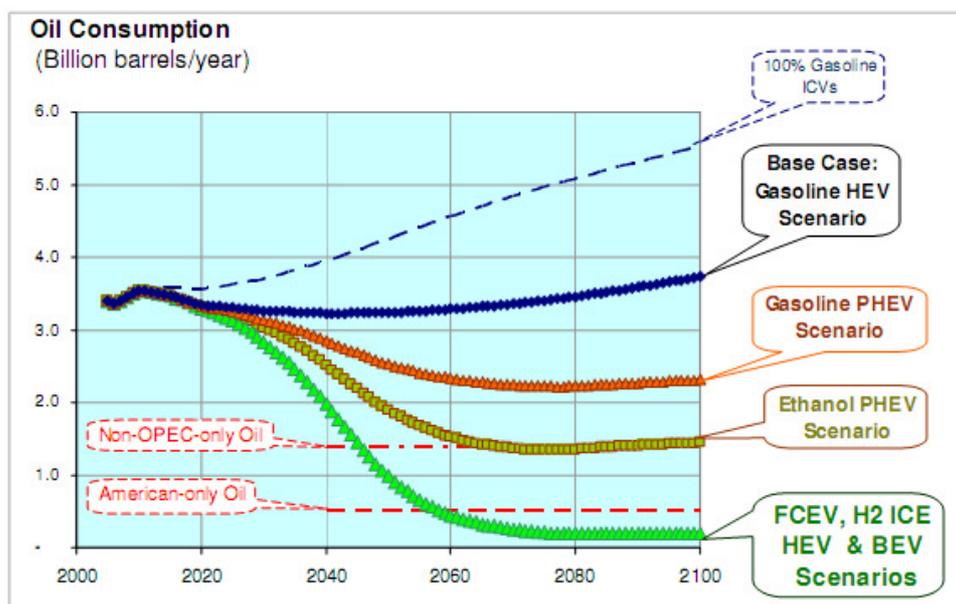


**Contribution to the consultation on the EC Communication  
A sustainable future for transport:  
Towards an integrated, technology-led and user friendly system.**

The European Hydrogen Association, EHA, represents 15 national hydrogen and fuel cell associations as well as the main hydrogen production and distribution companies in Europe promoting the use of hydrogen and fuel cells for cleaner transport and energy systems. In the transition to a sustainable transport future for Europe, the development of zero emission vehicles will be crucial to achieve EU's CO<sub>2</sub> and local emission targets for 2020

Within the current state of automotive technology, electric battery vehicles powered by electricity from the grid and electric fuel cell cars using hydrogen have the highest potential to facilitate the realisation of a carbon-free transport future<sup>1</sup> (see Figure 1: H2GEN Innovations presentation at the US National Hydrogen Conference (NHA), June 2009). The development of battery and fuel cell vehicles is complementary and reciprocal: battery vehicles use fuel cells as zero emission range extenders and fuel cells in turn use batteries in certain weather conditions. Political and economic support is needed, however, to ensure speedy commercialisation of these technologies and to engage public and private fleet operators as first end-users.

The production of hydrogen as an energy carrier like electricity depends on primary energy sources, thus a thorough 'well to wheel' review of the most efficient use of these resources to power these clean transport technologies needs to be made in order to structure policy decisions on: infrastructure; funding and pricing; technology; legislative framework; behaviour; and coordinated action as detailed below.

