

MARITIME

## LNGi status update

Comprehensive insights on worldwide LNG bunkering availability and market data on LNG as fuel for ships

29 May 2017



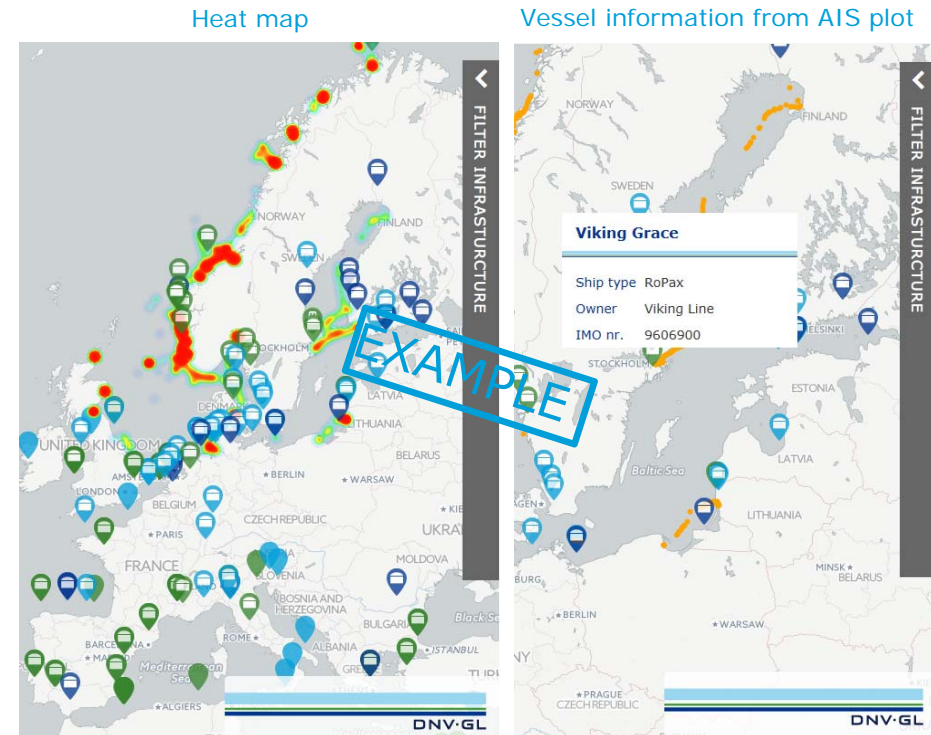
**LNGi**

**Collaboration for increased uptake of LNG as fuel**

# LNGi keeps you on top of the development of LNG bunkering for ships

## LNGi

- ✓ **Map** with LNG bunkering infrastructure with **detailed** project data
- ✓ Heat map and vessel positions of LNG fuelled fleet operating area using **AIS**
- ✓ Detailed **statistics** of LNG fuelled **fleet** development
- ✓ Scrubber + alternative fuels overview
- ✓ LNG related studies and publications



*The heat map and vessel positions are based on AIS data from 01.03.2016-11.03.2016*

# DEMAND

## Status for LNG fuelled ships

## 106 LNG fuelled ships in operation worldwide (1/2)

### Ships in operation

Year	Type of vessel	Owner	Class	Year	Type of vessel	Owner	Class
2000	Car/passenger ferry	Fjord1	DNV GL	2012	PSV	Olympic Shipping	DNV GL
2003	PSV	Simon Møkster	DNV GL	2012	PSV	Island Offshore	DNV GL
2003	PSV	Eidesvik	DNV GL	2012	General Cargo	Nordnorsk Shipping	DNV GL
2006	Car/passenger ferry	Fjord1	DNV GL	2012	PSV	Eidesvik Shipping	DNV GL
2007	Car/passenger ferry	Fjord1	DNV GL	2012	PSV	Island Offshore	DNV GL
2007	Car/passenger ferry	Fjord1	DNV GL	2012	Car/passenger ferry	Torghatten Nord	DNV GL
2007	Car/passenger ferry	Fjord1	DNV GL	2012	Car/passenger ferry	Torghatten Nord	DNV GL
2007	Car/passenger ferry	Fjord1	DNV GL	2012	Car/passenger ferry	Torghatten Nord	DNV GL
2008	PSV	Eidesvik Shipping	DNV GL	2013	PSV	REM	DNV GL
2009	PSV	Eidesvik Shipping	DNV GL	2013	RoPax	Viking Line	LR
2009	Car/passenger ferry	Tide Sjø	DNV GL	2013	Car/passenger ferry	Torghatten Nord	DNV GL
2009	Car/passenger ferry	Tide Sjø	DNV GL	2013	Tug	Incheon Port Authority	KR
2009	Car/passenger ferry	Tide Sjø	DNV GL	2013	General Cargo	Eidsvaag	DNV GL
2009	Patrol vessel	Remøy Management	DNV GL	2013	RoPax	Fjordline	DNV GL
2009	Car/passenger ferry	Fjord1	DNV GL	2013	High speed RoPax	Buquebus	DNV GL
2010	Patrol vessel	Remøy Management	DNV GL	2013	Tug	CNOOC	CCS
2010	Car/passenger ferry	Fjord1	DNV GL	2013	Tug	CNOOC	CCS
2010	Patrol vessel	Remøy Management	DNV GL	2013	Car/passenger ferry	Norled	DNV GL
2010	Car/passenger ferry	Fjord1	DNV GL	2014	Car/passenger ferry	Norled	DNV GL
2010	Car/passenger ferry	Fjord1	DNV GL	2014	Tug	Buksér & Berging	DNV GL
2010	Car/passenger ferry	Fosen Namsos Sjø	DNV GL	2014	RoPax	Fjordline	DNV GL
2011	PSV	DOF	DNV GL	2014	Patrol vessel	Finish Border Guard	DNV GL
2011*	Oil/chemical tanker	Tarbit Shipping	DNV GL	2014	Tug	Buksér & Berging	DNV GL
2011	Car/passenger ferry	Fjord1	DNV GL	2014	Gas carrier	Anthony Veder	BV
2011	PSV	Solstad Rederi	DNV GL	2014	Gas carrier	Anthony Veder	BV
2012*	Car/passenger ferry	Fjord1	DNV GL	2014	PSV	Remøy Shipping	DNV GL
2012	PSV	Eidesvik	DNV GL				

