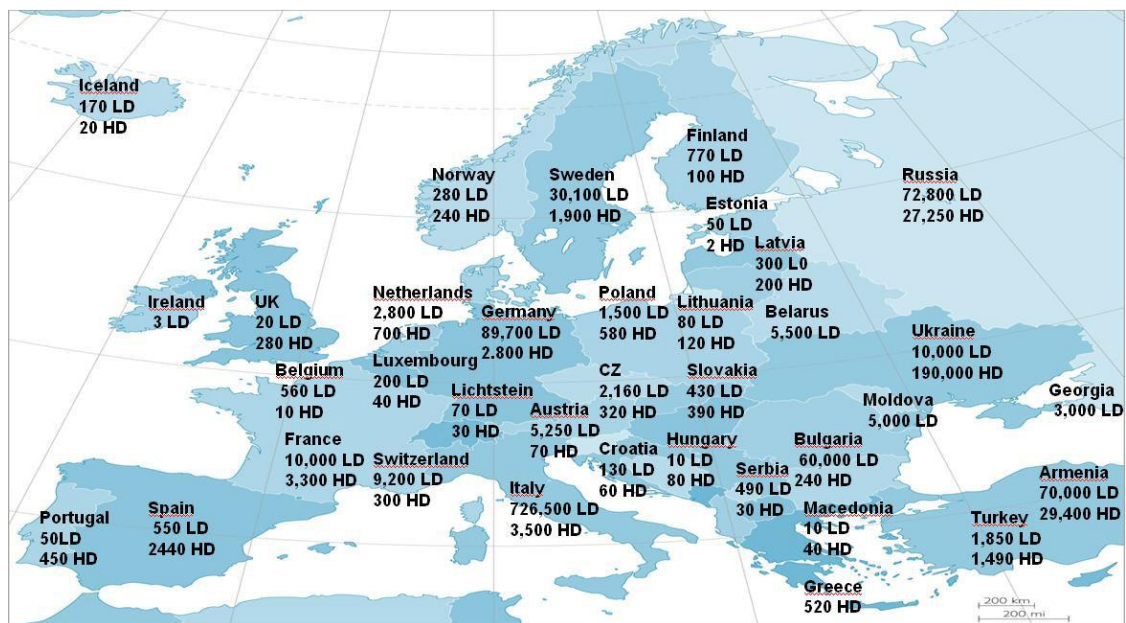


## NGVA Europe Position Paper: Minimum infrastructure needs for Methane (NG/biomethane) refuelling across Europe

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In response to the Expert Group Meeting on Future Transport Fuels on May 5<sup>th</sup>, NGVA Europe welcomes the Commission evaluation process of identifying possible measures for supporting the infrastructure build-up for certain alternative fuels. Taking into account the great environmental benefits being related to natural gas and biomethane and despite the fact that more and more ex-factory methane driven vehicles are being introduced to the European market place, the market share of CNG and LNG vehicles is still rather small, now making up close to 1 million vehicles in the EU, which is making up a market share of only 0,4 % of the total running park.



Today practically all vehicles using methane as a fuel are propelled by CNG (compressed natural gas and biomethane being injected into the gas grid). But LNG heavy duty trucks (dedicated or dual fuel) are becoming more and more popular as trucks are Europe biggest road polluters and only very few options to replace Diesel exist so far. LNG (liquefied methane) has a higher energy density than CNG and is therefore a real and affordable way to replace Diesel on medium and long distances (LNG Blue Corridors).

The slow development of bio natural gas vehicles is basically caused by very high investment costs that are required for the build-up of the needed methane refuelling infrastructure (CNG and L-CNG stations). Therefore the network of methane refuelling stations is still rudimentary and EU member states have decided to put a different strategy focus on national level, in terms of type of vehicles.

E.g. some big member states like France or Spain are so far mostly going for urban HDVs using CNG, but hardly have any LDVs on their roads.

