

## NGVA statement on T&E study:

### “The role of natural gas and biomethane in the transport sector”

- T&E study on natural gas and biomethane does not contribute to informed debate.
- Benefits of CNG and LNG are clear and should not be ignored.
- Natural gas is the only commercial fuel alternative to diesel achieving lower CO2 emissions.
- State-of-the-art CNG cars and vans meet the 2020 CO2 targets already today.
- In recent vehicle tests by the German and Swiss automobile clubs (VCD and VCS), both members of T&E, natural gas vehicles came out as the greenest cars of the year.

Transport and Environment (T&E), a Brussels based NGO advocating sustainable mobility in Europe, recently presented a report on natural gas and biomethane in transport, based on a study by the environment consultancy Ricardo (UK). T&E says that natural gas and biomethane as a fuel are the ‘road to nowhere’ and that natural gas used in vehicles is a ‘dead end’.

The natural gas vehicle industry does not subscribe to the reservations T&E gives to natural gas and biomethane as a fuel and a first analysis of the study produced by Ricardo reveals numerous discrepancies, contradictions and incomplete or obsolete figures, with some of the findings based on technologies that are no longer existent or in use, and others presented as facts without a proper source. The report is not based on any new evidence and for some parts of the study there is no clear set of supporting data available. Experts from the industry were not involved and no opportunity to comment was given.

Existing European legislation and other comprehensive studies show very different results. Figures from organisations such as the Intergovernmental Panel on Climate Change (IPCC), JEC (Joint Research Centre, Eucar, Concawe) and the International Energy Agency (IEA) confirm that the use of natural gas in transport yields much better results overall than both petrol and diesel in all modes of transport, as a very promising solution from an environmental, economic and operational point of view. In order to break the current oil dependency, a wide range of alternative fuels will be required, including natural gas.

Main shortcomings of the T&E study:

- T&E claims high natural gas leakage rates within the **well-to-tank (WTT)** supply chain, which would diminish the GHG advantage of natural gas vehicles, and points to a range of published studies and recent evidence to support this assertion. Recently, however, there has been only one main study on this subject (Exergia, 2015) and gas stakeholders are still in discussions with the European Commission on the findings of this study, which is not based on new underlying data. There are no consolidated figures on methane leakages, the work at expert level is still ongoing (chapter 2.3.2.). Methane leakages in the end can be controlled and overcome through the application of technology.
- T&E uses **tank-to-wheel (TTW)** emissions for natural gas vehicles, in particular related to methane slip in dual-fuel trucks and retrofitted vehicles in the UK (based on an earlier Ricardo-

AEA study, 2014). However, dual-fuel technology does not exist in the current market and does not meet the EUR VI vehicle regulations. Ricardo's study refers to a limited CO<sub>2</sub> reduction potential of NGV technology in light, medium and particularly heavy duty vehicles, but based on Euro V/5 or older technology and not taking into account latest technology developments. With the introduction of the Euro VI/6 regulation, natural gas engines have become even more energy efficient and cleaner than before. When claiming higher CO<sub>2</sub> tailpipe emissions for natural gas compared to diesel (e.g. table 2-21, 2-23, 2-24 in the Ricardo study), no source is given. There is hardly any reference to ex-factory and state-of-the-art NGV technology. Also the 2020 forecasting is lacking a source.

- T&E claims that natural gas used in vehicles would be a **costly way to reduce emissions**, however natural gas is the most cost-efficient CO<sub>2</sub>-mitigation option in the transport sector. When comparing the CO<sub>2</sub> abatement costs (€/t CO<sub>2</sub>) of different vehicle technologies in cars, the break-even-mileage (km/year) for natural gas is already reached at 13,000 km versus 47,000 km for plug-in hybrids or more than 100,000 km for electric vehicles (University of Cologne, EWI, 2014). Dedicated compressed natural gas (CNG) and liquefied natural gas (LNG) vehicle technology is very mature and simple (using a 3-way-catalyst) and does not require costly additional chemical treatment (with the use of heavy systems), to meet the European emission limits. No proof can be found that the roll-out of CNG and LNG infrastructure will lead to higher costs than for other alternative fuels (including electricity and hydrogen), as is also shown by an impact assessment by the European Commission backing the Clean Power for Transport package.
- T&E has completely ignored the capability of natural gas engines to run on **blends of natural gas with biomethane or synthetic methane**, with even larger GHG savings as a result. Biomethane and synthetic methane can meet an important share of the current fuel demand, provided biomethane would be made available for the transport sector and not be subsidised to produce electricity. Extensive blending of natural gas and biomethane is put into practice in countries like Sweden and the Netherlands, where renewables already account for half of the natural gas fuel demand (50%), followed by Germany and Switzerland (20%) and France (15%).