\* Conversion project

Updated 29 May 2017  
Excluding LNG carriers and inland waterway vessels

## 106 LNG fuelled ships in operation worldwide (2/2)

### Ships in operation

Year	Type of vessel	Owner	Class	Year	Type of vessel	Owner	Class
2014	General Cargo	Egil Ulvan Rederi	DNV GL	2016	Gas carrier	Navigator Gas	ABS
2014	General Cargo	Egil Ulvan Rederi	DNV GL	2016*	Oil/chemical tanker	Furetank Rederi	BV
2014	PSV	Siem Offshore	DNV GL	2016	Icebreaker	Arctica Shipping	LR
2015	PSV	Harvey Gulf Int.	ABS	2016	Car/passenger ferry	Boreal Transport Nord	DNV GL
2015	Ro-Ro	Norlines	DNV GL	2016	Car/passenger ferry	Boreal Transport Nord	DNV GL
2015	Car/passenger ferry	Samsøe municipality	DNV GL	2016	Tug	CNOOC	CCS
2015	PSV	Simon Møkster Shipping	DNV GL	2016	Gas carrier	Chemgas Shipping	BV
2015	PSV	Siem Offshore	DNV GL	2016	Car carrier	UECC	LR
2015	Ro-Ro	Norlines	DNV GL	2016	Oil/chemical tanker	Terntank	BV
2015*	Oil/chemical tanker	Bergen Tankers	LR	2016	Oil/chemical tanker	Terntank	BV
2015	Car/passenger ferry	Society of Quebec ferries	LR	2016	Car/passenger ferry	BC Ferries	LR
2015	Gas carrier	Evergas	BV	2016	Gas carrier	Evergas	BV
2015	Gas carrier	Evergas	BV	2016	PSV	Siem Offshore	DNV GL
2015	Tug	CNOOC	CCS	2016	Car/passenger ferry	Seaspan Ferries Corp.	BV
2015*	Car/passenger ferry	AG Ems	DNV GL	2016	Gas carrier	Navigator Gas	ABS
2015	Tug	NYK	NK	2016	Ro-Ro	Searoad Holdings	DNV GL
2015	Gas carrier	Chemgas Shipping	BV	2016	Car carrier	UECC	LR
2015	Gas carrier	Evergas	BV	2017	Gas carrier	Navigator Gas	ABS
2015	PSV	Harvey Gulf Int.	ABS	2017	Car/passenger ferry	Seaspan Ferries Corp.	BV
2015	Container ship	TOTE Shipholdings	ABS	2017*	RoPax	Baleària	BV
2015	Car/passenger ferry	AG EMS	DNV GL	2017	RoPax	Tallink	BV
2015	Bulk ship	Erik Thun	LR	2017	Gas carrier	Ocean Yield	DNV GL
2016	Container ship	TOTE Shipholdings	ABS	2017	PSV	Harvey Gulf Int.	ABS
2016	Gas carrier	Evergas	BV	2017	Tug	Østensjø Rederi	BV
2016	PSV	Harvey Gulf Int.	ABS	2017	Oil/chemical tanker	Groupe Desgagnés	BV
2016	Bulk ship	Erik Thun	LR	2017	Oil/chemical tanker	Terntank	BV
2016	Oil/chemical tanker	Terntank	BV				

\* *Conversion project*

Updated 29 May 2017  
Excluding LNG carriers and inland waterway vessels

## 115 confirmed LNG fuelled newbuilds (1/3)

### Confirmed orderbook

Year	Type of vessel	Owner	Class
2017	Car/passenger ferry	Society of Quebec ferries	LR
2017	Car/passenger ferry	Society of Quebec ferries	LR
2017	Tug	Drydocks World	
2017	PSV	Siem Offshore	DNV GL
2017	Gas carrier	Evergas	BV
2017	PSV	Siem Offshore	DNV GL
2017*	Ro-Ro	TOTE Shipholdings	ABS
2017	Car/passenger ferry	BC Ferries	LR
2017	Gas carrier	Ocean Yield	DNV GL
2017	Gas carrier	Navigator Gas	ABS
2017	Dredger	DEME	BV
2017	Dredger	DEME	BV
2017*	Container ship	Wessels Reederei	BV
2017	Hopper Barge	Bremenports	DNV GL
2017	HSLC	Fred. Olsen	DNV GL
2017	PSV	Harvey Gulf Int.	ABS
2017	Cable layer	DEME Tideway	DNV GL
2017	Gas carrier	Evergas	BV
2017	Gas carrier	Evergas	BV
2017	Tug	Østensjø Rederi	BV
2017	Tug	Østensjø Rederi	BV
2017*	Car/passenger ferry	BC ferries	ABS
2017	RoPax	Rederi AB Gotland	DNV GL
2017	Car/passenger ferry	Caronte & Tourist	RINA
2017	Oil/chemical tanker	Groupe Desgagnés	BV
2017	Oil/chemical tanker	Groupe Desgagnés	BV

