.	
			Mitsubishi Corp.	0.8	2006/2020	F.O.B.	
			Osaka Gas	0.8	2009/2026	F.O.B.	
Yemen	Balhaf	Yemen LNG T1 & 2	Itochu Corp., The Chugoku Electric	0.77	2006/2020	F.O.B.	
			KOGAS	2	2008/2028	F.O.B.	
			GDF SUEZ	2.55	2009/2029	F.O.B.	
			TGPL	2	2009/2029	D.E.S.	

#### OTHER

Portfolio including Equatorial Guinea	BG	KOGAS	1.3	2008/2016	D.E.S.	
BG Portfolio	BG	Quintero LNG	1.7	2009/2030	D.E.S.	
Iberdrola Portfolio	Iberdrola	DONG	0.72	2011/2021	D.E.S.	
ENI LNG Portfolio	Eni	Iberdrola	0.92	2002/2018	D.E.S.	
ENI LNG Portfolio	Eni	Hidrocantabrico + EDP	0.36	2005/2016	D.E.S.	
ENI LNG Portfolio	Eni	E.On Espana	0.65	2007/2022	D.E.S.	
Total Portfolio	Total Gas and Power	CNOOC	1	2010/2024	D.E.S.	
Mitsubishi	Mitsubishi Corp.	Shizuoka Gas	0.3-0.7	2010/2015	D.E.S.	
BP Portfolio	BP	Chubu Electric	0.5	2012/2028	D.E.S.	
ENI LNG Portfolio	Eni	The Tokyo Electric Power co.	1.04	2011-2015	D.E.S.	



# Sea transportation routes

Trade	Loading point	Unloading point	Nautical miles
DZ-SP	Bethioua	Barcelona	352
DZ-SP	Bethioua	Cartagena	113
DZ-JP	Bethioua	Chita	9 512
DZ-CN	Bethioua	Dalian	9 312
DZ-IN	Bethioua	Dahej	4 421
DZ-SP	Bethioua	El Ferrol	979
DZ-F	Bethioua	Fos Cavaou	520
DZ-F	Bethioua	Fos Tonkin	530
DZ-SP	Bethioua	Huelva	391
DZ-UK	Bethioua	Isle of Grain	1 675
DZ-I	Bethioua	La Spezia	684
DZ-F	Bethioua	Montoir de Bretagne	1 298
DZ-JP	Bethioua	Niigata	9 130
DZ-GR	Bethioua	Revithoussa	1 285
DZ-ND	Bethioua	Rotterdam	1 714
DZ-SP	Bethioua	Sagunto	243
DZ-JP	Bethioua	Senboku	9 078
DZ-TW	Bethioua	Yung-An	8 348
DZ-SP	Skikda	Barcelona	351
DZ-F	Skikda	Fos Cavaou	407
DZ-F	Skikda	Fos Tonkin	396
DZ-SP	Skikda	Huelva	716
QZ-KR	Skikda	InCheon	8 970
DZ-I	Skikda	Porto Levante	456
DZ-GR	Skikda	Revithoussa	924
DZ-SP	Skikda	Sagunto	384
EG-SP	Damietta	Barcelona	1 554
EG-SP	Damietta	Cartagena	1 677
EG-UK	Damietta	Dragon	3 041
EG-US	Damietta	Elba Island	5 320
EG-JP	Damietta	Kawagoe	7 882
EG-JP	Damietta	Ohgishima	8 002
EG-I	Damietta	Porto Levante	1 350
EG-GR	Damietta	Revithoussa	591
EG-P	Damietta	Sines	2 182
EG-ARG	Idku	Bahia Blanca	7 490
EG-SP	Idku	Barcelona	1 499
EG-SP	Idku	Bilbao	2 743
EG-JP	Idku	Chita	7 990
EG-IN	Idku	Dahej	3 251
EG-CN	Idku	Dapeng, Shenzhen	6 665

