



Natural gas for transport in the EU The Alternative Fuels Infrastructure Directive

**23th meeting of the EU-Russia Gas Advisory Council's
Work Stream on Internal Market Issues (GAC WS2)
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Natural gas for transport in the EU

- How natural gas can contribute to achieve the 2030 Energy and Climate policy objectives?
- The Directive 2014/94/EU " Alternative Fuels Infrastructure" and other policy developments concerning natural gas and bio-methane vehicles: the Low Emission Mobility Strategy and the Strategic Transport Research and Innovation Agenda
- Upcoming legislative initiatives
- Delegated act on AFI standards: State of play with natural gas standards
- Financial instruments supporting Alternative Fuels Infrastructure deployment
- The main outcomes of the LNG Blue Corridors project
- Conclusions



Promoting sustainable mobility: the potential of LNG as a low-emission fuel

Transport in the EU still depends on oil for about 94% of its energy needs. As NG reserves are estimated to be lasting longer than oil, it is expected that the price of NG will be significantly lower than oil's prices in the mid and long term with a lower impact on the EU economy. In addition the use of biomethane will increase the EU energy security supply

Transport represents almost a quarter of Europe's greenhouse gas emissions and is the main cause of air pollution in cities. The emissions from lorries, buses and coaches currently represent some 18% of the emissions from transport, whereas waterborne transport's emissions amount to some 13%

The reduction of the oil dependence is essential for security supply reasons but also for achieving the EU 2030 Energy and Climate policy objectives, a 40 % reduction of the overall GHG emissions, a share of renewable energy of at least 27% of the EU's energy consumption, and an indicative target of increasing energy efficiency by at least 27% by 2030

How natural gas can contribute to achieve the 2030 Energy and Climate policy objectives

According to the industry: natural gas reduces GHG emissions from passenger cars on a Well-to-Wheel (WtW) basis by 23% compared with petrol and by 7% compared with diesel. For heavy-duty vehicles, benefits compared to diesel are of 16% for CNG and up to 15% for LNG. Methane as a vehicle fuel emits up to 95 percent less PM and up to 70 percent less NOx compared to the very strict European emission standards for new heavy duty vehicles (Euro VI) and light duty vehicles (Euro 6).

These advantages can be higher in the shipping sector: CO₂ 20% (including potential methane slip), SO_x almost 100%, P.M. 95%; and NO_x 85% (<https://ec.europa.eu/transport/sites/transport/files/modes/maritime/studies/doc/2015-12-lng-lot1.pdf>)

Over 360 biometane upgrading plants exist in the EU. Grid injection is in use in 11 EU Member States (AT, CH, DE, DK, FI, FR, LX, NL, NO, SE, UK).

The Directive on alternative fuel infrastructures

1. Minimum requirements on alternative fuels infrastructure build up, to be implemented through Member States' national policy frameworks
 - Investments encouraged
2. EU common technical specifications
 - Interoperability
3. Consumer information
 - Fuel / vehicle compatibility
 - Confidence for investors & consumers

The Directive on alternative fuel infrastructures

Electricity in urban/suburban and other densely populated areas	Appropriate number of publically accessible points	by end 2020
CNG in urban/suburban and other densely populated areas	Appropriate number of points	by end 2020
CNG along the TEN-T core network	Appropriate number of points	by end 2025
Electricity at shore-side	Ports of the TEN-T core network and other ports	by end 2025
Hydrogen in the Member States who choose to develop it	Appropriate number of points	by end 2025
LNG at maritime ports	Ports of the TEN-T core network	by end 2025
LNG at inland ports	Ports of the TEN-T core network	by end 2030
LNG for heavy-duty vehicles	Appropriate number of points along the TEN-T core network	by end 2025

Low Emission Mobility Strategy

The European Strategy for low-emission mobility establishes three main pathways to achieve a low-emission mobility: increasing the efficiency of the transport system; speeding up the deployment of low-emission alternative energy for transport, and moving towards zero-emission vehicles

The prospects for low-emissions alternative energy differ among transport modes. The widest range of options is currently available for passenger cars and buses, and solutions are rather straightforward for rail through electrification. In the medium-term, advanced biofuels will be particularly important for aviation, as well as for lorries and coaches

Natural Gas is expected to be increasingly used as an alternative for marine fuels in shipping and for diesel in lorries and coaches. Its potential can be increased significantly with the use of biomethane and synthetic methane (power-to-gas technologies)

The Strategic Transport Research & Innovation Agenda

The Strategic Transport Research & Innovation Agenda adopted on 31 May 2016 as part of the 1st EU Mobility Package .