\* *Conversion project*

Year	Type of vessel	Owner	Class
2017	Oil/chemical tanker	Groupe Desgagnés	BV
2017	Car/passenger ferry	BC Ferries	LR
2017	Container ship	Crowley Maritime Corp.	DNV GL
2017	Container ship	Crowley Maritime Corp.	DNV GL
2017	Container ship	Brodosplit	DNV GL
2017	Bulk ship	POSCO	KR
2018	Container ship	Brodosplit	DNV GL
2018	Bulk ship	ESL Shipping	DNV GL
2018	Bulk ship	ESL Shipping	DNV GL
2018	Tug	Keppel Smit Towage	ABS
2018	Tug	Maju Maritime	ABS
2018*	Car/passenger ferry	BC ferries	ABS
2018	PSV	Harvey Gulf Int.	ABS
2018	Container ship	Brodosplit	DNV GL
2018	Container ship	Brodosplit	DNV GL
2018	Car/passenger ferry	Royal Doeksen	LR
2018	Car/passenger ferry	Royal Doeksen	LR
2018	Car/passenger ferry	CHFS	LR
2018	Car/passenger ferry	CHFS	LR
2018*	Ro-Ro	TOTE Shipholdings	ABS
2018	RoPax	Rederi AB Gotland	DNV GL
2018	General cargo ship	Nordnorsk Shipping	DNV GL
2018	Container ship	Containerships	ABS
2018	Container ship	Containerships	ABS
2018	Container ship	GNS Shipping	ABS
2018	Container ship	GNS Shipping	ABS

Updated 29 May 2017

Excluding LNG carriers and inland waterway vessels

## 115 confirmed LNG fuelled newbuilds (2/3)

### Confirmed orderbook

Year	Type of vessel	Owner	Class	Year	Type of vessel	Owner	Class
2018	Container ship	GNS Shipping	ABS	2019	Oil/chemical tanker	SCF	DNV GL
2018	Container ship	GNS Shipping	ABS	2019	Oil/chemical tanker	SCF	DNV GL
2018	Heavy lift vessel	Heerema Offshore	LR	2019	Oil/chemical tanker	AET	
2018	Oil/chemical tanker	Furetank Rederi	BV	2019	Oil/chemical tanker	AET	
2018	Oil/chemical tanker	Furetank Rederi	BV	2019	Tug	Mitsui O.S.K. Lines	
2018	Oil/chemical tanker	Furetank Rederi	BV	2019	Cruise ship	Carnival Corporation	RINA
2018	Dredger	DEME	BV	2019	Cruise ship	Carnival Corporation	RINA
2018	Dredger	van der Kamp	DNV GL	2019	Oil/chemical tanker	Älvtank	BV
2018	Oil/chemical tanker	Thun Tankers		2019	Oil/chemical tanker	Älvtank	BV
2018	Oil/chemical tanker	SCF	DNV GL	2019	Oil/chemical tanker	Thun Tankers	BV
2018	Oil/chemical tanker	SCF	DNV GL	2019	Offshore installation ship	DEME	DNV GL
2018	Oil/chemical tanker	AET		2019	Dredger	DEME	BV
2018	Oil/chemical tanker	AET		2019	RoPax	Baleària	BV
2018	Car/passenger ferry	Torghatten		2019	Car carrier	Siem Car Carriers	
2018	Bunker ship	Harley Marine Services		2019	Car carrier	Siem Car Carriers	
2018	Bunker ship	Harley Marine Services		2019	Emergency response ship	German Transport Ministry	
2018	Bunker ship	Sinanju Tankers		2019	Emergency response ship	German Transport Ministry	
2018	Reefer	SeOil Agency/Gas Entec		2019	RoPax	Brittany Ferries	
2018	Car/passenger ferry	Torghatten		2019	RoPax	Baleària	
2018	Car/passenger ferry	Torghatten		2019	RoPax	Baleària	
2018	Car/passenger ferry	Torghatten		2019	Oil/chemical tanker	Rosneft	
2019	Car/passenger ferry	Torghatten		2020	Oil/chemical tanker	Rosneft	
2019	Oil/chemical tanker	Thun Tankers		2020	Oil/chemical tanker	Rosneft	
2019	Oil/chemical tanker	Thun Tankers		2020	Oil/chemical tanker	Rosneft	
2019	Oil/chemical tanker	Thun Tankers		2020	Oil/chemical tanker	Rosneft	

