



Gas LNG Europe

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PGCD-3

THE EUROPEAN SMALL-SCALE LNG INFRASTRUCTURE: STATUS AND OUTLOOK

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GLE = European association of LNG import terminals



GLE represents ca. 90% of regasification capacity of LNG imports in the EU

- GLE is one of the three columns of GIE (Gas Infrastructure Europe), the European association of the Transmission, Storage and LNG Terminal Operators
- GLE membership:
 - 17 member companies
 - 9 countries
 - 1 observer



- LNG as fuel in maritime and road transport and energy solution in off-grid destinations is gathering ground throughout Europe.
- In March 2014 Gas LNG Europe (GLE) launched the **European small-scale LNG map and database** with updates in June 2014 and April 2015.
- This for the first time provides the LNG industry and interested parties with an overview of the available, planned and announced small-scale LNG infrastructure and services in Europe.





European Commission

Clean Power for Transport Package

- On 24 January 2013 the European Commission announced within the **Clean Power for Transport Package** a Communication on a European alternative fuels strategy, a Directive focusing on infrastructure and standards and an accompanying document describing an action plan for the development of LNG in shipping.
- On 29 September 2014, the European Parliament and the Council adopted a Directive on the deployment of alternative fuels infrastructure.
- The GLE small-scale LNG study supports this initiative not only by showing existing small scale LNG infrastructure and projects but also by identifying missing links in the network. **In addition to the transport sector, the study supports the development of the use of LNG in off pipeline locations.**

The result of the study was an **Excel database and a map** showing the small scale LNG infrastructure in Europe.

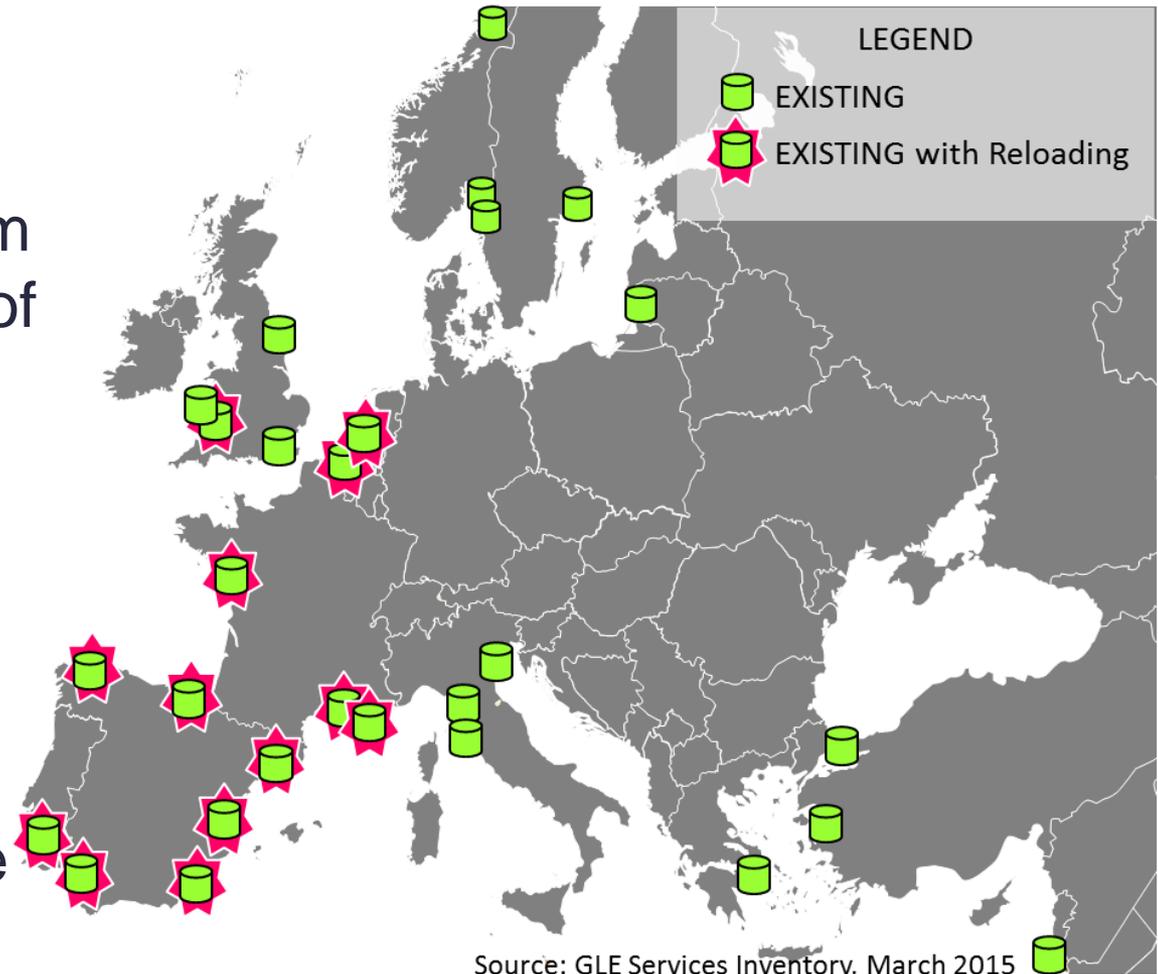
- It covers the infrastructure for sea transport, transport on inland waterways as well as road transport.
- Additionally, it shows the existing infrastructure as well as the planned infrastructure (i.e. projects) and public accessible and private facilities (e.g. LNG filling stations).
- It shows not only the type and location of the infrastructure, but also standardised additional information of each facility (e.g. company, website, capacity, start-up year).