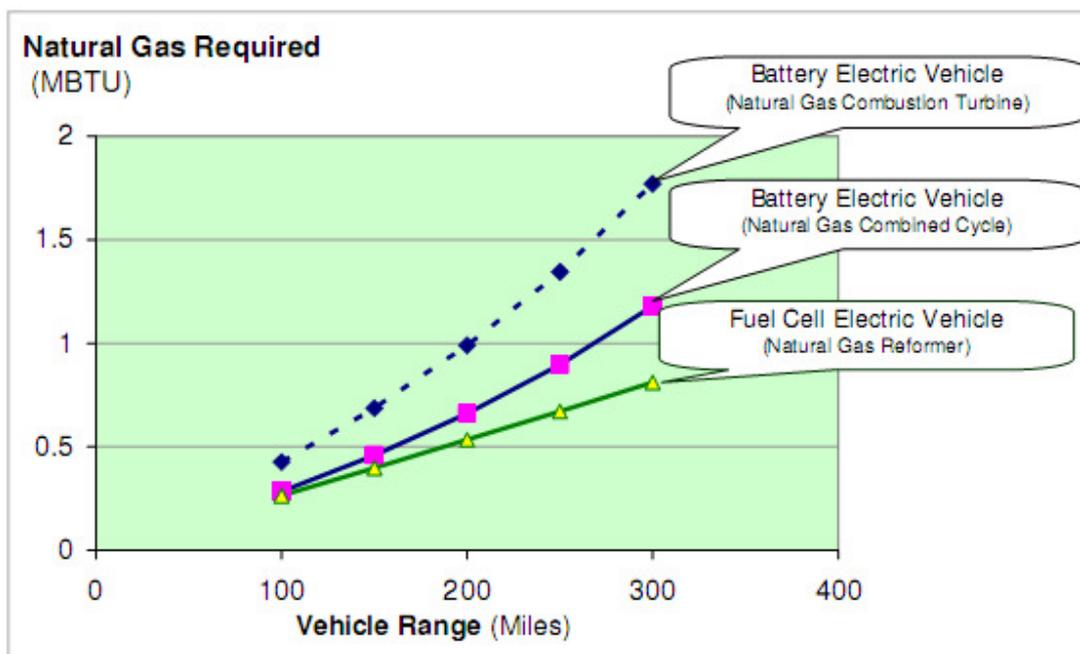


<sup>1</sup> figure 1

(1) Infrastructure.

The environmental costs (air pollution, CO<sub>2</sub> emissions) of all transport modes could reach €210 billion by 2020<sup>2</sup>. These costs sustain a relatively inefficient transport system that is responsible for over 20% of Europe's CO<sub>2</sub> emissions. Priority in new infrastructure planning should therefore be given to integrating the needs of future clean technologies that make the best use of primary energy sources<sup>3</sup>. The proposed European Industrial Initiatives on Solar, Wind, Bio energy, Carbon Capture and Storage, Smart Grids, proposed in the EU Strategic Energy Technology Plan, could become important instruments if part of their activities were dedicated to developing more synergies and contributing to a more efficient, low carbon transport infrastructure. The next Stakeholders meeting of the Fuel Cell and Hydrogen Joint Undertaking on October 26-27, 2009 in October is organizing a session on this topic. It is also encouraging the European Commission's identification of "Sustainable Transport" as a potential focal point for collaboration of the EU Technology Platforms.

<sup>3</sup> Figure 2. Quantity of natural gas required to power an advanced Li-ion battery Electric vehicle compared to a hydrogen-powered fuel cell electric vehicle as a function of vehicles range. Study presented by H2Gen and NHA conference 2009).



Hydrogen Production Efficiency.xls; Tab NG per mile; AM 38; 3/25/2009

<sup>2</sup> (EC communication on Strategy for the internalisation of external costs(COM 2008/435)).

## (2) Funding and pricing.

New transport technologies need an all-encompassing new infrastructure for their production, sales, maintenance and refuelling needs. Their prices will remain relatively high unless coordinated financial and fiscal support is secured to kick-start the market. Many attempts have been made to internalise costs to society for polluting technologies. Several surveys have also indicated that potential consumers are willing to pay an extra price for clean technologies. More attention should be given to policies that actually foster and leverage these consumer tendencies, making clean technologies available to cities that demonstrate their support for bold steps in sustainable transport. As more than 70 % of the EU population live in cities extra funding (push-push principle), to allow front-running cities to step up their efforts and become attractive places to live and invest in, would inspire more cities to follow their example. Increased EU efforts, to ensure fast and effective implementation of the Directive on the Promotion of clean and energy efficient vehicles (COM2007/817) so that operational lifetime costs for energy consumption and CO<sub>2</sub> and pollutant emissions are included in public procurement of road vehicles will lower barriers for follower cities to invest in clean vehicles.

