

# Executive Summary LNG - Report 2020

Analysis of developments in the LNG  
fleet, transport, trade and infrastructure



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## 1 Executive Summary

The global LNG market has been growing for many years. Global trade in natural gas is booming as energy producers seek cleaner energy sources to replace oil and coal. Demand has risen sharply, especially in Asia, and production has increased significantly in the US, which has helped reshaping global energy markets.

According to the analysts, the longer-term outlook for the LNG sector still remains positive as shifts in the global energy mix towards "cleaner" fuels will support robust growth in global gas demand.

The World Energy Outlook 2019 (International Energy Agency, IEA) forecasts that by 2040 (depending on the scenarios) in a range of 52 to 64 percent of natural gas will be distributed worldwide in the form of LNG.<sup>1</sup> This would mean that in future a quarter of global energy consumption would be covered by LNG.

Due to these developments, ISL prepared a report about the LNG market comprising basic facts about the long-term and recent developments in the LNG fleet, transport, trade and infrastructure.

### 1.1 Fleet

The detailed fleet analysis shows that the fleet of Liquefied Natural Gas (LNG) carriers is quite young in average. The first LNG tankers were built more than 40 years ago, but the beginning of a real building boom dates back ten years only. Overall, the last years have been positive for the LNG sector. A record in new LNG projects and a stable demand, as more and more countries prefer LNG as an energy source, result in a large number of LNG newbuilding orders and a fleet expansion.

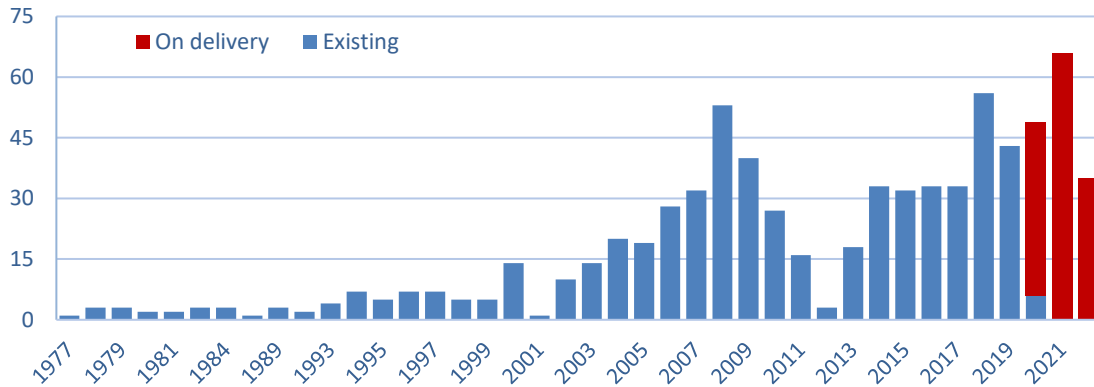
Together with the bulk carrier fleet, the LNG tanker fleet has recorded the strongest growth within the world merchant fleet for years. Within one decade, the capacity of the LNG carrier fleet nearly doubled. At the start of April 2020, the LNG fleet consisted of 594 carriers with a combined 89.0 million cbm, compared to 47.1 million cbm in 2010. The demand for new LNG-tonnage remained high. Beginning of April 2020, there were orders for 143 LNG carriers with a capacity of 21.6 million cbm, equalling 24.3 per cent of the existing LNG carrier fleet capacity.

Newbuilding prices that follow the general trends in shipbuilding make new LNG orders attractive. LNG carrier scrapping remains low. Old LNG tankers are sold either as scrap after 40 years or for conversion into storage or regasification plants.