Trade	Loading point	Unloading point	Nautical miles
EG-F	Idku	Fos Cavaou	1 430
EG-F	Idku	Fos Tonkin	1 440
EG-JP	Idku	Himeji	7 911
EG-KR	Idku	InCheon	7 768
EG-CN	Idku	Jiangsu Rudong	7 546
EG-JP	Idku	Kawagoe	7 991
EG-CL	Idku	Mejillones	10 439
EG-KW	Idku	Mina Al Ahmadi	3 414
EG-JP	Idku	Oita	7 766
EG-I	Idku	Porto Levante	1 299
EG-KR	Idku	Pyeong-Taek	7 764
EG-SP	Idku	Sagunto	1 571
EG-JP	Idku	Sakai	7 907
EG-JP	Idku	Sodeshi	8 032
EG-JP	Idku	Tobata	7 607
EG-KR	Idku	Tong-Yeong	7 726
EG-TW	Idku	Yung-An	6 824
EqG-JP	Punta Europa	Chita	10 841
EqG-JP	Punta Europa	Futtsu	10 957
EqG-JP	Punta Europa	Himeji	10 781
EqG-KR	Punta Europa	InCheon	10 651
EqG-JP	Punta Europa	Kawagoe	10 842
EqG-JP	Punta Europa	Niigata	11 058
EqG-JP	Punta Europa	Ohgishima	10 897
EqG-JP	Punta Europa	Oita	10 616
EqG-KR	Punta Europa	Pyeong-Taek	10 648
EqG-CL	Punta Europa	Quintero	6 752
EqG-JP	Punta Europa	Sakai	10 758
EqG-JP	Punta Europa	Sodeshi	10 883
EqG-JP	Punta Europa	Tobata	10 591
EqG-KR	Punta Europa	Tong-Yeong	10 578
EqG-TW	Punta Europa	Yung-An	9 657
NIG-MEX	Bonny Island	Altamira	6 214
NIG-SP	Bonny Island	Barcelona	3 910
NIG-SP	Bonny Island	Bilbao	3 982
NIG-SP	Bonny Island	Cartagena	3 635
NIG-JP	Bonny Island	Chita	10 850
NIG-IN	Bonny Island	Dahej	7 136
NIG-CN	Bonny Island	Dalian	10 468
NIG-CN	Bonny Island	Dapeng, Shenzhen	9 328
NIG-UK	Bonny Island	Dragon	4 206



Trade	Loading point	Unloading point	Nautical miles
NIG-SP	Bonny Island	El Ferrol	3 745
NIG-F	Bonny Island	Fos Cavaou	4 091
NIG-CN	Bonny Island	Fujian	10 054
NIG-JP	Bonny Island	Futtsu	10 966
NIG-BR	Bonny Island	Guanabara Bay	3 422
NIG-JP	Bonny Island	Higashi-Ohgishima	10 972
NIG-JP	Bonny Island	Himeji	10 790
NIG-SP	Bonny Island	Huelva	3 359
NIG-KR	Bonny Island	InCheon	10 390
NIG-JP	Bonny Island	Joetsu	11 167
NIG-TH	Bonny Island	Map Ta Phut	8 708
NIG-KW	Bonny Island	Mina Al Ahmadi	7 588
NIG-JP	Bonny Island	Mizushima	10 743
NIG-F	Bonny Island	Montoir de Bretagne	3 980
NIG-JP	Bonny Island	Negishi	10 965
NIG-JP	Bonny Island	Niigata	11 067
NIG-JP	Bonny Island	Ohgishima	10 900
NIG-JP	Bonny Island	Oita	10 626
NIG-BR	Bonny Island	Pecem	2 811
NIG-PR	Bonny Island	Penuelas	4 498
NIG-KR	Bonny Island	Pyeong-Taek	10 657
NIG-GR	Bonny Island	Revithoussa	4 899
NIG-ND	Bonny Island	Rotterdam	4 493
NIG-SP	Bonny Island	Sagunto	3 686
NIG-JP	Bonny Island	Sakai	10 767
NIG-JP	Bonny Island	Senboku	10 767
NIG-P	Bonny Island	Sines	3 417
NIG-JP	Bonny Island	Sodeshi	10 893
NIG-JP	Bonny Island	Tobata	10 600
NIG-KR	Bonny Island	Tong-Yeong	10 354
NIG-JP	Bonny Island	Yanai	10 653
NIG-TW	Bonny Island	Yung-An	9 440
NO-DR	Hammerfest	Andres	4 613
NO-ARG	Hammerfest	Bahia Blanca	7 777
NO-SP	Hammerfest	Barcelona	3 155
NO-SP	Hammerfest	Bilbao	2 099
NO-SP	Hammerfest	Cartagena	2 885
NO-F	Hammerfest	Fos Cavaou	3 359
NO-JP	Hammerfest	Futtsu	12 520
NO-JP	Hammerfest	Himeji	12 344
NO-SP	Hammerfest	Huelva	2 594