## (3) Technology.

As battery and fuel cell cars will be important contributors to EU's climate mitigation and adaption goals, stronger political and financial commitment to support the European industries involved in the development of these technologies is needed to build a reliable and competitive production and supply industry linked to a strong customer base. The EU's emphasis on being technology neutral is laudable although this neutrality could in the long-run lead to a spiral effect of missed market opportunities and reduction of investments in research and development of new technologies in general. Active and concrete joint procurement support that includes lowering barriers of transnational procurement for clean transport technologies and involving "transnational infrastructure managers" should be put in place quickly at an European level to allow for balanced market development across Europe.

## (4) Legislative framework.

A rapid expansion of the required infrastructure for battery and fuel cell vehicles is needed to facilitate a widespread uptake of these clean technologies. However EU, national and local regulation remains underdeveloped and in many EU countries authorisation procedures are costly and lengthy. In addition, the EU's proposals for legislation, such as the recast of the Integrated Pollution and Prevention and Control Directive, do not always consider the effect on the development of clean technologies (recast of (small hydrogen reformers still have to go through the same authorisation as large hydrogen reformers).

The EU should therefore stimulate more meticulous coordination between legislative proposals from different directorates and their corresponding effect on clean transport technology development, including infrastructure requirements. The fuel cell and hydrogen industry together with the support of the JRC has put extensive effort into developing international codes and standards that are accepted at global level. Industry-led standardisation efforts could accelerate the introduction of these technologies.

(5) Behaviour.

For decades, EU, national and local authorities have used any known and innovative instrument to force a change in car-dependent behaviour. It has become clear that transport habits will only change by sound local planning that allows easy access to public transport befitting of individual transport modes. Encouraging developments in the production of commercial fuel cell buses will facilitate important cost reductions that can trigger the market for passenger fuel cell vehicles.

To leverage these developments to EU's "Lisbon behaviour", more efforts will be needed to not only inform citizens of the need for responsible transport choices but also to involve local production and supply chains to build the components of sustainable electric transport communities. This will have to include broad dissemination of best practice at national and local government level, including funding for the development of wide-spread training and education of future stakeholders.

(6) Coordinated action.

Since 2008, the EHA has been hosting the secretariat of the European Regional and Municipalities Partnership for hydrogen and fuel cells, HyRaMP, representing 30 regions across Europe that integrate hydrogen as an energy carrier into their transport and energy systems. Local officials involved in sustainable transport planning are facing decisions that require a clear understanding of rational and potential uses of primary energy in planning an intelligent infrastructure for clean transport technologies.

An EU-wide comprehensive effort, going beyond project-based dissemination, and supported by existing networks, could ensure that local officials are regularly informed about important clean transport developments. A dedicated website including information on clean vehicles, as initiated by DG TREN recently, is a step in the right direction. The creation of the European Technology Platform on Electric Mobility, that intends to accelerate the market for commercial battery and fuel cell electric vehicles, could become the focal point of collaboration with relevant EU Technology Platforms to help local officials excel in this task.

(7) The external dimension.

On September 19, 2009 a group of multinational companies signed a Memorandum of Understanding to undertake a thorough evaluation of the best locations for the first hydrogen refuelling stations in Germany. This type of joint action should be expanded in the coming years to all EU Member States using lessons learnt from similar exercises in the US and Japan.

Integration of the needs of clean transport technologies in the broader EU road and energy infrastructure projects should be ensured: especially linking battery and fuel cell infrastructure requirements to balancing the grids of Trans European Energy Networks as well as pipe/cable/refuelling station network planning of the new Trans European Networks for transport.

Over the last few years and with the support of several EU funding, national and local funding programmes significant industrial expertise has been built by European companies, leading to important technology breakthroughs in fuel cell and hydrogen technology . Now it is time that EU's transport policy includes support for clear pathways, leading to concrete solutions and paving the way for rapid commercialisation of these technologies.

Respectfully submitted

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