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<sup>1</sup> Dependent on the scenario ("Stated policies" scenario, 57 %; "Sustainable development" scenario, 64 % and "Current policies" scenario, 52 %); based on data of IEA (Ed.); World Energy Outlook 2019; Tab. 4.1 Global gas demand, production and trade by scenario, p. 178; [https://www.oecd-ilibrary.org/energy/world-energy-outlook-2019\\_caf32f3b-en](https://www.oecd-ilibrary.org/energy/world-energy-outlook-2019_caf32f3b-en)

**Fig. 1-1 LNG Carrier Fleet by Year of Build and Estimated Delivery Date as of April 2020 (ships on order in red), Number of Vessels**



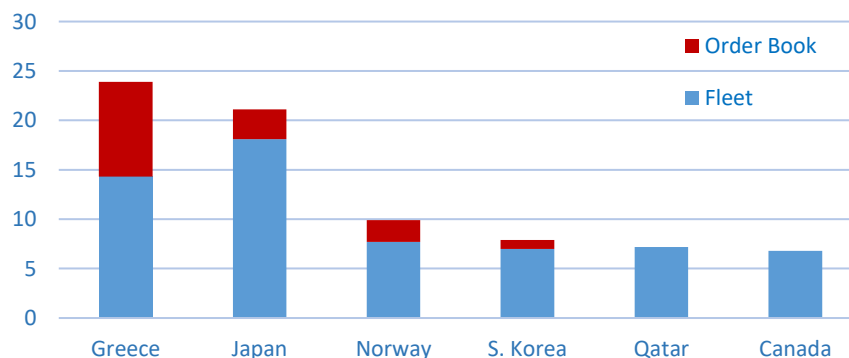
Source: ISL 2020, based on Clarkson Research

## 1.2 Ownership of the LNG Fleet

Greece and Japan dominate the LNG fleet in terms of capacity. In terms of fleet and order book combined, Greece has recently overtaken Japan as the leading owner country, as Greek owners have ordered a large number of new ships since 2018 – a total of 55 ships with a capacity of 9.6 million cbm (see Figure 1-2). As of April 2020, Greek owners accounted for nearly 44 % of the global capacity on order, compared to 16 % of the fleet. In addition to newbuilding orders, Greek owners were the most active buyers of second-hand tonnage in recent years.

Second, after Greece, is Japan, that still operates the largest fleet (18.1 million cbm) and further 3 million cbm (22 carriers) in the order book.

**Fig. 1-2 Top LNG Owners by Country, April 2020, (capacity in million cbm)**



Source: ISL 2020, based on Clarkson Research

The global LNG carriers market is fragmented. If all vessels were owned by integrated gas companies, it would be easy, but only a few gas companies have own fleets worth mentioning and many of their ships are chartered from shipping companies.

It is evident that the profile of LNG shipowners is changing, as more participants such as energy companies become shipowners. The following table shows the top ten shipowners of the current LNG fleet. At the beginning of April 2020, the top ten control about half of the trading fleet and around 30% of the order book, according to Clarkson Research. In terms of transport capacity, Qatar’s Nakilat is still the largest owner having 29 wholly owned carriers (6.9 million cbm). The Bermuda-based Teekay Corporation has 43 LNG carriers (6.8 million cbm), followed by the Japanese MOL with 38 LNG units (5.9 million cbm).

**Tab. 1-1: LNG Fleet by Top Owner Companies, April 2020**

Owner	Ship No.	Storage capacity 1,000 cbm	% of total
Qatar Gas (Nakilat)	29	6,929	7.8 %
Teekay Corp.	43	6,848	7.7 %
Mitsui OSK Lines	38	5,919	6.6 %
Angelicooussis Group	32	5,277	5.9 %
Nippon Yusen Kaisha	30	4,497	5.1 %
GasLog	27	4,316	4.8 %
Petras (MISC)	30	3,895	4.4 %
BW Group	22	3,460	3.9 %
Golar LNG	19	2,961	3.3 %
K-Line	15	2,230	2.5 %
OTHERS	309	42,698	48.0 %
<b>TOTAL</b>	<b>594</b>	<b>89,030</b>	<b>100.0 %</b>

