Brussels, 29 August 2011

The European hydrogen and fuel cells sector, represented by the organisations listed below, welcomes the upcoming discussions of the EU transport Ministers related to non-budgetary ways of funding transport infrastructure and would like to make the following written contribution in view of the informal ministerial **on 5-6 September 2011**.

## Introduction

The recent EU Commission's report of Future Transport Fuels Expert Group[1] indicate that "Hydrogen could enter the broader market in the medium to long term, starting around 2015, and would then require strategic integration of hydrogen production and distribution facilities in current transport infrastructure planning (TEN-T)." Hydrogen together with electricity, to power respectively fuel cell electric vehicles and battery electric vehicles, are indicated in this report as "the main options for substituting oil as energy source for propulsion in transport" towards zero emissions.

Therefore the review of the TEN- T Guidelines, the Strategic Transport Technology plan and structural funds programming offer a timely opportunity for the integration of clean technology infrastructure development.

Hydrogen, as a key energy carrier used in fuel cell electric vehicles, will be an essential component of a future low carbon economy. It can be produced from all primary energy sources and Fuel cells and Hydrogen for transport provide traditional driving performance with zero tail-pipe emissions at the point of consumption, as well as a strong reduction of noise. Hydrogen can be used for multiple transport modalities. In road-transport hydrogen is an alternative for all types of passenger cars for short, medium and long ranges, (public) buses, light duty vehicles and other similar applications. Moreover hydrogen has a potential in certain maritime applications and in aviation, with the great potential for linking logistical and public transport applications in (air)ports with other hydrogen fueled modalities, allowing maximum use of hydrogen infrastructure and enabling broad sustainable transport.

Hydrogen as a clean alternative fuel and fuel cells as a new (electric) propulsion technology will therefore play a key role in achieving the objectives of EU transport policy by introducing clean electric power-trains in EU's transport system provided proper policy and political support are put in place in the coming years.

## 1. A dedicated hydrogen infrastructure is required

It is clear now that only a shift to clean technologies together with better modal choices can deliver the transition to a clean, safe and silent transport system. Electric cars, both battery and fuel cells, are the only alternatives with the potential to reduce carbon footprint in individual transport to zero. Fuel cell electric vehicles are a clean alternative for both shorter and longer ranges, delivering similar driving-performance as conventional cars in terms of range, size and refueling time and thus providing for a realistic clean alternative. Battery electric cars are limited in their range and size and face longer recharging times and are therefore fit for shorter journeys. To enable an offer of clean transport choices that accommodates the diversity of needs in terms of driving performance, car-size and refueling-time, both electric alternatives need to be commercially deployed and appropriate refueling infrastructure needs to be built up in line with the scaling up of the car car-fleet (cf. report on a portfolio of power trains for Europe, a fact-based analysis: the role of battery electric vehicles, plug-in hybrids and fuel cells electric vehicles, November 2010).

As highlighted in the recent White Paper on transport, rapid action and clear impulse to introduce new technologies would support the competitiveness of the EU transport industry to address environmental, energy and mobility challenges of the next decades. The call for shifting to innovative transport systems and infrastructure is not driven by consumer demand or performance issues, but by the clear societal choice to significantly reduce transport's carbon foot print and increase security of energy supply.
The market will not cater for a change to a low carbon transport system by itself, especially where high initial investments in infrastructure are at stake and imply disadvantage for the first movers.

## 2. A coherent and predictable long-term strategy, regulatory framework and financial support mechanism is needed to attract the necessary (private) investments

Credible transitions require a consistent and predictable regulatory framework, financial support mechanisms to attract investments as well as require public, budget-neutral incentives to ensure timely and sustainable introduction of clean transport options, similarly to what was designed to support the production of renewable energy. The technology is there and ready for deployment.

The Fuel cells and Hydrogen sector is inviting Member States to support, along traditional ways of funding, appropriate budget neutral solutions to sustain infrastructure build up as well as the scaling up of fleets of alternative cars. These non-budgetary ways of funding infrastructure range from risk-sharing facilities, guarantees, fiscal incentives to green procurement, standardization and appropriate support mechanisms able to foster the market shift towards a sustainable transport system.

A hydrogen refueling infrastructure for passenger vehicles could initially be deployed by inserting hydrogen dispensing systems in existing sites, as has been done previously with other alternative fuels such as LPG or CNG.
Strategic built up of infrastructure will be further achieved by inter-urban linkage of urban hydrogen hubs accommodating a variety of users like public buses, taxis, Light duty vehicles, passenger cars, catering for a portfolio of users and increasing cost-efficiency. These hubs could also efficiently support the development of hydrogen production and distribution capacity through combination of the needs of various transport functions: public transport, urban and inter-urban logistics, materials handling (warehouses, airports, and ports), maritime transport. In a national context, an initial network of 20 refueling sites is recently announced by two major industrial players and the German Government, alongside the already existing networks in several major German cities and a plan for large scale deployment in hydrogen mobility is currently being developed in Germany with a group of companies, including financial support mechanisms and incentives.

