



CURRENT VIEW ON SMALL SCALE LNG

Development of road transport infrastructure rocketing in LNG importing countries

Gas Infrastructure Europe (GIE) engaged FTI Consulting to assess the development of small scale LNG infrastructure across Europe.

Building on GIE's existing research as of June 2016, FTI Consulting conducted desktop research to assess the various operational, under construction or planned small scale LNG projects as of November 2017.

Key findings

Small scale LNG infrastructure is heavily dependent on the proximity of large scale LNG import terminals. As of November 2017, 75% of operational small scale LNG infrastructures were located in countries that have large scale regasification terminals¹, mainly in Western Europe.

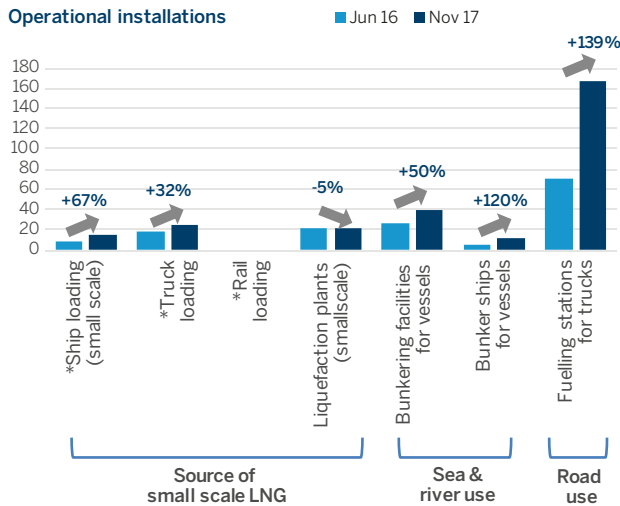
France, Italy, Spain and the UK have been driving the growth in small scale LNG infrastructure, increasing the number of their operational facilities by 133% over 2016-2017. This concentration in Western Europe is expected to continue: 65% of under construction or planned projects are located in countries with large scale import terminals. This is further corroborated by the absence of development of facilities that could liquefy natural gas from networks into LNG, confirming the large scale LNG import terminals as the key logistical springboard for small scale LNG.

Among the different types of infrastructure, LNG fuelling stations for trucks have witnessed the strongest growth over 2016-2017: both the number of operational stations as well as the number of under construction and planned stations have more than doubled to 167 and 71 respectively.

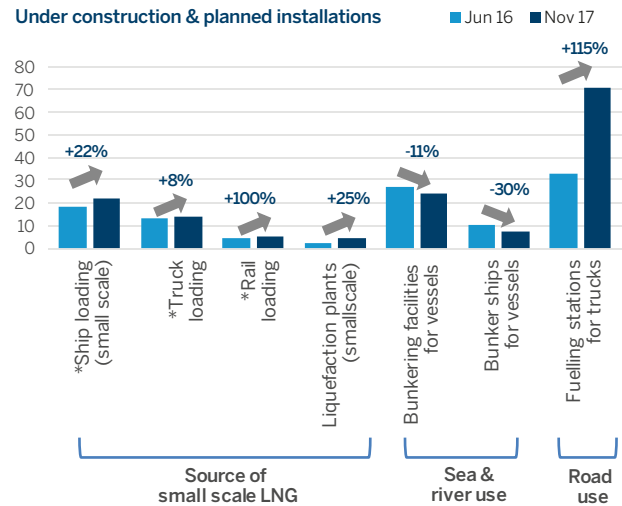
The number of sea and river small scale LNG infrastructure projects has also grown, albeit to a lesser pace, moving from 31 to 50 over 2016-2017 (+62%), while the pipeline of new under construction or planned projects showed a slight decline from 37 to 31 (-16%).

In the rail sector, 5 planned rail loading projects have been identified, in Northern Europe and Spain. None had been sanctioned as of November 2017, suggesting persistent challenges in kick-starting railroad LNG transport.

¹ United Kingdom, the Netherlands, Belgium, France, Portugal, Spain, Italy, Poland, Greece, Turkey and Lithuania.