\* *Conversion project*

Updated 29 May 2017  
Excluding LNG carriers and inland waterway vessels



## 115 confirmed LNG fuelled newbuilds (3/3)

### Confirmed orderbook

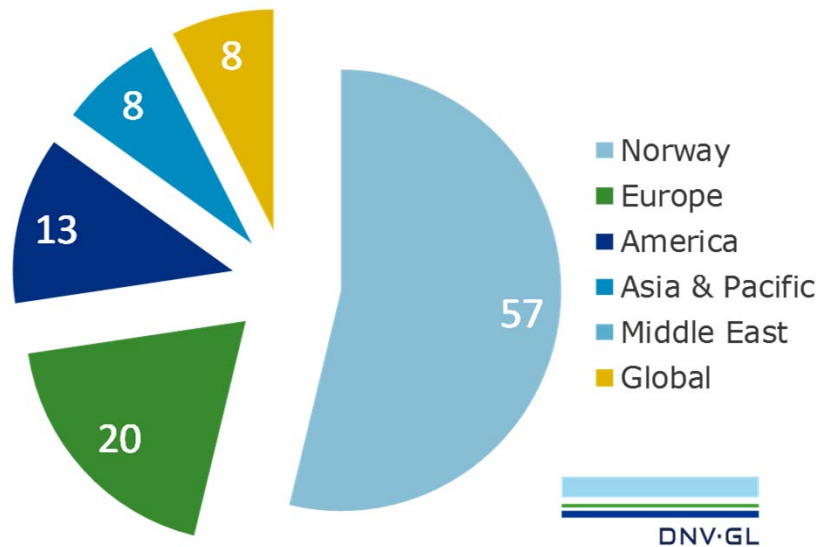
Year	Type of vessel	Owner	Class
2020	Container ship	Pasha Hawaii	
2020	Container ship	Pasha Hawaii	
2020	Research ship	German Transport Ministry	
2020	RoPax	Viking Line	
2020	Cruise ship	Carnival Corporation	RINA
2020	Cruise ship	Carnival Corporation	
2021	Cruise ship	Carnival Corporation	
2021	Cruise ship	Carnival Corporation	
2022	Cruise ship	Carnival Corporation	RINA
2022	Cruise ship	MSC Cruises	
2022	Cruise ship	RCCL	
2024	Cruise ship	MSC Cruises	
2024	Cruise ship	RCCL	

\* *Conversion project*

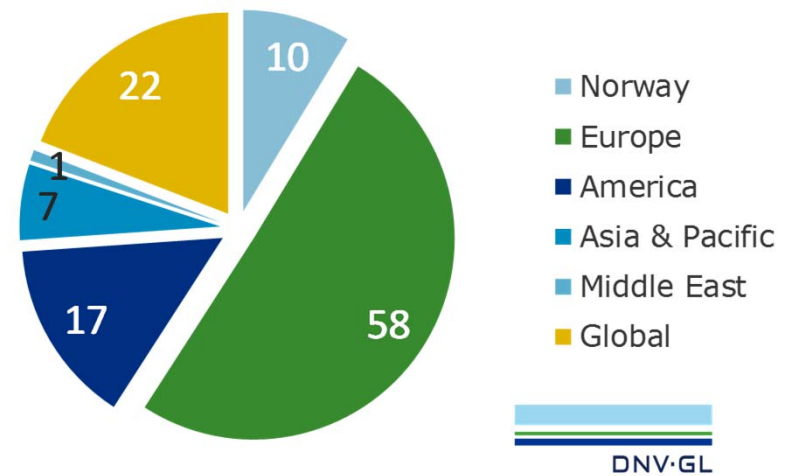
Updated 29 May 2017  
Excluding LNG carriers and inland waterway vessels

