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## **NGVA Europe' contribution to Public hearing on European strategy on clean and energy efficient vehicles - 11 March 2010**

NGVA Europe very much looks forward to contributing on the debate on **clean and energy efficient vehicles** and to answering to the questions n.1, 3, 4 and 6 as written contributions on the most relevant areas for the European natural gas industry for transport.

**NGVA Europe is the only association representing the interests of the European NGV (natural gas vehicles) industry with relation to the use of natural gas (both gaseous and liquid) and biomethane in transport. Information on our organization and its activities can be found at [www.ngvaeurope.eu](http://www.ngvaeurope.eu)**

### **Introduction**

Compressed natural gas (CNG) is a 'clean' gas and a true alternative today whose efficiency and reliability have been proven with a very good performance in terms of both gas emissions and noise reduction, delivering substantial benefits to the community, including increased energy security.

Furthermore, mixing a controlled quantity of Hydrogen into Natural Gas (CNG/H<sub>2</sub> mixtures for Internal Combustion Engines) provides additional benefits in terms of emissions reduction without requiring a 'revolution' of the engine system, but only an 'evolution' based on the Natural Gas technologies already existing.

Environmental benefits are an additional reduction of CO<sub>2</sub> emissions (higher H/C ratio), a reduction in NMHC and CO emissions and potential increasing in engine efficiency (higher combustion speed).

All by using the technology developed within CNG applications, promoting the use of CNG/H<sub>2</sub> blends may speed up the process to develop the future Hydrogen scenario, boosting the production and distribution pathway as well as the specific regulations and service rules.

It has been above-reported the importance to promote CNG as alternative fuels and as a bridge to even cleaner solutions such a biomethane an mixtures natural gas/hydrogen and the reasons why CNG and biomethane/mixtures CNG/H<sub>2</sub> must be part of the EU strategy for a **wide** sustainable mobility for Europe **today**.

### **Questions and answers**

**1. Should the vision agreed in the CARS 21 mid-term review be now adjusted? (i.e. 2020 perspective of improved combustion engine's market dominance combined with growing market penetration of electric and hydrogen vehicles and hybridisation conceived as the bridging technology and 2050 perspective of transport decarbonisation).**

The real possibilities of alternative fuels and tractions for 2020 are already known, and no technology breakthroughs should be expected at short term. And in this sense the approach of CARS 21 remains ambitious and realistic and is a sound basis for designing future. Electricity and hydrogen as alternative "fuels" will have their participation on the market, but by no means is any of them going to replace

traditional fuels in the bulk of road transport. Hybridisation is an expensive way of recovering part of the energy dissipated during braking and its efficiency (in private cars) has not always responded, up today, to the expectations. Hydrogen and fuel cells have received big amounts of European funds in the last years, and the practical result application in the transport sector is not visible. But hydrogen is an energy vector that has to be taken into account, and fuel cells are a way to use it, but unfortunately not yet at the stage of industrial and commercial application in vehicles. A wise way to continue in the development of hydrogen production, storage, compression and logistics in general would be to push its use mixed with natural gas; because being both gases its mixture is easy to do and its use can be done directly, with only minor changes in existing natural gas vehicles: buses and trucks. With this approach it will be promoted the hydrogen technology in general, necessary for a future fuel cell or other powerplant. Additional any quantity of hydrogen put in the natural gas will mean the equivalent reduction in weight of the CO<sub>2</sub> emitted.

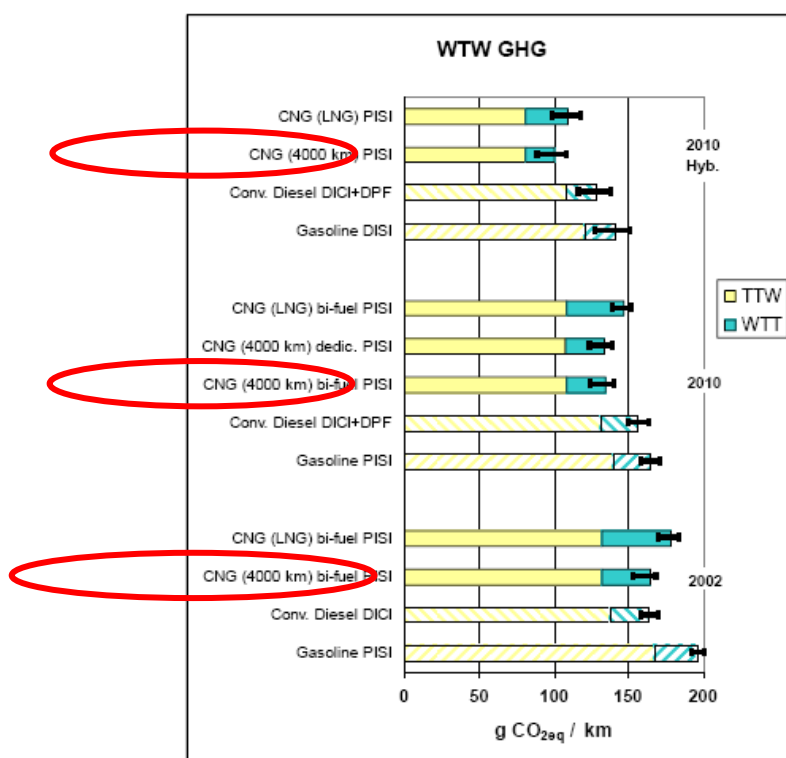
Talking about **bridging technologies**, CNG is a 'bridge' to a decarbonised solution: biomethane is in fact a suitable alternative for carbon neutral fuels, and it has the advantage of being produced from different sources: urban waste, crops and forestry biomass. And it has an exclusive advantage against other biofuels, because its molecule is the same of its equivalent non bio fuel: it is methane (CH<sub>4</sub>) as the natural gas it complements. **Natural gas/biomethane vehicles** are particularly well adapted for the urban heavy transport, both urban buses and garbage collection trucks, and putting more natural gas vehicles in service we will pave the way for the use of biomethane.