Combustion of natural gas, biomethane or synthetic methane generates virtually no particulate matter (PM) and has low emission levels of nitrogen oxides (NO<sub>x</sub>), therefore making it an ideal fuel for extensive use in urban areas, to improve air quality in cities. T&E claims that natural gas offers little to no benefits in terms of pollutant emissions compared to diesel engines as a result of the Euro VI/6 regulation. However, the terms under which RDE tests have been agreed (as of 2017), have confirmed that pollutant emissions will exceed Euro 6 laboratory test levels considerably. It is therefore premature to conclude there are no benefits to natural gas as a vehicle fuel. T&E claims that with the introduction of RDE tests, emissions from all fuels will rise by 20%. This is however a speculative assertion, first tests under real driving conditions have shown positive results for natural gas vehicles in comparison to conventional fuels, as well as hybrid and electric drivetrains.

Natural gas engines emit much lower levels of other harmful and carcinogenic pollutants like non-methane hydrocarbons (NMHC), including aromatics as benzene. Natural gas engines are almost 50% quieter than those powered by traditional fuels. Natural gas engines meet the highest safety standards, systems are tight and robust. Natural gas is lighter than air, making it possible for CNG or LNG vehicles to access ventilated car parks, unlike LPG cars for example, as LPG (propane/butane) is heavier than air. Fuelling natural gas is as easy and quick as filling up with petrol or diesel.

## Conclusion:

Europe is global leader in NGV technology and this position should not be jeopardised. Emphasis must be put on creating an internal market for alternative fuels, including natural gas and renewable methane, that has the potential to significantly reduce emissions of CO<sub>2</sub>, PM, and NO<sub>x</sub>.

The T&E report risks creating a narrow debate based on incomplete information. The NGV industry will continue to contribute credible figures to the debate and remains open and willing to participate in any future studies on this topic. The stakeholder community must work more closely together in the transition to more sustainable mobility.

Natural gas is consistent with the Energy Union's strategy for sustainable mobility and has been identified as one of the key contributors to fight climate change and improve air quality in a cost-effective way. CNG and LNG remain an integrated part of the Directive 94/2014/EU on the deployment of an alternatives fuels infrastructure. The EU's energy and climate policy framework sets a 30% CO<sub>2</sub> reduction target for mobility by 2030, which can be easily reached through a higher share of natural gas in transport. Natural gas contains less carbon than traditional hydrocarbon fuels and therefore emits much less CO<sub>2</sub> as a vehicle fuel: 25% on average, opening up the road to carbon neutral mobility when blended with renewable methane. Furthermore, natural gas reduces emissions of particulate matter (PM) by up to 95% and nitrogen oxides (NO<sub>x</sub>) by up to 70% compared to the very strict emission standards for new heavy duty (Euro VI) and light duty vehicles (Euro 6).

The full potential of natural gas engines has yet to be deployed. Optimised natural gas engines (using direct injection and higher compression ratios) will become as energy efficient as diesel engines, meaning additional CO<sub>2</sub> and other harmful emission savings will be achieved. Further development may also include hybridisation of natural gas engines.

## About NGVA Europe

NGVA Europe has more than 140 members from 40 countries and promotes the use of natural gas and renewable methane as a transportation fuel, mainly in cars, vans, buses and trucks. It serves as a platform for the industry involved in the production and distribution of vehicles and gas. It defends their interests to European decision makers, to create accurate standards, fair regulations and equal market conditions. NGVA Europe creates networks with interested stakeholders to reach consensus on positions and actions. It also collects, records and communicates reliable facts and developments in the gas vehicle market. For more information, please visit [www.ngva.eu](http://www.ngva.eu).

## Note to the editors

The following companies and associations are members of the board of directors of NGVA Europe: Air Liquide/Fordonsgas, Audi AG\*, Bohlen & Doyen, CNH Industrial/Iveco, Daimler, Energigas, Engie, E.ON Gas Mobil, Fiat Chrysler Automobiles, Gas Natural Fenosa, Gas Networks Ireland, Gasmobil, Gasrec, Gazprom, GRDF\*, GRTgaz\* Hexagon Raufoss, Linde, RAG\*, Scania, Shell, Swagelok, Volvo AB, Westport, Uniper\*, Zukunft Erdgas.

\*To be formally approved by the General Assembly 2016.

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