Trade	Loading point	Unloading point	Nautical miles
NO-KW	Hammerfest	Mina Al Ahmadi	7 808
NO-CL	Hammerfest	Mejillones	7 541
NO-JP	Hammerfest	Niigata	12 621
NO-JP	Hammerfest	Oita	12 180
NO-PR	Hammerfest	Penuelas	4 528
NO-I	Hammerfest	Porto Levante	4 196
NO-ND	Hammerfest	Rotterdam	1 401
NO-US	Hammerfest	Sabine Pass	5 455
NO-SP	Hammerfest	Sagunto	3 065
NO-JP	Hammerfest	Tobata	12 154
NO-KR	Hammerfest	Tong-Yeong	12 140
NO-TW	Hammerfest	Yung-An	11 238
AE-JP	Das Island	Futtsu	6 485
AE-JP	Das Island	Higashi-Ohgishima	6 491
AE-DU	Das Island	Jebel Ali	131
US-JP	Kenai	Himeji	3 727
TT-MEX	Point Fortin	Altamira	2 334
TT-DR	Point Fortin	Andres	679
TT-ARG	Point Fortin	Bahia Blanca	4 628
TT-SP	Point Fortin	Barcelona	3 976
TT-US	Point Fortin	Cameron	2 201
TT-CA	Point Fortin	Canaport LNG	2 150
TT-SP	Point Fortin	Cartagena	3 701
TT-US	Point Fortin	Cove Point	1 900
TT-US	Point Fortin	Elba Island	1 690
TT-SP	Point Fortin	El Ferrol	3 452
TT-ARG	Point Fortin	Escobar	4 920
TT-US	Point Fortin	Everett	2 032
TT-BR	Point Fortin	Guanabara Bay	3 245
TT-KR	Point Fortin	InCheon	9 685
TT-CN	Point Fortin	Jiansu Rudong	9 750
TT-DU	Point Fortin	Jebel Ali	8 215
TT-JP	Point Fortin	Joetsu	14 030
TT-JP	Point Fortin	Kawagoe	13 805
TT-US	Point Fortin	Lake Charles	2 247
TT-TH	Point Fortin	Map Ta Phut	11 169
TT-CL	Point Fortin	Mejillones	7 596
TT-KW	Point Fortin	Mina Al Ahmadi	10 541
TT-BR	Point Fortin	Pecem	1 732
TT-PR	Point Fortin	Penuelas	560
TT-US	Point Fortin	Port Freeport	2 272

## Sea transportation routes (cont'd.)

Trade	Loading point	Unloading point	Nautical miles
TT-KR	Point Fortin	Pyeong-Taek	9 685
TT-CL	Point Fortin	Quintero	7 051
TT-ND	Point Fortin	Rotterdam	4 102
TT-US	Point Fortin	Sabine Pass	2 247
TT-JP	Point Fortin	Sakai	13 721
TT-SP	Point Fortin	Sagunto	3 863
TT-CN	Point Fortin	Shanghai	9 750
TT-P	Point Fortin	Sines	3 315
TT-KR	Point Fortin	Tong-Yeong	9 303
TT-TW	Point Fortin	Yung-An	10 174
BI-JP	Lumut	Futtsu	2 399
BI-JP	Lumut	Higashi-Ohgishima	2 405
BI-JP	Lumut	Himeji	2 999
BI-JP	Lumut	Negishi	2 416
BI-KR	Lumut	Pyeong-Taek	2 850
BI-JP	Lumut	Senboku	2 405
BI-JP	Lumut	Sodegaura	2 430
BI-KR	Lumut	Tong-Yeong	2 014
MY-JP	Bintulu	Chita	2 395
MY-JP	Bintulu	Fukuoka	2 160
MY-JP	Bintulu	Futtsu	2 505
MY-JP	Bintulu	Higashi-Ohgishima	2 530
MY-JP	Bintulu	Himeji	2 400
MY-JP	Bintulu	Hokhaido	2 288
MY-KR	Bintulu	InCheon	2 124
MY-JP	Bintulu	Nagasaki	2 151
MY-JP	Bintulu	Negishi	2 513
MY-JP	Bintulu	Niigata	2 511
MY-JP	Bintulu	Ohgishima	2 530
MY-KR	Bintulu	Pyeong-Taek	2 124
MY-JP	Bintulu	Sakai	2 376
MY-JP	Bintulu	Senboku	2 376
MY-CN	Bintulu	Shanghai	1 942
MY-JP	Bintulu	Shin-Minato	2 635
MY-JP	Bintulu	Sodegaura	2 515
MY-JP	Bintulu	Sodeshi	2 378
MY-KR	Bintulu	Tong-Yeong	1 674
MY-TW	Bintulu	Yung-An	1 350
ID-JP	Bontang	Chita	2 500
ID-JP	Bontang	Hatsukaichi	2 412
ID-JP	Bontang	Himeji	2 400