Please find on the next five slides **the facilities covered** by the small scale LNG infrastructure study (in addition to the 'large-scale' LNG infrastructure):

- Loading LNG ships
- Transhipment
- Loading small ships
- LNG Railcar /Truck Loading
- Small scale liquefactions
- LNG refuelling stations for ships /trucks
- LNG bunker ships
- Satellite LNG Storages

Reloading

- Transfer of LNG from the LNG reservoirs of the terminal into a vessel
- In 2014 more than 130 ship loading operations were done. About 14 million m³ LNG were reloaded



Transshipment

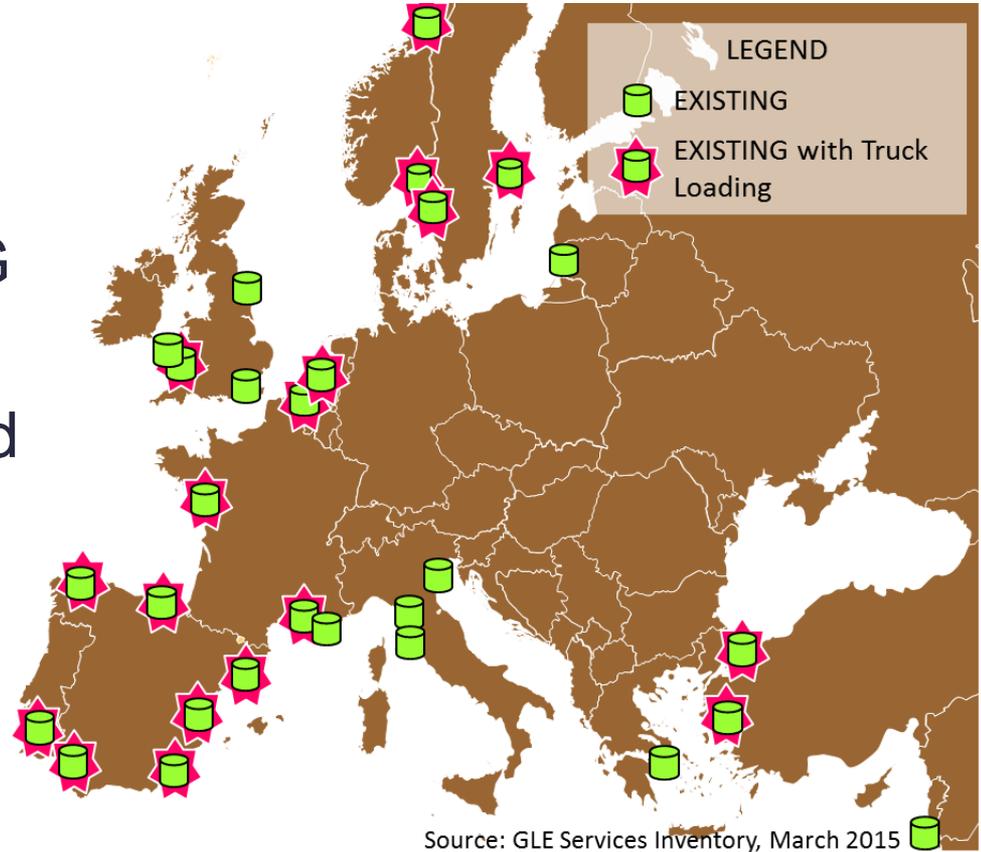
- Direct transfer of LNG from one vessel into another
- Offered in France, Spain, UK and from 2015 in Belgium and The Netherlands
- In 2014 one operation was done in France: 150,000 cm LNG

