



# European Green Cars Initiative

## Recommendations of the European Green Cars Initiative Ad-Hoc Industrial Advisory Group for a EU Strategy on Clean and Energy Efficient Vehicles

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### 1. Objectives

The global trend towards clean and energy efficient vehicles is driven by concerns regarding the impacts of fossil fuel based road transport on energy security, climate change and public health. Particularly electrification is understood as providing a potential multitude of opportunities for the use of energy from renewable sources and to reduce local emissions and (well-to-wheel) green house gas emissions like no other. At the same time, further improvements of conventional power trains and logistics are expected to significantly contribute to clean and energy efficient transport in a complementary manner.

This paper summarizes a series of indications that the members of the Ad-Hoc Industrial Advisory Group for the PPP European Green Cars Initiative agree on concerning the priorities of the European Commission in support of clean and energy efficient vehicles over the coming decade. It is based on the multi-annual and cross-sector implementation plan of the European Roadmap Electrification of Road Transport jointly presented by the European Technology Platforms ERTRAC, EPoSS and SmartGrids in late 2009. R&D priorities are proposed and reference is made to the need for complementary manufacturing capacities, infrastructures and deployment measures, and standardisation. Moreover, a common understanding of large potentials for efficiency gains in conventional power trains and logistics is taken into account.

The primary focus of this paper is to provide advice regarding public policy actions addressing technology development and, where market uptake of innovation is concerned, some measures are also suggested.

This statement is meant mainly to provide a response to Question 6 of the European Commission's Public Consultation to prepare a communication about the future strategy for clean and energy efficient vehicles. It includes suggestions for a number of dedicated lighthouse projects.

### 2. Recommendations

Recognising that the aim is to enable Europe to become the world leader in the drive towards the decarbonisation of road transport and mobility, the topic of clean and energy efficient vehicles and changing attitudes of society have a number of important implications for the global competitiveness of the involved industrial sectors:

- The electrification of mobility has to be made viable at the earliest possible opportunity by carrying out R&D and delivering the world's most advanced plug-in hybrid and full electric vehicle technologies and services;
- Access to and direct exploitation of renewable and CO<sub>2</sub>-free energy as a distinguishing feature of Europe with respect to other parts of the world;

- Standardised charging infrastructures and billing systems need to be made available in a timely and coherent manner;
- The internal combustion engine and a range of hybrids as well as range extenders, which will coexist with fully electric power trains and remain of dominant importance for long distance transport and freight distribution, require substantial R&D efforts to utilize the improvement potential and more diversity with respect to different alternative fuels (eg. synthetic biofuels) in order to keep mobility affordable and to achieve increased independence from hydro-carbon fuel imports while building on the leading position of European industry particularly as regards Diesel engine technology;
- Innovative services as well as optimization of existing transport modes and logistics is generally needed.

Consequently, industrial recommendations for the mid- to long-term advancement of the clean and energy efficient vehicles topic at European level have to anticipate the support needs of all involved sectors for all stages of the innovation chain from targeted technology development to manufacturing and deployment dealing with different generations of the technology. Thus, creating strong links between the European Union's R&D programmes and the measures in support of market uptake is absolutely essential. The following needs and priorities can be stated from the perspective of research and innovation:

### **Technology Development:**

Engineering of future generations of both electric and conventional vehicles will build on a wide range of mature components for all main functions of storage, use and recovery of energy and power as well as for their effective integration into a harmonized and energy efficient system with negligibly low emissions. The involved industries will assign major parts of their R&D budgets for continuous improvement of these technologies. However, what research objectives public funding would be the most justified for will strongly depend on an assessment of opportunities for a competitive edge in a globalized electric vehicle market.

From today's point of view for the next ten years **major strategic** importance for Europe will be related to the following **technology domains**:

- Energy storage cells and systems with high energy/power density at low cost
- Hybrid and electric traction systems using less amounts of scarce materials
- Advanced combustion and after treatment as well as engines for alternative fuels
- Energy efficient vehicle concepts with reduced air drag and energy needs for auxiliaries
- Seamless integration of vehicles systems for mobility, logistics, energy and data
- Methods of design, simulation, prototyping, and testing of vehicles, parts and processes
- Materials allowing for weight reduction as well as for recycling and sustainability

### **Manufacturing:**

Major product innovation and novel processes particularly related to electric vehicles technologies as well as further improvements of the internal combustion engine can be expected to result from the R&D projects funded in the European Green Cars Initiative. Consequently, measures to fully seize the related opportunities for economic growth in Europe have to be taken. Particularly for components of major strategic importance for the flourishing of automotive manufacturing in Europe, e.g. batteries, support will be needed.