Trade	Loading point	Unloading point	Nautical miles
ID-JP	Bontang	Kagoshima	2 211
ID-JP	Bontang	Kawagoe	2 510
ID-JP	Bontang	Negishi	2 573
ID-JP	Bontang	Niigata	2 857
ID-JP	Bontang	Ohgishima	2 560
ID-JP	Bontang	Oita	2 413
ID-KR	Bontang	Pyeong-Taek	2 493
ID-JP	Bontang	Sakai	2 385
ID-JP	Bontang	Senboku 2	2 385
ID-JP	Bontang	Sodegaura	2 566
ID-JP	Bontang	Tobata	2 370
ID-KR	Bontang	Tong-Yeong	2 043
ID-JP	Bontang	Yokkaichi	2 510
ID-TW	Bontang	Yung-An	1 455
ID-JP	Blang Lancang	Higashi-Ohgishima	3 456
ID-KR	Blang Lancang	InCheon	3 091
ID-KR	Blang Lancang	Pyeong-Taek	3 149
ID-JP	Tangguh	Chita	2 569
ID-MEX	Tangguh	Energia Costa Azul	6 850
ID-JP	Tangguh	Futtsu	2 618
ID-KR	Tangguh	Gwangyang	2 548
ID-JP	Tangguh	Niigata	3 036
ID-KR	Tangguh	Pyeong-Taek	2 734
ID-CN	Tangguh	Shanghai	2 231
ID-TW	Tangguh	Yung-An	1 972
Q-MEX	Ras Laffan	Altamira	9 922
Q-DR	Ras Laffan	Andres	8 595
Q-ARG	Ras Laffan	Bahia Blanca	8 630
Q-SP	Ras Laffan	Barcelona	4 710
Q-SP	Ras Laffan	Bilbao	5 925
Q-CA	Ras Laffan	Canaport	8 007
Q-SP	Ras Laffan	Cartagena	4 817
Q-JP	Ras Laffan	Chita	6 446
Q-IN	Ras Laffan	Dahej	1 290
Q-CN	Ras Laffan	Dalian	5 935
Q-CN	Ras Laffan	Dapeng, Shenzhen	5 098
Q-US	Ras Laffan	Elba Island	8 716
Q-SP	Ras Laffan	El Ferrol	5 689
Q-F	Ras Laffan	Fos Cavaou	4 684
Q-CN	Ras Laffan	Fujian	5 867
Q-JP	Ras Laffan	Futtsu	6 539