Loading of bunker ships

- LNG is loaded on bunkering ships which supply to LNG-fuelled ships or LNG bunkering facilities for vessels
- Offered in Belgium, France, The Netherlands and Spain

Truck loading

- LNG is loaded on tank trucks which transport LNG in smaller quantities
- About 42,600 trucks loaded 1.9 mcm LNG at truck loading facilities at large-scale LNG terminals in 2014



Rail loading

- LNG is loaded on rail tanks which transport LNG in smaller quantities
- This service has not been available in Europe yet

LNG small-scale liquefaction plants

- LNG is produced in small scale liquefaction plants to respond to peak shaving demand or make available natural gas to regions where it is not economically or technically feasible to build new pipelines.

LNG bunkering facilities for vessels

- This stationary facility allows ships to bunker LNG to be used as fuel for the vessel.

LNG bunker ships

- This ship supplies LNG directly to LNG-fuelled ships or to LNG bunkering facilities for vessels.

LNG refuelling stations for trucks

- This facility allows trucks to fill LNG to be used as fuel.

LNG satellite storages

- They enable to store LNG in small quantities in areas where there is no high pressure pipeline. LNG is delivered mainly by trucks (but also by small LNG ships) to these satellite plants where it is then stored and regasified into the natural gas distribution networks or used by an end user.

1. GLE gathered all information available among its members.
2. In order to guarantee efficiency and to avoid redundancies, GLE discussed the agreed scope of work with other relevant organisations for a potential cooperation.
3. Further data was collected from public sources.

- On the website of GIE - Gas Infrastructure Europe (www.gie.eu) the database and map are available in electronic format.
- The map is available in printed format (A0) as well and can be ordered online at www.gie.eu.
- An interactive map will be provided soon as well.
- It will thereby greatly enhance the visibility of the small-scale LNG infrastructure.

MAP LEGEND

the indication of interconnection points is consistent with all other GIE grid maps