Research and Innovation on natural gas blended with biometane should focus on **the development of new and highly efficient, low polluting combustion engines that include hybrid technology**. This will contribute together with a higher use of renewable methane to the decarbonisation of road vehicles

Research and Innovation on the vehicle side will be developed and implemented in close coordination with the Strategic Energy Technology Plan (SET-Plan) to develop and **increase the production of renewable methane mainly from biomass and power to gas technologies**

Upcoming actions: Fuel price Comparison

The Commission will adopt, by means of implementing acts, a common methodology for alternative fuels unit price comparison by November 2017.

Two main options under consideration:

- A method (Euros per 100 km) that reflects the price per 100 km which takes into account both the energy content of the fuel and powertrain efficiency.
- A method (Euros per petro litre equivalent) where prices are reflected in the energy content of the fuel only.

FIA is now carrying out a "Consumer Survey on Fuel price Comparison" in three MS: **Germany, France and Italy**

Upcoming actions: Revision of the Clean Vehicles Directive

The Directive requires public bodies to take life-time energy and environmental aspects into account when purchasing road vehicles. The goal is to stimulate market for clean, energy-efficient vehicles

The ex-post evaluation (REFIT) showed that the Directive is relevant relevant, but not fit for the purpose.

A proposal for revision of the Directive is planned for November 2017

Extensive consultation process in Q1 & Q2 2017

Eliminating technical barriers for natural gas: standards

The standard **EN 16723-2** for **natural gas and bio-methane for use in transport and bio-methane for injection in the natural gas network** was adopted in March 2017

The standard **EN ISO 20519:2017** for **LNG refueling points for inland waterway vessels or sea-going ships** was published in February 2017

The standard for LNG connectors and receptacles will be addressed by **EN-ISO 12617:2017**. The **ISO 12617** standard adopted in 2015.

The CEN has started the process for **transposition** in EN-ISO standard of the **ISO 16924** standard for LNG and L-CNG refueling points published in December 2016.

The CEN has started the process for **transposition** EN-ISO standard of the **ISO 16923** standard for CNG refueling points published in December 2016.

The standard for CNG connectors and receptacles will be addressed by **EN ISO 14469:2017**, the enquiry will conclude in August

Market development of CNG, LNG vehicles

- *CNG Current situation in the EU*

There are one million and two hundred thousand vehicles running on CNG representing 0.7% of the EU vehicle fleet. The industry aims to have 5% of the fleet by 2020. 3000 refuelling stations, with the majority in Germany and Italy

- *CNG International situation*

15 million vehicles including EU representing 1.2% of the vehicle fleet worldwide. The strongest markets (in terms of growth) are in Asia and South America

- *LNG Current situation in the EU*

There are around 2,000 EURO V and EURO VI LNG trucks (IVECO, SCANIA and around 110 refuelling stations): UK, Spain, Sweden, Netherlands ...