Note: only owned ships

Source: ISL 2020, based on Clarkson Research

### 1.3 Fuels

LNG is not only carried as cargo in specialized tank ships for onshore use in power plants, but can also play a major role as ship fuel to reduce emissions. Therefore, it is discussed as an important alternative energy source for vessels sailing in the so-called SECA (Sulphur Emission Control Areas) or ECA (Emission Control Areas). However, there are still some important restrictions and challenges to tackle. According to a scenario by Lloyds Register, dated 2012, there will be more than 650 LNG fuelled deep-sea ships delivered in 2025 in a base case (high case: up to 2,000). The largest group of these newbuildings are dry bulk carriers (275 ships), followed by oil tankers (146 ships) and container carriers (110 ships). The estimated LNG fuelled newbuildings will have a share of 4.2 % of the total global newbuildings and the LNG bunker demand of the fleet will amount to 24.1 mmt in 2025 in the base case and could reach almost 70 mmt in high case. Chapter 4 includes detailed demand estimations and regulations.

### 1.4 Infrastructure

Main infrastructures are the export terminals with liquefaction plants and the import terminals with re-gasification plants. The largest export facilities are located in Qatar, soon to be overtaken by Australia and in near future maybe by the USA, while Japan has the largest import facilities, followed by South Korea and USA as shown in detail in the report by regions and countries. Loading and unloading facilities need high capital investment. Most expensive seven LNG export terminal projects as of 2019 are announced with 145 billion US \$ investments as Statistica

reported in March 2020.<sup>2</sup> The global planned LNG market by technology and end-user industry (expansion of regasification and liquefaction terminal capacities) was valued at \$102.2 billion in 2019, and is projected to reach \$58.9 billion by 2030, growing at a CAGR of 9.9% from 2020 to 2030 as Research & Market assumed mid August 2020.<sup>3</sup>

The bunker fuel infrastructure is an important aspect LNG usability as a fuel for the shipping industry. It is argued that a prerequisite for the use of LNG in shipping propulsion is an ample fuel supply infrastructure. In this study, onshore facilities including projects are described as well as bunker boats. In addition, ship-to-ship transfer of LNG cargoes were tested successfully very often.

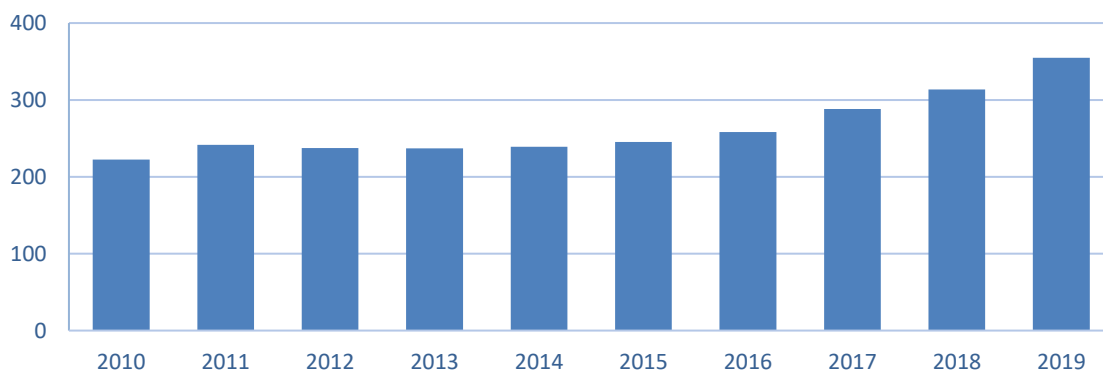
Under the headline “Safety” a few catastrophes in onshore plants are mentioned, but sea transport has proven to be safe.

### 1.5 Trades

Finally, the study analyses the main trades. Before the main routes for LNG transport by sea are shown, it is explained why sea transport is less expensive than pipeline transport over longer distances.

In 2019, global LNG trade (based on import vales) reached 354.7 million tons (MT) and, has the strongest growth rate since 2010 with an increase of 13.0% to the previous year as shown in the following figure.