GIE Member Countries



Other Countries

Small Scale LNG Infrastructure



in operation



under construction



planned



announced



LNG import terminal offering new LNG services



LNG liquefaction plant



LNG bunker facility for vessels



LNG bunker ship



LNG refuelling station for trucks

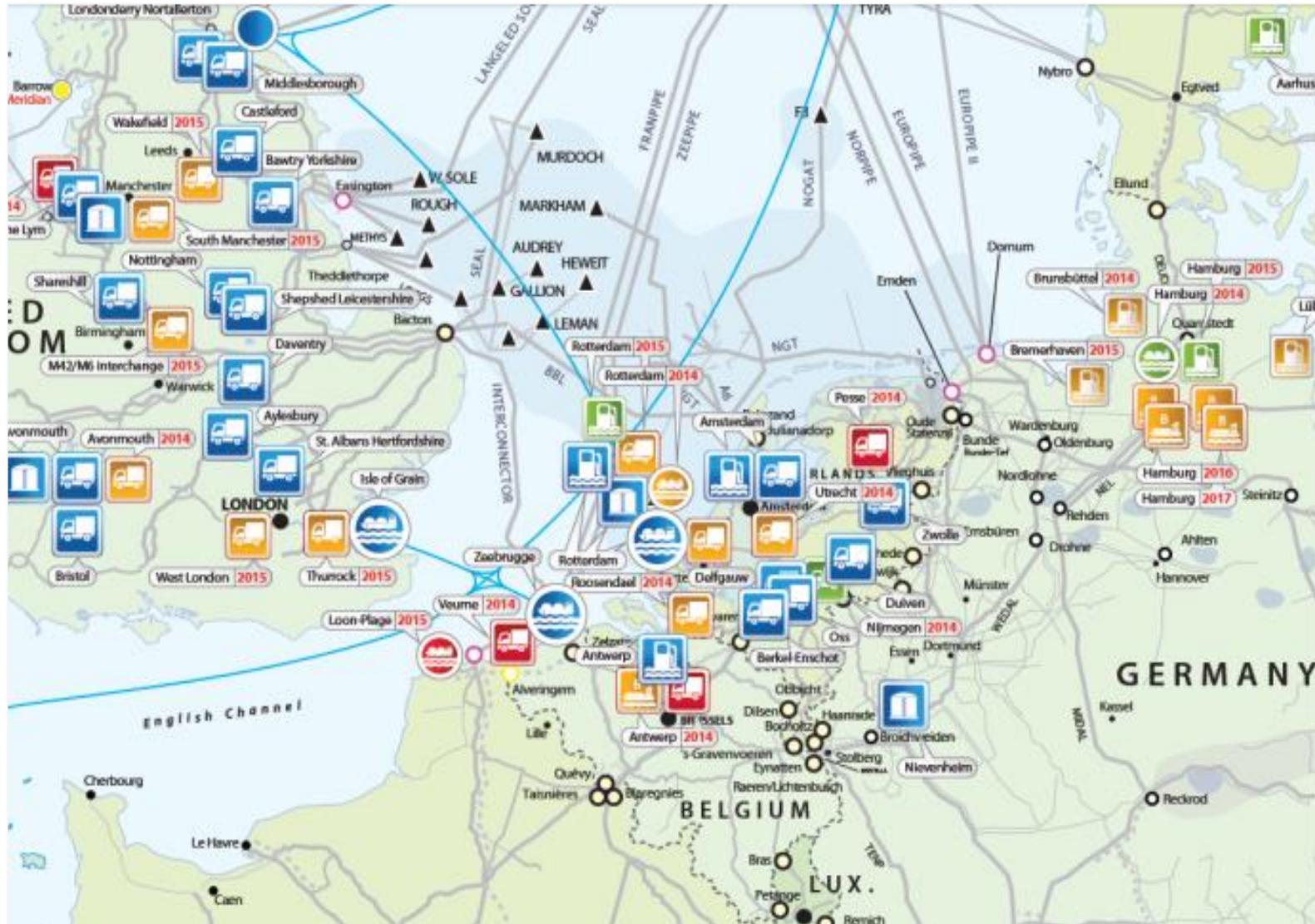


LNG satellite storages (not included in map)

Pesse 2014

City, Start-up date

Results: Map (3/4)



Results: Database



2015-03 UPDATE GLE SSLNG DATA, draft 2.xlsx - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View