The available vehicle options are:

- LDV using CNG
- HDV (urban buses and trucks) using CNG
- HDV (on medium and long distance haulage) using LNG

This diversity of national strategies has led to a very fragmented development of methane refuelling (public filling stations or private fleet depot stations). **What it needs is a harmonised strategy to develop methane refuelling across the EU.**

The following two concepts of methane refuelling stations apply:

1. CNG station using a compressor connected to the pipeline
2. L-CNG station with CNG and LNG dispenser where LNG is stored in a cryogenic tank

In total there are only 2.700 refuelling points (public and private) in Europe, whereof only 20 stations are equipped with the L-CNG technology.

This situation is not acceptable as **bio natural gas is an available, clean and affordable fuel**, which can significantly contribute to reach the 2020 emission reduction targets (Fuel Quality Directive and Renewable Energy Directive) and will also notably help to make European transport more sustainable in a 2050 perspective. Having said that, NGVA Europe believes that any technology neutral approach by the European Commission would be the wrong attempt to reduce both, oil dependency and emission reduction of pollutants.

There are certainly several power train alternatives theoretically available today, but some of these technologies, including electric vehicles and hydrogen fuel cells, are far from being mature and economically viable for the final customer. We don't have the luxury of time, mobility changes slowly, so we have to work with and use what we have got now, the natural gas combustion engine technology. Depending on the natural gas/biomethane ratio, **CO<sub>2</sub> savings of 24-100 %** can be achieved by using this clean immediately available technology instead of conventional oil derived fuels.

We believe in the future fuel mix in transport, different options can serve different applications, but we would like to ask the European Commission to carefully consider all possible scenarios and technology readiness on a time frame up to 2020. The next decade will be crucial to reach our emission reduction targets. Methane can therefore play a major role, provided political support for the further build-up of the methane refuelling infrastructure would be realised.

The decision to strongly promote electric mobility has been taken at political level. But EVs only give a partial solution for urban traffic on short distances. Methane however is, due to its excellent CO<sub>2</sub>, NO<sub>x</sub> (and particularly NO<sub>2</sub>), PM and noise reduction performance, the ideal alternative in LDVs for covering longer distances, heavy urban buses and trucks, and HDVs for long distance haulage using LNG as a fuel.

## **NGVA Europe suggestions for a minimum Methane refuelling infrastructure:**

In relation with the Expert Group discussion note, NGVA Europe supports Option 2 “Direct investments and subsidies for alternative fuel infrastructure” and Option 3 “Legislative actions on alternative fuel infrastructure”.

When looking at Option 2, **“financing schemes and state aids” to directly support the construction of the methane refuelling infrastructure (CNG and L-CNG stations) are essential.** In addition to that funding research and technology demonstration project for the harmonisation and homologation is also needed with regards to LNG, LBM (Liquefied Biomethane), Methane/Diesel (dual fuel), NG/hydrogen mixtures and CNG hybrids. The European NGV (Natural Gas Vehicle) related industry already made investments of 1,5 billion € to establish the existing network of methane refuelling stations. More than twice as much would however be needed to guarantee adequate refuelling conditions. **NGVA Europe therefore calls for a European investment fund to allocate this capital.**

Option 3 “Legislative actions” should complement any funding scheme as reality has proven that regulatory measures are needed to rapidly implement alternative fuels. **The market cannot make this decision on its own which alternative fuel to give preference to. If we would just wait for a change in customer behaviour, this would mean a manifestation of oil in transport for a long time.** The customer will always pick alternative solutions that are visible and affordable. CNG vehicles are affordable and the fuel is also still cheap, so what it needs is more visibility of and accessibility to methane refuelling.