## Area of operation of LNG fuelled vessels

Operating area of the 106 ships in operation

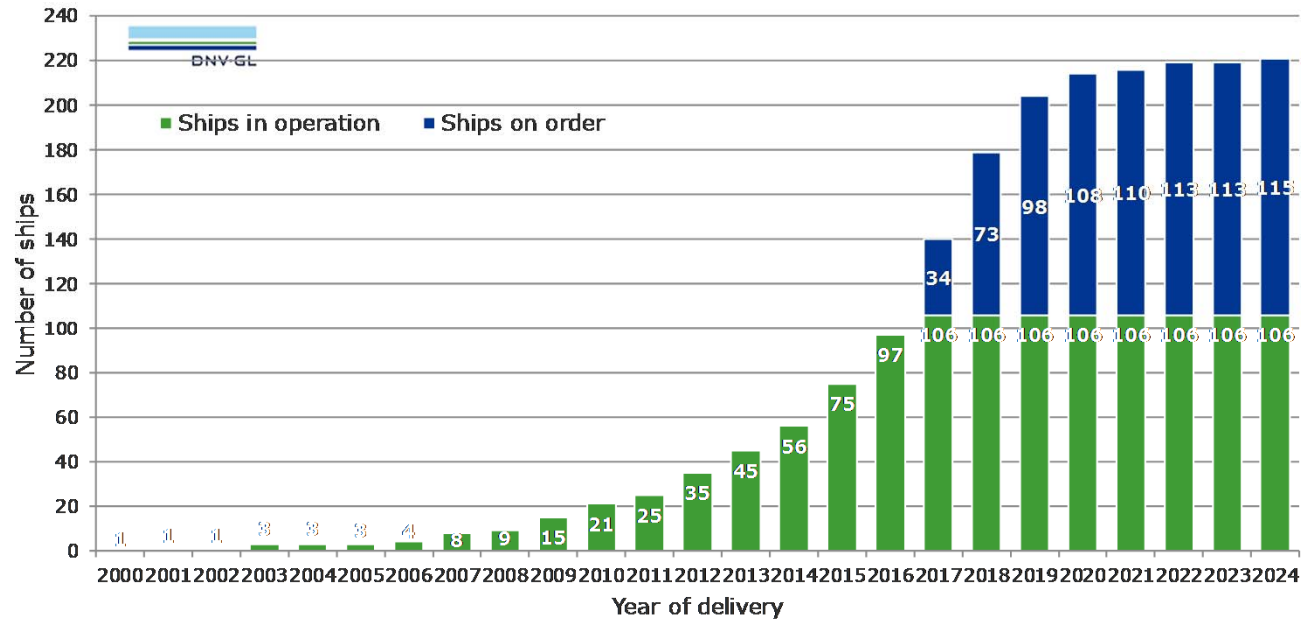


Operating area of the 115 ships in the confirmed orderbook



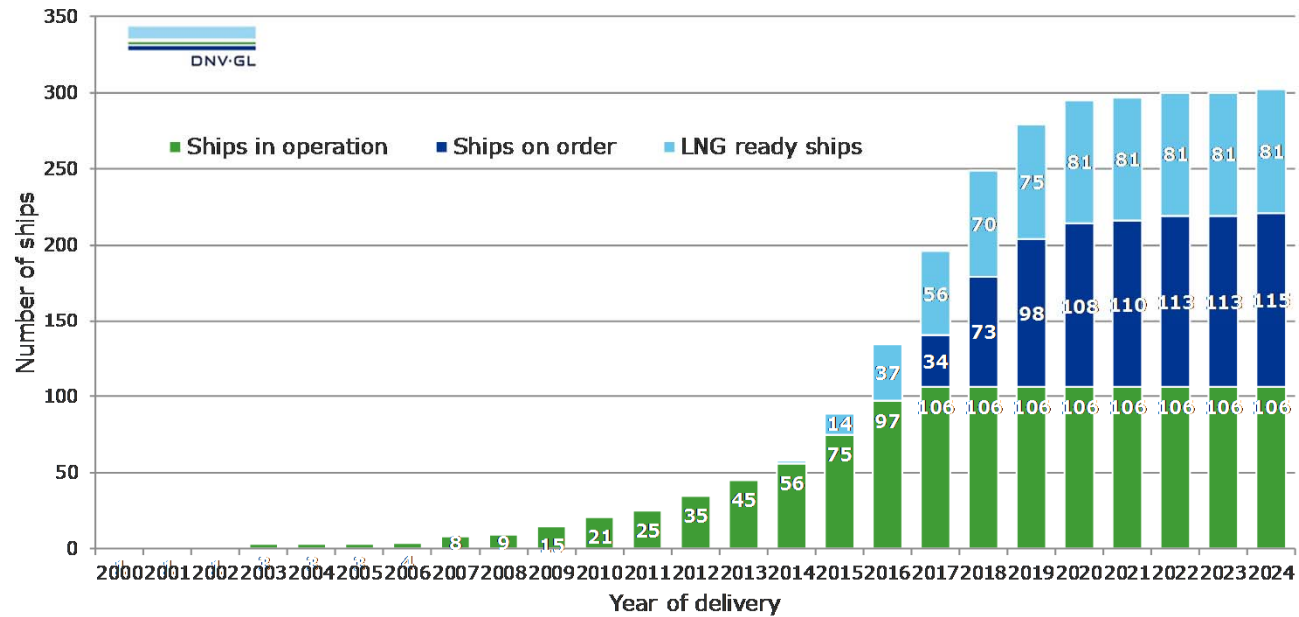
Updated 29 May 2017  
Excluding LNG carriers and inland waterway vessels