In this context, it is worth highlighting Europe's leading role in fuel cell bus manufacturing and demonstration: the EU has been conducting the largest fuel cell bus demonstrations in the world, with active support of regional and local governments and with great success (www.chic-project.eu). For passenger cars, Europe is also playing a major role in manufacturing and demonstration. In Denmark the Hydrogen Link Project seeks to establish enabling H2 infrastructure inside its own country and in partnership with Norway, Sweden and German. Together with KIA it signed a MOU for deployment of FCEVs by 2015, and the fleet of FC cars in the demonstration projects of the FCH JU is also increasing constantly (http://www.h2moves.eu/intro.html)

Learning costs can be further reduced by following a coordinated European roll-out strategy. Provided an appropriate support system is in place to overcome the first-mover disadvantage, it is expected that between now and 2015 the sector will go through a pre-commercial phase, including the build up of about 200 refueling units in various urban regions across Europe, accommodating passenger and light duty mobility locally (5000 FCEV passenger cars, 500 FC busses. This phase should then be followed by the early commercial phase between 2015 and 2020, focused on progressive market penetration by building out networks in a few Member States and linking existing pre-commercial hydrogen infrastructure networks, leading to a full commercial market penetration level from 2025 onwards.

Standards development is also an essential part of infrastructure build up. Standards are well advanced in the area with ISO and SAE standards already covering the hydrogen refueling interface, hydrogen fuel quality, and hydrogen refueling station safety and lay out requirements. European industry- led coordination is required to ensure that the needs of European stakeholders are addressed by international standards and to support the establishment of an efficient regulatory framework calling out these standards.

### 3. A public-private approach and better pooling of available public and private resources are essential for success

Enhanced coordination and planning of multi-level financing mechanisms, as initiated in the FCH JU public private partnership, to support market introduction of clean vehicles and refuelling infrastructure is needed to enable pooling of the various funds available both at private and public levels.

To attract sufficient private investment, a predictable and long-term framework should be in place, allowing pooling of resources from various funding/support schemes and targeting market de-risking mechanisms, such as equity based funding and innovative financing mechanisms.

Furthermore, pooling of resources at national, regional and European level should be encouraged and accommodated to enable build-up of sufficient funds for the high investments ahead.

Strategic programming of structural funds aligned on the priorities of Europe 2020 could be used to support the development of new infrastructures and modernisation of existing ones in an integrated way able to accommodate conventional and new technologies. Regional and structural funds could also be linked to local and regional procurement, notably pre-commercial ones for innovative technologies and infrastructures.

Coordinated programming initiatives between groups of Member states should be envisaged in cases where deployment support would be particularly needed to overcome a competitive disadvantage a new infrastructure might have and which would need to be bridged with support in order to create a level playing field with incumbent infrastructures.

Furthermore public budget-neutral monetary (e.g. energy tax funded tax credits for alternative fuel retailing) and non-monetary measures are needed to cover the initial operational investment gap. Special attention should be given to the development of appropriate risk-sharing mechanisms to bridge the pre-commercial deployment phase. This high risk and low return period before actual commercial competitiveness, needs to be overcome.

## Conclusion and recommendations

To enable the European citizen to choose clean transport alternatives that offer similar user perspectives, new infrastructure for clean fuel options needs to be build up. European players and notably SMEs, which are among the market leaders in hydrogen technology deployment in transport, as well as regions are already collaborating to integrate these technologies in local transport systems. However a coordinated and wide long-term, predictable strategy - including a regulatory and financial framework- should be put in place to accelerate market-uptake and to share the initial risks between society and industry.

We look forward to continuing our dialogue and to contributing to the further development of the financial and regulatory framework necessary to achieving these objectives.

Yours sincerely,

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**For more Information:**

**Fuel Cells and Hydrogen Joint Undertaking (FCH JU),** www.fch-ju.eu

FCH JU is the public private partnership supporting research, technological development and demonstration (RTD) activities in fuel cell and hydrogen energy technologies in Europe to accelerate the market introduction of these technologies.

**NEW-IG** www.fchindustry-jti.eu
NEW-IG is the industry group of a public-private partnership built to implement a target-oriented R&D programme to support the broad market introduction of fuel cells and hydrogen technologies.

**European Hydrogen Association, EHA** www.h2euro.org
Representing 20 national associations and the main hydrogen infrastructure development companies, the EHA is promoting the integration of hydrogen as a clean energy carrier in Europe's energy and transport system.

**HyRaMP** www.hy-ramp.eu
The European Regions and Municipalities Partnership for hydrogen and fuel cells represents over 30 regions and cities. HyRaMP's objective is fostering the adoption of fuel cell and hydrogen technologies in local energy and transport systems.

**N.ERGHY** www.nerghy.eu
The N.ERGHY association is representing the interests of over 60 European universities and research institutes active in the field of Fuel Cell and Hydrogen technology development. The objective of the Association is to promote, support and accelerate the deployment of these technologies by aligning the European R&D community and by strengthening the close collaboration between academia and industry.

1 http://ec.europa.eu/transport/urban/vehicles/road/clean_transport_systems_en.htm