### **The main bottleneck:**

**Considering infrastructure investment costs of approx. 400.000 € for public stations and 1.000.000 € for depot stations serving clean bio natural gas vehicles, it is clear that an European infrastructure fund in combination with a European Directive demanding member states to implement a minimum refuelling infrastructure is the only logic way to make sure that more CNG and LNG vehicles will be put in the market in the future.**

For the specific situation of NG/biomethane, it should be noted that a distinction must be made between the infrastructure needed for light duty and heavy duty vehicles. The following minimum infrastructure needs for LDVs and HDVs would be required:

- LDVs: talking about CNG/biomethane for private passenger cars and commercial fleets using cars and vans, we would suggest availability in **10 % of the urban filling stations, and at 25 % of the filling stations along the motorways.** Though the exact figures should be verified, it should be noted that the essence would be to stipulate a % which would lead to the availability of filling stations capable of providing NG/biomethane **every 150 km along the motorways** (or major highways where motorways are not available), and a logical distribution inside the cities. Methane refuelling should however be possible everywhere across Europe by not using more than 15 minutes to drive to the next refuelling station.

- HDVs: the infrastructure needed for HDVs varies depending if its referred to the urban transport of persons and goods, or heavy duty trucks used for long distance haulage:
  - a) The LNG refuelling infrastructure for transport of goods ought to be developed in a dialogue with major trucking companies and operators of major truck refuelling facilities near truck terminals and along the European motorways. An initial target could be i.e. to offer refuelling possibilities **every 400 km along the major roads used for international truck traffic**. The L-CNG filling station concept would apply, able to provide both CNG for LDVs and LNG for HDVs.
  - b) The CNG/biomethane refuelling infrastructure for HDV urban fleets (mainly buses and refuse trucks) is not yet established all over Europe, although cities are increasingly in favour of methane heavy vehicles in their urban fleets. The Expert Group report on Future Transport Fuels, published on 25<sup>th</sup> January 2011, says that **“Methane (CNG) should be promoted as one of the main alternatives fuels in HDVs in urban transport”**. **European cities should therefore aim for at least 50% methane share in their public fleets**. A city like Madrid is leading by example and has its entire refuse truck fleet running on CNG (670 trucks) and an additional 600 CNG buses out of 2000 (target of 1000 CNG buses for 2012).

#### Conclusion:

All the above mentioned measures to link the filling station network development for methane to percentages should always refer to the total number of existing filling stations. Complementary measures to an EU fund would be:

- Linking permits for new multifuel stations to the inclusion of CNG or L-CNG refuelling facilities.
- Demanding that stations above a certain total volume of fuel sales must offer methane refuelling facilities.

These two options have the advantage of not hitting the EU budget or national aids, but the fuel retailing companies. Independently it should of course still being possible to open dedicated methane filling stations outside of existing filling stations if the opening of a new location for methane only would be required for private or public use. **Due to the L-CNG filling station concept, which does not necessarily require a connection to the pipeline, all European filling stations qualify to offer methane in all locations.**

#### CNG/LNG associated infrastructure costs:

The next information intends to give a general overview of the associated costs when installing methane refuelling stations. The figures should be taken as average figures from different EU countries.

First of all, it should be taken into account that two different approaches can be faced when talking about a new natural gas filling station:

- **CNG Fuelling Station:** this type of infrastructure can be fed from the existing natural gas grid. In this case, it would be necessary to install a compressor with the capacity of reaching a final pressure of 200 bars, and the dispensers. **The total cost of this kind of facility would be around 400.000 €. This average figure would be representative for an installation with a compression capacity of 300÷500 m<sup>3</sup>/h.**

- **CNG/LNG Fuelling Station:** this type of infrastructure capable of supplying both, liquefied and compressed natural gas, has to be fed with liquefied natural gas via HD transport tankers. It would be necessary to install a stationary LNG tanker to accumulate and feed the installation, a transfer pump to convert LNG into CNG, and the dispensers. The cost of the stationary tanker and the transfer pump is similar to the cost of a compressor. **The total cost of this kind of facility would also be around 400.000 €. The maintenance would however be expected to be lower.**

Additional information on costs:

- Difference between gasoline and CNG version of a LD vehicle: 1.500÷2.500 € depending on vehicle size/engine complexity.
- Difference between diesel oil and CNG version of a HD vehicle: +13÷25% of CNG compared to Diesel version, depending on vehicle type.
- Natural gas pipeline laying down: 300÷600 €/metre; depending on land characteristics.



Picture: Indox Cryo Energy, Spain

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