- *International situation*

China: 250,000 LNG trucks and almost 2,500 refuelling stations

USA: more than 25,000 trucks already running on LNG



EU Funding

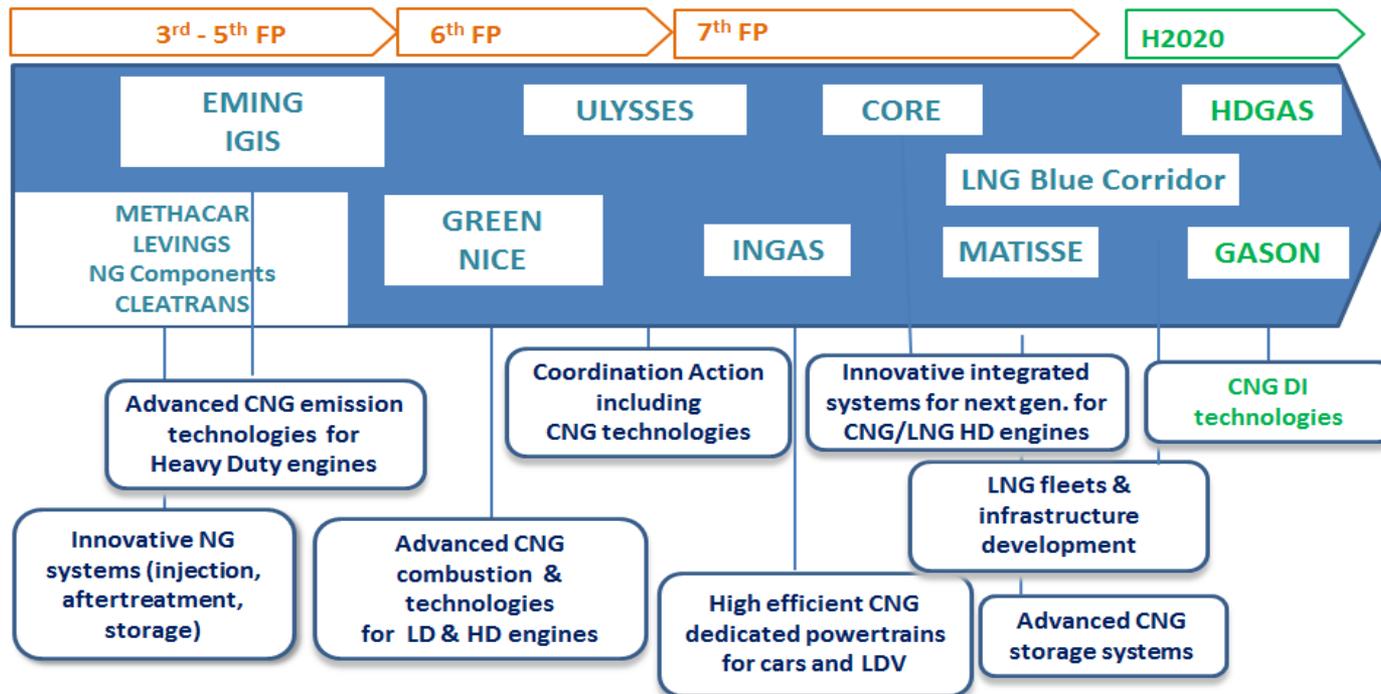
The **Connecting Europe Facility**, worth about EUR 24 billion over the period 2014-2020. The **third CEF call for proposals was closed in February 2017**. The CEF programme is contributing to the development of alternative fuels infrastructures across the TEN-T network

The **2017 CEF Transport Blending MAP Call for Proposals**, opened on 8 February 2017, makes €1 billion funding available **for projects of common interest in the transport sector** aiming at maximising the leverage of private involvement. This call is open to all EU Member States.

Cohesion Fund and ERDF also support transport infrastructure investments (mostly in rail and road) aimed at closing the missing links and removing bottlenecks in the system.

R&I on CNG and LNG

EU collaborative research supporting clean technologies development





LNG Blue Corridors project

<http://Ingbc.eu/>

The LNG Blue Corridors project aimed to demonstrate the use LNG as fuel alternative to diesel for medium and long distance transport and create the conditions for its market uptake. This objective has been already achieved to a significant extent