**Fig. 1-3 International LNG Trade in MT (2010-2019)**



Source: ISL 2020, based on data of IGU (Ed.); World LNG Report, (edition 2013 and 2020)

The trade partners and the development of trade volumes year-by-year are listed according to countries and regions. Main importing continents are Asia and Europe, mainly Japan and UK/Spain. The main exporting continent is also Asia, namely Southeast Asia and Golf states, as shown in the following table.

<sup>2</sup> Statistica.com (Ed.); Most expensive liquefied natural gas (LNG) export terminal projects worldwide as of 2019; News 17th Mar. 2020; <https://www.statista.com/statistics/332388/largest-lng-export-terminal-projects-worldwide/>

<sup>3</sup> Businesswire (Ed.); Global Planned LNG Market (2020 to 2030) - by Technology and End-use Industry; News 21. Aug. 2020; <https://www.businesswire.com/news/home/20200821005368/en/Global-Planned-LNG-Market-2020-2030-->

In the near future, the disruptive impact of the Covid-19 outbreak on the economies of importing countries will exert downward pressure on LNG demand in an already oversupplied market.

**Tab. 1-2: LNG Trade in 2019 (million tons per annum)**

- Import Region Export Region	Europe	Africa	Asia	Asia-Pacific	Middle East	North America	Latin America	Total	Share of Total
Africa	25.1	0.1	13.6	2.9	1.0	1.5	0.8	45.0	12.7%
Asia-Pacific	-	-	54.2	77.3	0.1	0.2	-	131.7	37.1%
Europe	4.2	-	0.1	-	-	-	0.4	4.7	1.3%
FSU	15.1	-	4.8	8.8	0.6	0.1	-	29.3	8.3%
Middle East	23.5	-	36.3	31.2	3.0	-	-	93.9	26.5%
North America	12.7	-	3.0	9.5	1.4	2.9	4.2	33.8	9.5%
Latin America	5.9	-	1.9	2.1	0.8	3.1	2.6	16.3	4.6%
Re-export	0.3	-	0.8	0.3	0.1	-	0.1	1.6	0.5%
Re-export Load.	0.9	-	0.1	0.4	-	-	-	1.6	0.5%
<b>Total</b>	<b>85.9</b>	<b>0.1</b>	<b>114.5</b>	<b>131.7</b>	<b>6.9</b>	<b>7.7</b>	<b>8.1</b>	<b>354,7</b>	<b>100%</b>
<b>Share of Total</b>	<b>24.2%</b>	<b>0.0%</b>	<b>32.3%</b>	<b>37.1%</b>	<b>1.9%</b>	<b>2.2%</b>	<b>2.3%</b>	<b>100%</b>	

Sources: ISL 2020, based on IGU (Ed.); World LNG Report 2020

Already grappling with a supply glut in liquefied natural gas (LNG), global gas companies face new challenges due to two seismic events: the COVID-19 pandemic and the global oil price shocks. Together, these developments are set to deepen and lengthen the current imbalance between supply and demand in LNG markets, leading to a lower-for-longer price environment. As a result, up to 8% of global LNG demand could be at risk (more than 25 million tonnes per annum) in the near term while the low-price environment could last another one to two years.

Market analysts of the IEA have adjusted their forecast for global gas demand to take into account the Covid-19 pandemic. As a result, the expected global demand for natural gas is now estimated at 4,370 bcm for 2025. This corresponds to an average annual growth rate of 1.5% up to the year 2025. The previous forecast expected an average increase of 1.8% over the same reporting period.<sup>4</sup> Following that new scenario IEA LNG trade forecast from June 2020 (taking into account the impact of the global Covid-19 pandemic), the global LNG trade is expected to reach 585 bcm/y by 2025, which represents an increase of 21% compared to 2019, which corresponds with an average annual growth rate of 3.3 % YoY.

<sup>4</sup> IEA (Ed.); Gas 2020 - Analysing the impact of the Covid-19 pandemic on global natural gas markets; June 2020; <https://www.iea.org/reports/gas-2020/2021-2025-rebound-and-beyond>