To the assessment by the members of the Ad-Hoc Industrial Advisory Group PPP Green Cars Initiative the following aspects bear particular opportunities and thus deserve close attention:

- Facilities for the series production and testing of advanced batteries and components
- Integration of specialist suppliers of customized modules into the value chain
- Common standardization of module interfaces and system communication
- Pilot facilities for the management (sourcing, processing, recuperation/recovery and recycling) of scarce materials
- Manufacturing processes with low environmental impact

### **Deployment and Implementation:**

According to the announcements of major vehicle manufacturers taken into account for the European Roadmap Electrification from about 2015 on mass production of innovative electric vehicles will start in Europe. In order to reach those high volumes that allow Europe to become market leaders, measures to create early demand are needed. This may start from public procurement for professionally managed fleets but will have to include the private user as a consumer soon. For specific applications fields, like e.g. long distance freight transport, comparable measures may be required for highly efficient internal combustion engines and improved logistics processes. The following action fields promise particular stimuli for a timely pan-European market development:

- Harmonized demand side measures for electric and other low CO<sub>2</sub> vehicles
- Availability of charging infrastructure for electric vehicles
- Common plug standards, billing processes (“roaming”) and CO<sub>2</sub> certification of energy
- Harmonized taxation supporting use of renewable energies and bio-fuels for transport
- Collaboration in logistics to achieve better vehicle fill, reduce cost and avoid non sustainable infrastructure interventions.

### **3. Policy Needs**

According to the joint understanding of the members of the Ad-Hoc Industrial Advisory Group PPP European Green Cars initiative, the following policy actions are required:

- All related industrial sectors and public and private stakeholder groups should be involved into the processes of setting priorities for a coherent and timely technology development and market uptake, e.g. through orientation along the agreed milestones of a roadmap as the PPP European Green Cars Initiative will continue to do it.
- Close coordination of the R&D and implementation programmes of the European Union and the member states should be aimed at, and clear relation to the activities of competing regions in the world should be achieved, either through seeking distinction or in establishing cooperation.
- Large scale investments in prototyping and manufacturing facilities are particularly justified in case of those facilities and infrastructures located in regions where existing or new clusters of vehicle manufacturers and suppliers or utilities promise a rapid uptake of innovations into internationally competitive value chains. Public private partnership models involving the respective member states and regional public authorities, the European Commission and the industry are particularly appropriate for this kind of spending.

- In case of direct payments to owners of electric and low CO<sub>2</sub> vehicles, the role of the European Commission will be that of a facilitator of harmonized rules at member states level rather than that of funding body. Nevertheless, regulations like the European Commission's legislation to limit average CO<sub>2</sub> emissions from the European fleet of cars should be better used for giving incentives to vehicle manufacturers with electric and low-CO<sub>2</sub> vehicles in their fleet. It is particularly important for the industry to know upfront how these incentive programs will look like and how sustainable they will be.
- Direct European investments should go to any harmonization initiatives allowing interoperability of electric vehicles cross border and responding to demand overseas. In particular for pan-European standardization to become widely accepted a consensus of all involved industrial sectors and public authorities has to be aimed for.

#### **4. Lighthouse Projects**

The strategic approach implies that projects will be of rather large scale and long duration. Therefore, the Ad-Hoc Industrial Advisory Group is particularly suggesting to establish and to commonly fund a number of European lighthouse projects which due to combined and integrated solutions for the cited action fields have particular leverage effects.

Examples include:

- A reference centre, e.g. as a specific Knowledge and Innovation Community (KIC) of the European Institute of Technology, focusing on performance testing and impact assessment of clean and energy-efficient vehicles, particularly in terms of health, safety, economics and the environment, which integrates research institutes, training facilities, design, test and assessment facilities and prototype manufacturing sites, bringing together knowledge from classic automotive engineering with the concepts of the ICT and energy sectors.
- Combinations of forces to strengthen the global competitiveness of the European automotive industry ranging from regional clusters to global alliances of electric vehicle manufacturing effectively representing significant parts of the (new) value chains with strong international market relevance.
- Green corridors and mode interfaces for electric and low-CO<sub>2</sub> vehicles in areas being particularly sensitive to or suffering from noise and emissions, e.g. freight distribution or transport in cities, air and sea ports or motorways in wildlife habitats like e.g. the Alps. Direct customer delivery solutions in cities suppressing a lot of unneeded and ineffective traffic while increasing convenience and welfare may be one promising example.
- Timely coordination of public (EU, members states, regions) and private (energy and mobility sector) responsibilities for support of R&D, innovation, and deployment, e.g. public procurement programs in support of electric and low-CO<sub>2</sub> vehicles.
- Anticipation of the challenges and needs of the innovation chain from technology development to deployment in the domain of electric and low CO<sub>2</sub> vehicles by a roadmap with milestones and actions agreed by all involved sectors. Particular topics include e.g. legislation and incentives, international affairs, strategic materials, commonly agreed standards. The Ad-Hoc Industrial Advisory Group for the PPP European Green Cars Initiative, which is aiming at a permanent status in Framework Programme 8, will be prepared to support such action from the perspective of R&D and technology development.

## **Contact and Further Information**

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