## There are currently 221 confirmed LNG ship fuel projects



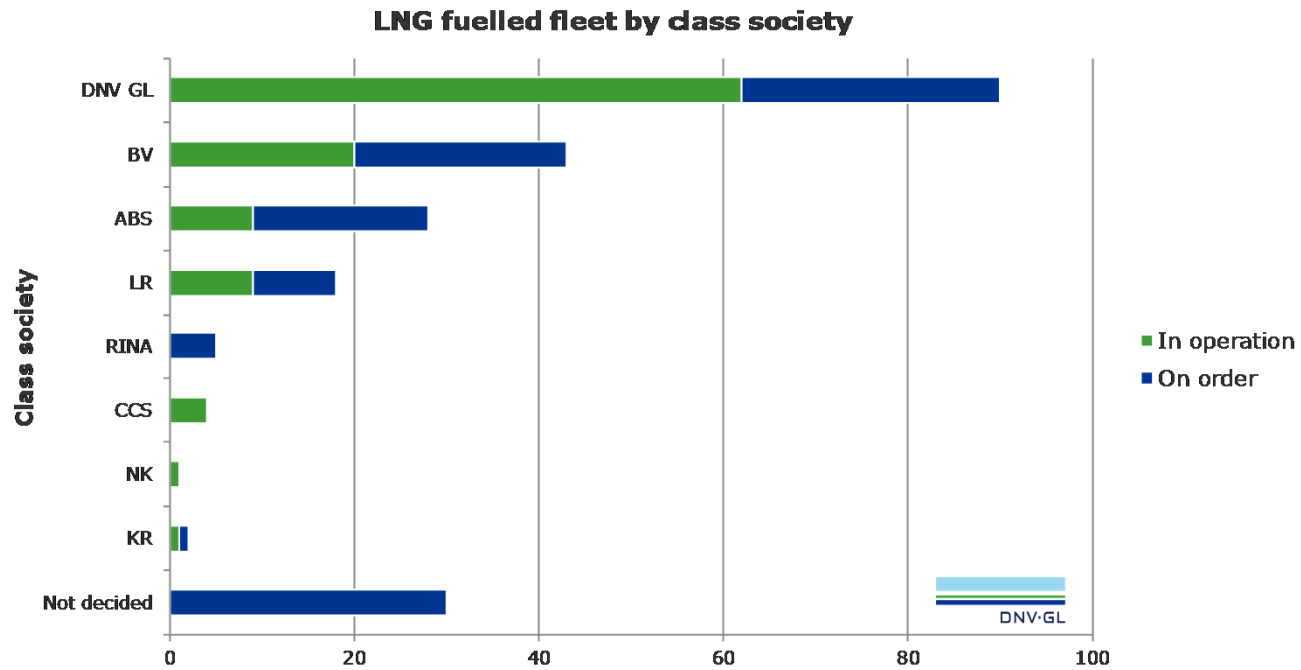
Updated 29 May 2017  
 Excluding LNG carriers and inland waterway vessels

## There are currently 221 confirmed LNG ship fuel projects



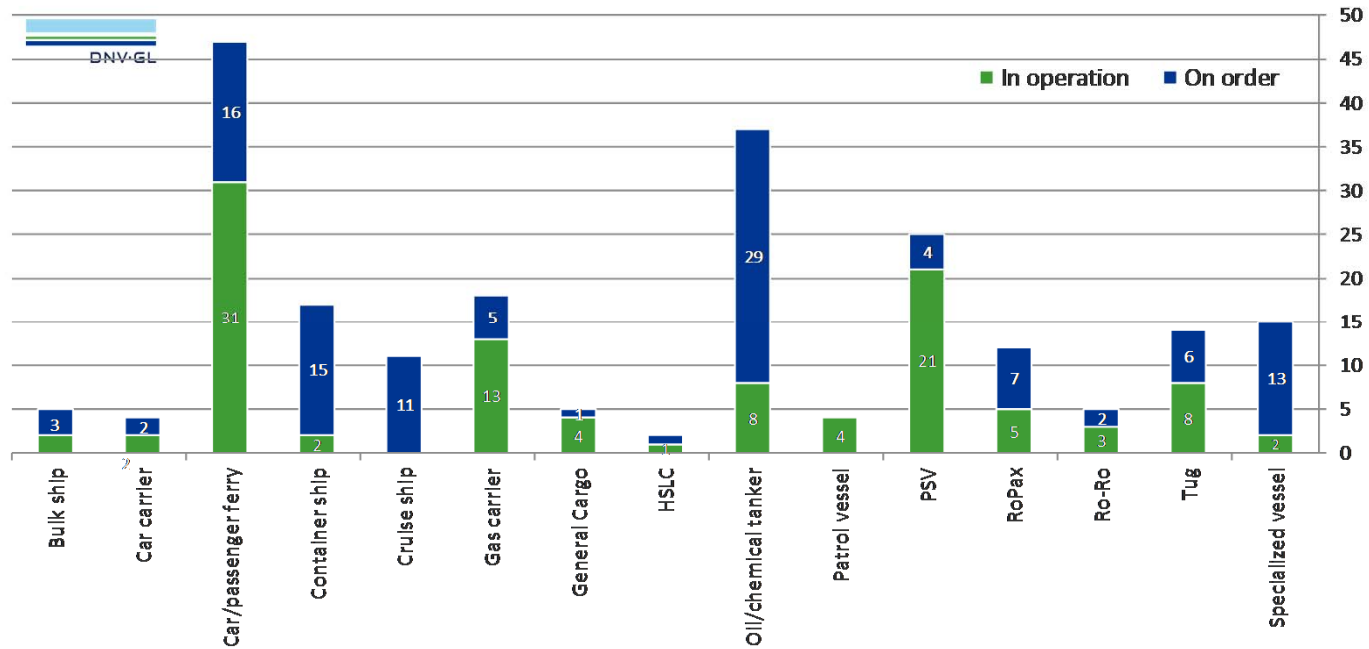
Updated 29 May 2017  
Excluding LNG carriers and inland waterway vessels