A3 Fuel loading ship

1	Please contact gie@gie.eu if your project is not included.							
2	TYPE of installation	Country	Status	Start-up Year	NAME of installation	Owner/Operator	Service offered	Remarks
3	Fuel loading ship	Belgium	operational	2013	Truck-to-ship bunkering Antwerp	Port of Antwerp	truck-to-ship bunkering	
4	Fuel loading ship	Belgium	under construction	2016	Antwerp bunkering station	Port of Antwerp		
5	Fuel loading ship	Bulgaria	under construction	2015	Ruse Terminal	Bulmarket DM Ltd.	bunker station for inland vessels	
6	Fuel loading ship	Denmark	under construction	2015	Hirtshals LNG ship bunkering terminal	Fjord Line/Liquiline Europe	n.a.	onsite st
7	Fuel loading ship	Denmark	planned		Aarhus LNG fuel loading ship	Port of Aarhus	n.a.	
8	Fuel loading ship	Denmark	planned		Copenhagen-Malmö LNG bunkering	Ports of Copenhagen-Malmö	n.a.	
9	Fuel loading ship	Estonia	planned		Tallinn LNG bunkering	Port of Tallinn	n.a.	
10	Fuel loading ship	Finland	planned		Helsinki LNG fuel loading ship	Port of Helsinki	n.a.	
11	Fuel loading ship	Finland	planned		Turku LNG fuel loading ship	Port of Turku	n.a.	
12	Fuel loading ship	France	planned		Dunkerque port on-land marine bunkering	Port of Dunkerque/Gaz-Opale	n.a.	
13	Fuel loading ship	Germany	operational	2011	Truck-to-Ship Bunkering Brunsbüttel	Port of Brunsbüttel, Gasnor	truck-to-ship bunkering	
14	Fuel loading ship	Germany	operational	2013	Truck-to-Ship Bunkering Mannheim	Staatliche Rhein-Neckar-Hafengesellschaft	truck-to-ship bunkering	
15	Fuel loading ship	Germany	under construction	2015	Bremen LNG terminal	HGM Energy	n.a.	Planned
16	Fuel loading ship	Germany	under construction	2015	Bunker Station Brunsbüttel	Port of Brunsbüttel; Gasnor; Det N	truck-to-ship bunkering	
17	Fuel loading ship	Germany	planned	2016	Small-Scale Terminal and Bunker Station Ham	Bomin Linde LNG	n.a.	
18	Fuel loading ship	Germany	planned	2016	Bunker Station Lübeck	Lübeck Port Authority	n.a.	
19	Fuel loading ship	Germany	planned		Bunker Station Rostock	Hafen-Entwicklungsgesellschaft R	n.a.	
20	Fuel loading ship	Italy	operational	2014	Civitavecchia (Rome) truck-to-ship bunkering	Port of Civitavecchia (Rome)	truck-to-ship bunkering	
21	Fuel loading ship	Italy	planned		Tremestieri (Messina) fuel loading ship	Caronte & Tourist	n.a.	
22	Fuel loading ship	Lithuania	planned		Klaipeda LNG bunkering	Port of Klaipeda	n.a.	
23	Fuel loading ship	Netherlands	operational	2013	Truck-to-ship bunkering Amsterdam	Port of Amsterdam	n.a.	
24	Fuel loading ship	Netherlands	operational	2013	Rotterdam LNG24 fuel loading ship	LNG24	n.a.	
25	Fuel loading ship	Netherlands	operational	2014	Truck-to-ship Bunkering Moerdijk	Port of Moerdijk	truck-to-ship bunkering	
26	Fuel loading ship	Netherlands	planned	2015	Rotterdam BominLinde fuel loading ship	Bomin Linde LNG	n.a.	
27	Fuel loading ship	Norway	operational	2003	Floro fuel loading ship (bunkering)	Saga Fjordbase/Gasnor	n.a.	
28	Fuel loading ship	Norway	operational	2003	Kollsnes LNG I	Gasnor	Liquefaction plant	
29	Fuel loading ship	Norway	operational	2004	Agotnes fuel loading ship	Coast Center Base	n.a.	delivery
30	Fuel loading ship	Norway	operational	2004	Snurrevarden (Karmøy) LNG liquefaction	Gasnor	Liquefaction plant	
31	Fuel loading ship	Norway	operational	2007	Halhjem LNG storage	Gasnor	n.a.	
32	Fuel loading ship	Norway	operational	2007	Kollsnes LNG II	Gasnor	Liquefaction plant	expander
33	Fuel loading ship	Norway	operational	2009	Hordvikneset LNG storage	Gasnor	n.a.	
34	Fuel loading ship	Norway	operational	2011	Risavika (Stavanger) LNG plant	Skangass	Liquefaction plant	
35	Fuel loading ship	Norway	operational	2012	Haukas LNG storage	Gasnor	n.a.	
36	Fuel loading ship	Norway	operational		Bodo	Barents NaturGass	n.a.	
37	Fuel loading ship	Norway	operational		Kirkenes	Barents NaturGass	n.a.	
38	Fuel loading ship	Norway	operational		Kristiansund fuel loading ship	Statoil/Gasnor	n.a.	
39	Fuel loading ship	Norway	operational		Lodingen	Barents NaturGass	n.a.	
40	Fuel loading ship	Norway	operational		Moskenes	Barents NaturGass	n.a.	

Ready | Import Terminals | Other SSLNG Infrastructure | 89%

Results: Installations per type

Installation	Status		
	Operational	Under construction	Planned
LNG terminals (large + small):			
Reloading	14	2	3
Transshipment	3	2	3
Bunkership loading	9	7	10
Truck loading	18	8	6
Rail loading	-	-	4
Liquefaction plants	22	n.a.	2
Bunkering facilities for vessels	26	5	22
Bunker ships	5	4	6
Refuelling stations for trucks	70	14	19
Satellite Storages	>1000	n.a.	n.a.

Results: Installations per country (top 10)



Country	Number of Installations*		
	Operational	Under construction	Planned
1. Spain	35	4	11
2. Norway	35	-	-
3. UK	22	2	9
4. Netherlands	17	5	6
5. Sweden	13	-	9
6. France	11	4	10
7. Belgium	7	5	1
8. Germany	5	3	9
9. Portugal	4	1	4
10. Finland	2	8	4

* excl. LNG Satellite Storages

The GLE study clearly demonstrates the availability of small scale LNG in Europe:

- Most of the European LNG import terminals already offer truck loading and the availability of loading bunkering ships is increasing as well.
- The number of refuelling stations for trucks (currently mainly in Spain, UK and Netherlands) and bunkering facilities for vessels (currently mainly in Norway) are increasing continuously.
- The GLE map and database provide a clear overview of small scale LNG infrastructure. Any additional information for the database is most welcome: gie@gie.eu

The last update was done in April 2015.