Trade	Loading point	Unloading point	Nautical miles
Q-BR	Ras Laffan	Guanabara Bay	8 197
Q-IN	Ras Laffan	Hazira	1 236
Q-JP	Ras Laffan	Higashi-Ohgishima	6 544
Q-JP	Ras Laffan	Himeji	6 350
Q-SP	Ras Laffan	Huelva	5 134
Q-KR	Ras Laffan	InCheon	6156
Q-UK	Ras Laffan	Isle of Grain	6 428
Q-DU	Ras Laffan	Jebel Ali	231
Q-CN	Ras Laffan	Jiangsu Rudong	5 825
Q-JP	Ras Laffan	Joetsu	6 658
Q-JP	Ras Laffan	Kawagoe	6 448
Q-TH	Ras Laffan	Map Ta Phut	4 326
Q-JP	Ras Laffan	Mizushima	6 316
Q-JP	Ras Laffan	Negishi	6 537
Q-JP	Ras Laffan	Niigata	6 640
Q-JP	Ras Laffan	Ogishima	6 513
Q-BR	Ras Laffan	Pecem	8 621
Q-I	Ras Laffan	Porto Levante	4 438
Q-SP	Ras Laffan	Sagunto	4 719
Q-JP	Ras Laffan	Sakai	6 347
Q-JP	Ras Laffan	Senboku	6 347
Q-P	Ras Laffan	Sines	5 291
Q-UK	Ras Laffan	South Hook	6 137
Q-JP	Ras Laffan	Tobata	6 173
Q-KR	Ras Laffan	Tong-Yeong	5 706
Q-JP	Ras Laffan	Yanai	6 170
Q-TW	Ras Laffan	Yung-An	5 230
Q-JP	Ras Laffan	Yokkaichi	6 448
OM-CN	Qalhat	Dapeng, Shenzhen	5 765
OM-JP	Qalhat	Futtsu	6 007
OM-JP	Qalhat	Higashi-Ohgishima	6 008
OM-JP	Qalhat	Himeji	5 838
OM-KR	Qalhat	InCheon	5 750
OM-JP	Qalhat	Mizushima	5 873
OM-JP	Qalhat	Senboku	5 812
OM-CN	Qalhat	Shanghai	5 379
OM-JP	Qalhat	Sodegaura	6 013
OM-JP	Qalhat	Yanai	5 700
RU-JP	Sakhalin II	Chita	1 085
RU-CN	Sakhalin II	Dalian	5 935
RU-CN	Sakhalin II	Dapeng, Shenzhen	1 744

Trade	Loading point	Unloading point	Nautical miles
RU-JP	Sakhalin II	Futtsu	1 065
RU-JP	Sakhalin II	Hatsukaichi	1 105
RU-JP	Sakhalin II	Himeji	1 196
RU-JP	Sakhalin II	Higashi-Ohgishima	1 067
RU-JP	Sakhalin II	Hokkaido	1 105
RU-KR	Sakhalin II	InCheon	1 763
RU-CN	Sakhalin II	Jiansu Rudong	1 410
RU-JP	Sakhalin II	Joetsu	615
RU-JP	Sakhalin II	Kawagoe	1 029
RU-JP	Sakhalin II	Nagasaki	1 120
RU-JP	Sakhalin II	Negishi	1 010
RU-JP	Sakhalin II	Niigata	581
RU-JP	Sakhalin II	Ogishima	964
RU-JP	Sakhalin II	Oita	1 061
RU-KR	Sakhalin II	Pyeong-Taek	1 763
RU-JP	Sakhalin II	Sakai	1 176
RU-JP	Sakhalin II	Senboku	1 233
RU-JP	Sakhalin II	Sodegaura	1 020
RU-JP	Sakhalin II	Sodeshi	934
RU-JP	Sakhalin II	Tobata	981
RU-KR	Sakhalin II	Tong-Yeong	1 363
RU-TW	Sakhalin II	Yung-An	1 967
YM-MEX	Balhaf	Altamira	8 313
YM-JP	Balhaf	Chita	6 433
YM-CN	Balhaf	Dapeng, Shenzhen	5 108
YM-US	Balhaf	Everett	6 373
YM-CN	Balhaf	Fujian	5 634
YM-IN	Balhaf	Hazira	1 703
YM-JP	Balhaf	Himeji	6 373
YM-KR	Balhaf	InCheon	6 243
YM-TH	Balhaf	Map Ta Phut	4 458
YM-CL	Balhaf	Mejillones	9 162
YM-JP	Balhaf	Oita	6 209
YM-US	Balhaf	Port Freeport	8 146
YM-KR	Balhaf	Pyeong-Taek	6 025
YM-KR	Balhaf	Tong-Yeong	5 625
AU-JP	Dampier	Chita	3 612
AU-CN	Dampier	Dapeng, Shenzhen	2 770
AU-JP	Dampier	Futtsu	3 734
AU-JP	Dampier	Higashi-Ohgishima	3 739
AU-JP	Dampier	Himeji	3 596