# DNV GL – trusted partner for LNG fuel projects



Updated 29 May 2017  
Excluding LNG carriers and inland waterway vessels

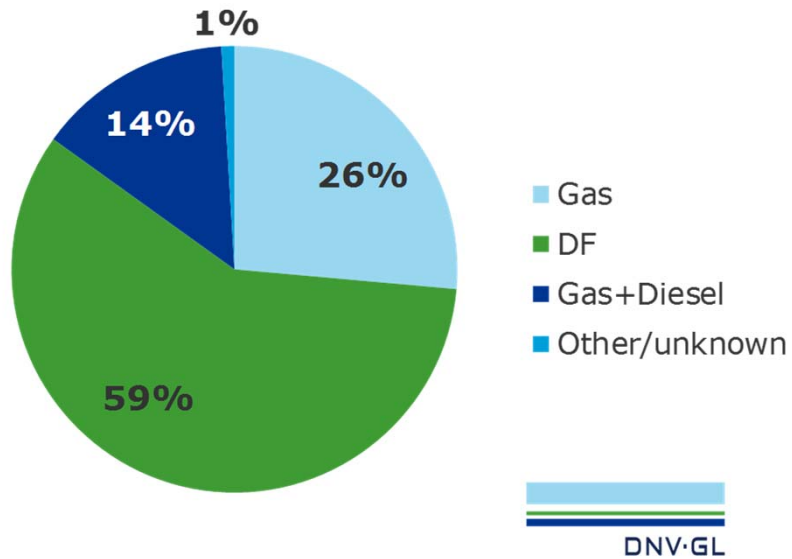
# LNG uptake by vessel segment



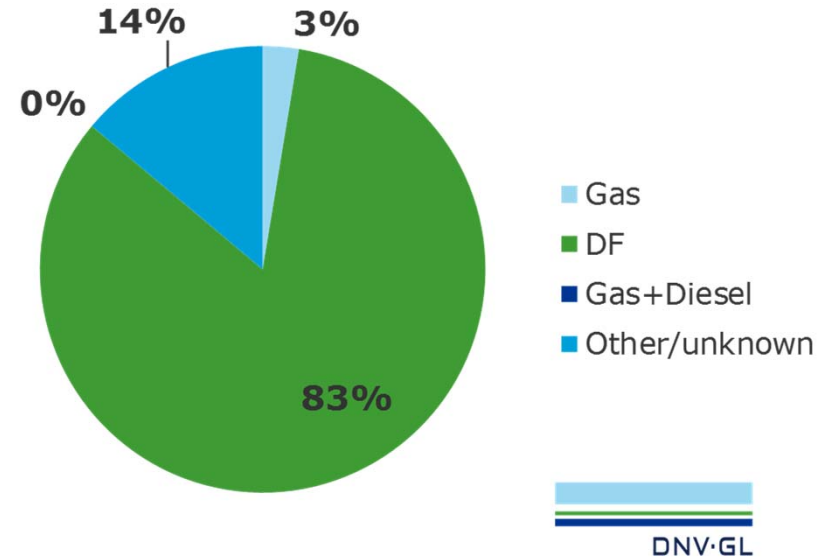
Updated 29 May 2017  
 Excluding LNG carriers and inland waterway vessels