*Part of large scale LNG import terminals



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LNG for road transportation

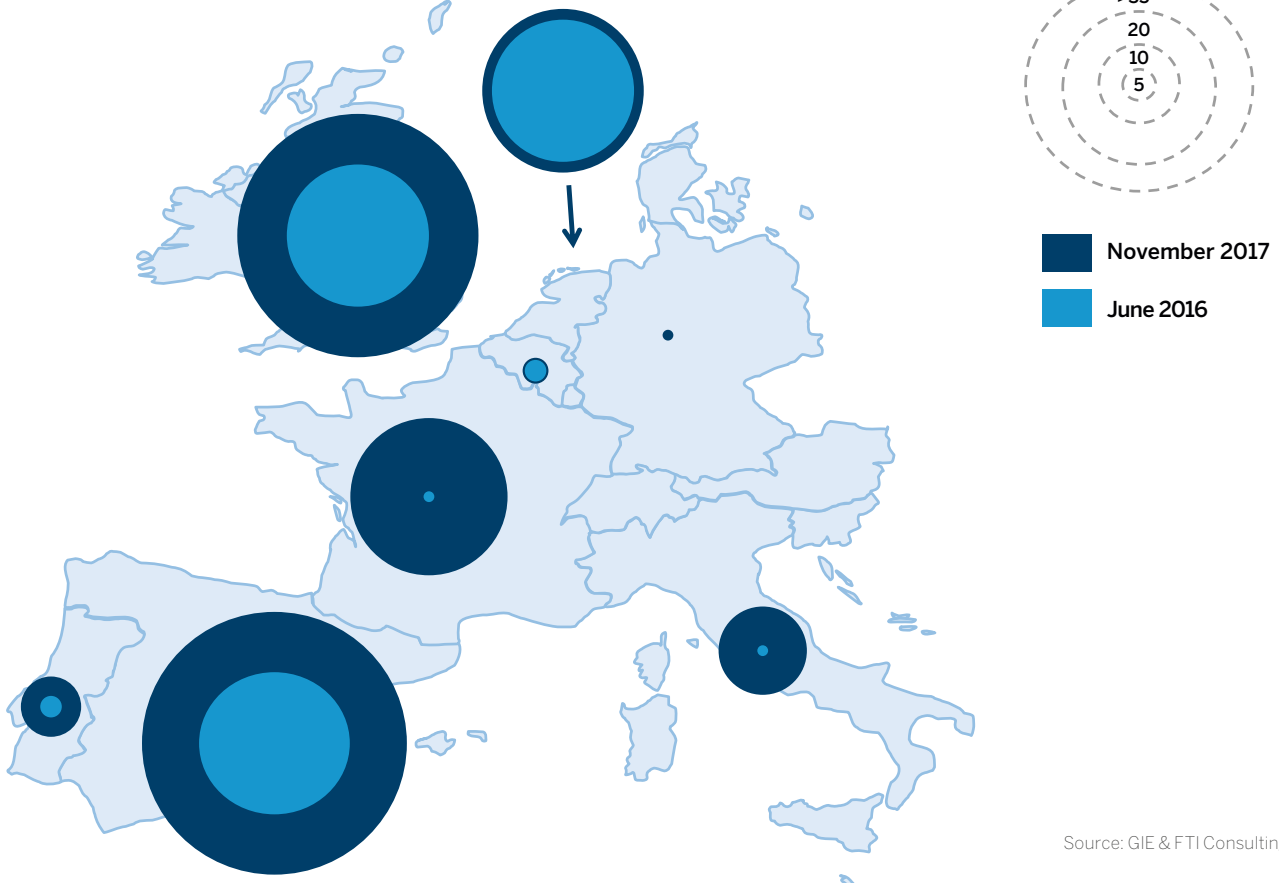
Between June 2016 and November 2017, the number of operational fuelling stations increased from 70 to 167. At the same time, the number of projects under construction and planned increased from 33 to 70, showing a strong pipeline of development. The UK, Spain and the Netherlands remain the countries with the most small scale LNG road infrastructure, with respectively 38, 37 and 23 stations. In the meantime,

France and Italy have partially caught up, moving from a single LNG station in the whole country in 2016 to respectively 17 and 13 operational stations by end 2017.

HAM, Gas Natural Fenosa, Gazrec and Gasnor were the companies with most LNG refuelling stations for trucks across Europe, with respectively 12%, 10%, 8% and 8% of the total installed stations.

Number of operational road transportation LNG refuelling stations

Selected countries representing 85% of total



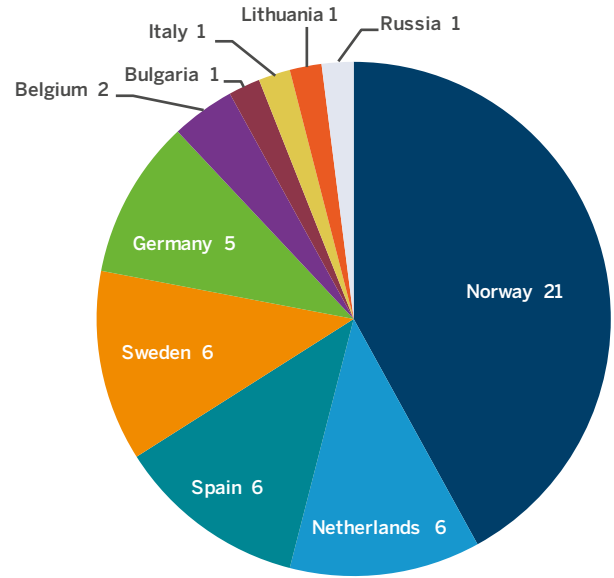
Source: GIE & FTI Consulting

LNG for sea and river transportation

Between June 2016 and November 2017, the number of operational small scale LNG fuelling facilities for ships increased from 31 to 50, located in 40 different sea and river ports. 78% of those facilities are stationary, while 22% are bunker ships capable of delivering LNG to the end-user vessel flexibly. River facilities are a minority, representing less than 5% of total facilities serving ships across the continent.

LNG infrastructure for sea and river transportation was, as of end 2017, concentrated in Northern Europe, with 64% of total infrastructure located in Norway, the Netherlands or Germany. Gasnor and Barents NaturGass were the companies with most LNG ship fuelling facilities across Europe, with respectively 16%, and 14% of total installed facilities.

Over 2016-2017, the number of new projects under construction and planned decreased from 37 to 31, showing a decelerating development pipeline, as facilities have come online in certain key ports, such as Shell's bunker ship "Cardissa" at the port of Rotterdam and Skangas's LNG carrier "Coralius" at the Baltic ports.



Number of operational rLNG stations for sea & river All europe

Source: GIE & FTI Consulting

Study conducted based on English-speaking web research and GIE members' information; prepared by Emmanuel GRAND and Tsampikos-Stefanos ORFANIDIS of FTI Consulting. All information presented here reflects the personal view of the authors, not of GIE, FTI Consulting or any affiliated entity.



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