## Sea transportation routes (cont'd.)

Trade	Loading point	Unloading point	Nautical miles
AU-KR	Dampier	InCheon	3 613
AU-JP	Dampier	Kagoshima	3 334
AU-JP	Dampier	Kawagoe	3 622
AU-KW	Dampier	Mina Al Ahmadi	5 041
AU-JP	Dampier	Mizushima	3 638
AU-JP	Dampier	Negishi	3 664
AU-JP	Dampier	Niigata	3 995
AU-JP	Dampier	Ohgishima	3 683
AU-JP	Dampier	Oita	3 460
AU-KR	Dampier	Pyeong-Taek	3 613
AU-JP	Dampier	Sakai	3 570
AU-JP	Dampier	Senboku	3 570
AU-CN	Dampier	Shanghai	3 306
AU-JP	Dampier	Sodegaura	3 692
AU-JP	Dampier	Sodeshi	3 687
AU-JP	Dampier	Tobata	3 585
AU-KR	Dampier	Tong-Yeong	3 526
AU-JP	Dampier	Yanai	3 491
AU-JP	Dampier	Yokkaichi	3 668
AU-TW	Dampier	Yung-An	2 715
AU-JP	Darwin	Futtsu	3 203

Trade	Loading point	Unloading point	Nautical miles
AU-JP	Darwin	Higashi-Ohgishima	3 208
AU-JP	Darwin	Negishi	3 017
AU-JP	Darwin	Ohgishima	3 055
AU-JP	Darwin	Sodegaura	3 212
AU-JP	Darwin	Sodeshi	3 156
AU-TW	Darwin	Yung-An	2 430
PU-MEX	Pampa Melchorita	Altamira	10 298
PU-SP	Pampa Melchorita	Barcelona	9 566
PU-SP	Pampa Melchorita	Bilbao	9 639
PU-SP	Pampa Melchorita	Cartagena	9 292
PU-JP	Pampa Melchorita	Chita	8 575
PU-SP	Pampa Melchorita	El Ferrol	9 510
PU-JP	Pampa Melchorita	Futtsu	8 450
PU-SP	Pampa Melchorita	Huelva	9 053
PU-TH	Pampa Melchorita	Map Ta Phut	11 027
PU-JP	Pampa Melchorita	Niigata	8 408
PU-JP	Pampa Melchorita	Oita	8 854
PU-SP	Pampa Melchorita	Sagunto	9 451
PU-JP	Pampa Melchorita	Sakai	8 731
PU-JP	Pampa Melchorita	Tobata	8 846

## Inter-Trade

Re-loading point	Unloading point	Nautical miles
Cartagena	Dahej	4 933
Cartagena	Escobar	5 526
Cartagena	Joetsu	9 695
Cartagena	La Spezia	637
Cartagena	Marmara Ereglisi	1 434
Cartagena	Pecem	3 365
Cartagena	Revithoussa	1 417
Cartagena	Sakai	9 405
Cartagena	Yung-An	8 331
Huelva	Aliaga	1 712
Huelva	Bahia Blanca	5 605
Huelva	Dahej	5 266
Huelva	Escobar	5 325
Huelva	Higashi Ohgishima	9 939
Huelva	Himeji	9 749
Huelva	La Spezia	985
Huelva	Sakai	9 738
Huelva	Senboku	9 738
El Ferrol	Aliaga	2 257
El Ferrol	Bahia Blanca	5 920
El Ferrol	Sines	341
Fos Cavaou	Bahia Blanca	6 257
Montoir de Bretagne	Chita	10 672

Re-loading point	Unloading point	Nautical miles
Montoir de Bretagne	Guanabara Bay	3 770
Sines	Pecem	3 158
Zeebrugge	Bahia Blanca	6 602
Zeebrugge	Barcelona	1 914
Zeebrugge	Cartagena	1 639
Zeebrugge	Chita	11 141
Zeebrugge	Guanabara Bay	5 219
Zeebrugge	Huelva	1 222
Zeebrugge	InCheon	10 774
Zeebrugge	Pecem	3 966
Zeebrugge	Revithoussa	2 929
Zeebrugge	Sagunto	1 705
Zeebrugge	Sines	1 134
Port Freeport	Bahia Blanca	4 233
Port Freeport	Dahej	9 710
Port Freeport	Guanabara Bay	5 306
Sabine Pass	Futtsu	9 052
Sabine Pass	Guanabara Bay	10 252
Sabine Pass	Pecem	3 336
Sabine Pass	Sodegaura	9 201
Guanabara Bay	Bahia Blanca	1 423
Guanabara Bay	Escobar	977
Guanabara Bay	Higashi Ohgishima	10 903





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