# All engine concepts are in use for ship propulsion

**Gas engine technology  
- ships in operation**

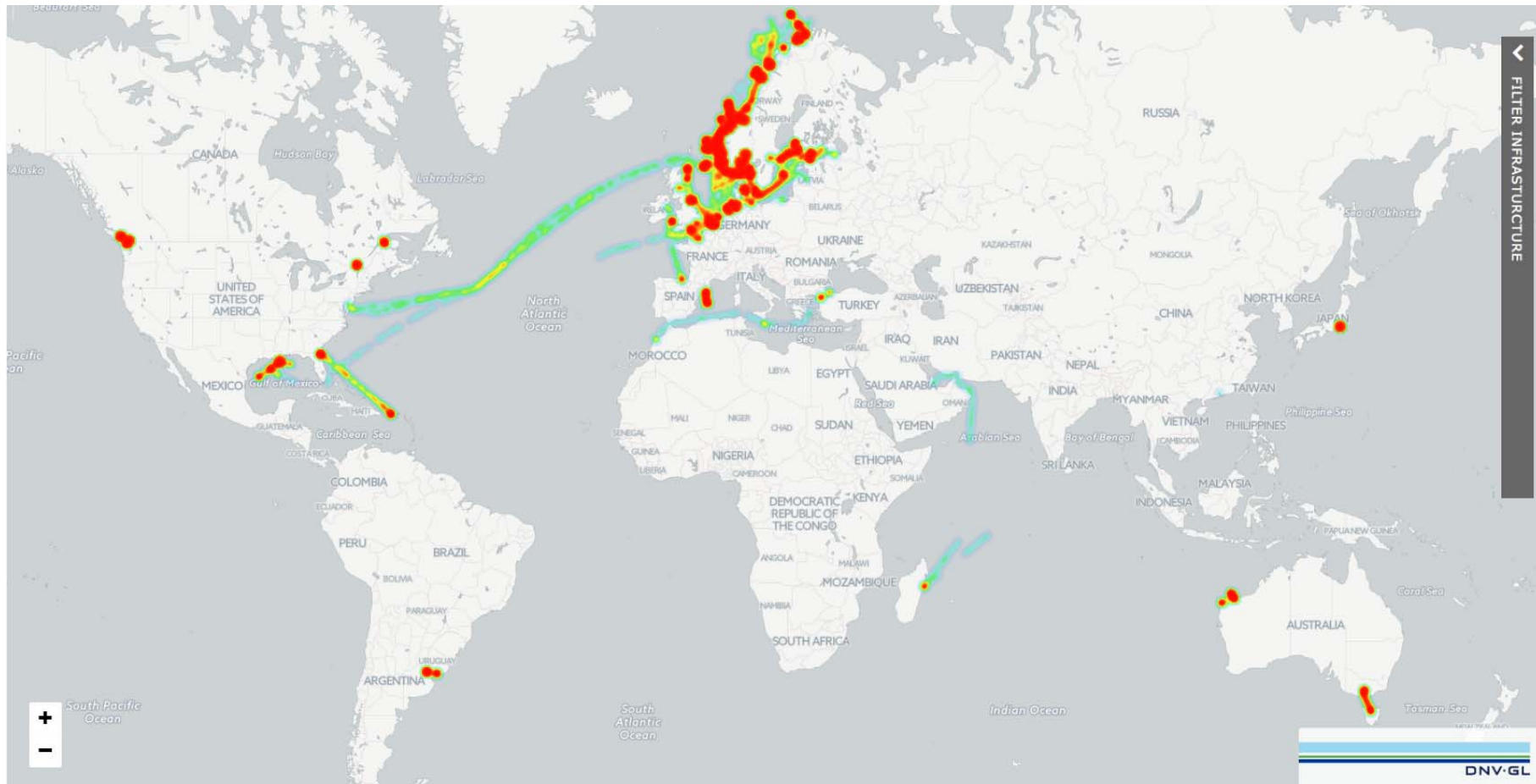


**Gas engine technology  
- confirmed orderbook**



Updated 29 May 2017  
Excluding LNG carriers and inland waterway vessels

## AIS data from LNGi shows that LNG fuelled ships are already covering a large area



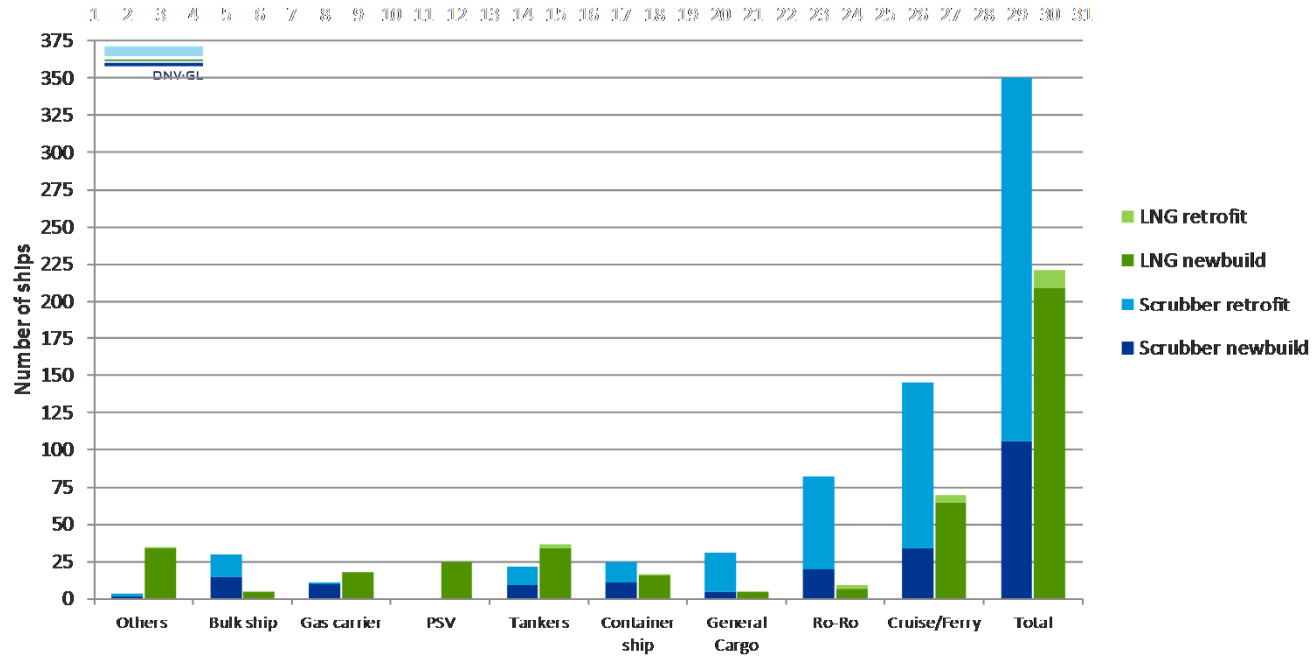
*The heat map is based on the LNG fuelled fleet's AIS positions from 15.05.2017-25.05.2017*



**DEMAND**

**Uptake of scrubbers**

# Investments in scrubbers are higher in total numbers but LNG fuel is the most frequent choice for newbuilds



*\*Number of ships are shown. Number of scrubber units are higher.*

Updated 29 May 2017  
 Excluding LNG carriers and inland waterway vessels

# LNG as a fuel

## Get ready for the future - today

For more information please

Visit: [www.dnvgl.com/LNGi](http://www.dnvgl.com/LNGi)

Email: [lngi@dnvgl.com](mailto:lngi@dnvgl.com)

[www.dnvgl.com](http://www.dnvgl.com)

SAFER, SMARTER, GREENER