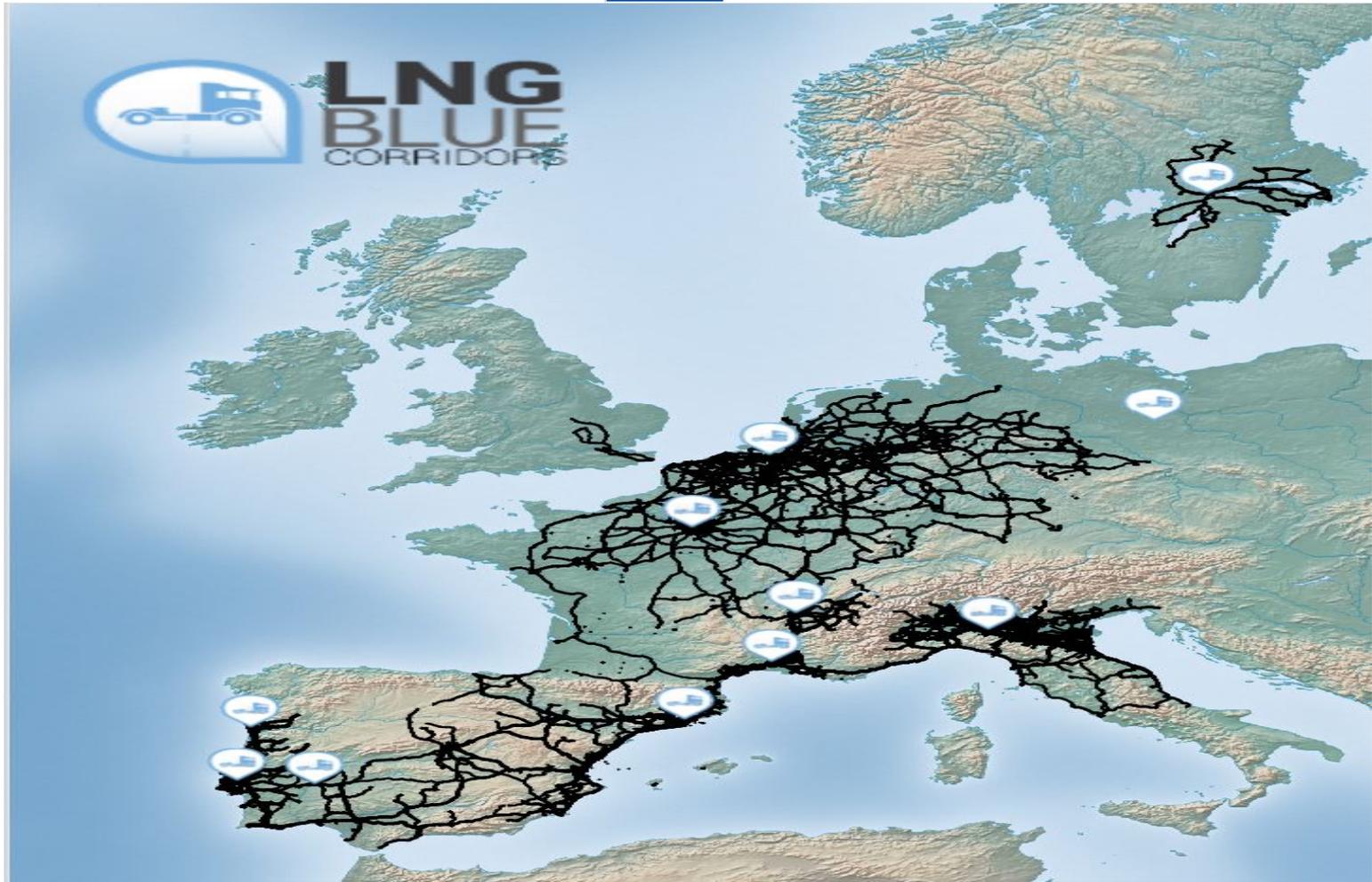
Main data:

- 12 out of 13 LNG filling stations have been built, the last one, the SINES-Portugal filling stations will be built this year
- 142 trucks are participating in the demonstration. 127 are monitored; the objective for this year is that 100% of the trucks be monitored.
- More than 19,560,000 km were run by the LNG trucks in the project
- More than 6,000 tons of natural gas were consumed
- Up to 10% Euros saving by the use of LNG in comparison to diesel

The project has contributed to develop a new generation of LNG trucks (IVECO Stralis, and Volvo based on late high pressure direct injection-HPDI-) with power ranges similar to conventional diesel engines



European
Commission



The development of LNG as fuel for vehicles

Main issues to be addressed:

- Methane emissions from the whole LNG supply chain should be minimised
- The entry in the market of new LNG truck manufactures is needed. The problem is not only the lack of infrastructures, the problem is the lack of trucks for long hauls and vessels
- A stronger introduction of biomethane in transport to increase the sustainability of natural gas and ensure security supply is needed.

The EU supports the development of LNG for transport through the implementation of the AFI Directive and several financial instruments (CEF, Horizon 2020...).



Thank you for your
attention!

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