**3. What are the implications of new propulsion technologies in a lifecycle analysis perspective as regards vehicles, and in a well-to-wheel perspective as regards energy supply chains? What are the resource implications in introducing innovative propulsion technologies?**

And

**4. What are the state of play and the future scenarios of technological developments in alternative powertrains (electric and hydrogen) and their market penetration? What are major risks and opportunities associated for different stakeholders? What will be the economic, societal, employment and environmental impacts brought by these developments?**

Talking about WTT GHG balance of CNG pathways, in terms of GHG emissions the 4000 km pipeline case is comparable to gasoline and diesel fuel and an interesting energy saving is due to the transport with a rise of the pressure in the pipelines up to 12 MPa (*Source: WTW analysis – version 2c march 2007 – Concawe/Eucar/JRC*)



From the point of view of the well-to-tank CO<sub>2</sub> balance, pollutants and noise an **interesting option for the transport is provided by the use of biomethane** as a fuel, generated both by the anaerobic fermentation of organic compounds and/or by thermal gasification of biomass. After the product has been upgraded to biomethane, by eliminating other gases and all impurities, it can be used directly in the engines or injected in the natural gas grid. Studies show that on the 2030 scenario, biomass could provide a contribution of approximately 15-16% on energy base in the European Union.

Furthermore security of energy supply is an increasing global concern, particularly following recent surging oil prices and increasing worries about the reliance on imports from less politically stable areas, so there is evidence that an efficient Europe-wide production and distribution of biogas could be part of the answer.

Employment will be generated mainly in agriculture, in the manufacture, construction and management of biogas plants and biogas purification plants. An efficient biogas-feed-in strategy will be built around the concept of 'biogas corridors': such corridors consist of biomass plantations established alongside the pipelines, so that the green gas can be fed into Europe's main natural gas grid without the need for additional pipelines and infrastructures.

Hydrogen fuel cell vehicles are and will still be out of industrial and commercial development in the next decade. Using pure hydrogen in internal combustion engines is possible, but the power produced is about half of the traditional fuels, this is the reason pointing to the **hydrogen/natural gas mixtures**, where it can be maintained the same specific power than with the natural gas only.

#### **6. What actions should be best taken at regional/ national /European or international level to promote technology development and market uptake of alternative powertrains (electric and hydrogen)?**

For governments, the choice to use NGVs should be driven by a combination of environmental and economic motivations. NGVs, can help reduce regulated and unregulated emissions of many pollutants comparable to or better than other fuels or emission reduction strategies.. In any country where NGVs (and other cleaner fuels) have been introduced successfully, strong support from the country's national government—and frequently local governments—has been absolutely essential. Without government support it is difficult to promote a wide-spread market for NGVs. Governments have numerous options and actions that can be used to promote specific policies as taxation, other financial incentives; non-financial incentives.

From a UE perspective, a political promotion of CNG/LNG/biomethane in the current and future transport policies should be foreseen because this fuel could undoubtedly have a role in developing a wide sustainable mobility: various examples of best practices throughout Europe are a clear example on how to proceed. Renewable sources, particularly biomethane, should be fostered and a new and European Regulation given for its injection in the grid.

Particular attention should be addressed to the developments of the so-called 'Green Corridors' which would have undoubtedly beneficial effects on the reduction of CO<sub>2</sub> emission from road transport and would stimulate the renewal of the circulating fleet with alternative powered vehicles; in particular such as vehicles running on LNG (liquefied natural gas).

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