



P14 - Research done on social network and press about advances carried out in implementation of clean fuels and efficient public transportation systems which can reduce pollution in urban areas and improve health



Introduction

- ▶ In Europe, the transport sector is responsible for around a quarter of greenhouse gas emissions making it the second biggest greenhouse gas emitting sector after energy;
- ▶ road transport alone contributes about one-fifth of the EU's total emissions of carbon dioxide (CO₂), the main greenhouse gas (European Commission 2015, Climate Action)
- ▶ The main environmental goal of Europe is represented by the reduction of the global GHG emission and the transport sector plays a main role in the achievement of this objective. In fact, the Commission's White Paper proposed a reduction of 60% in greenhouse gas emissions from transport by 2050, as measured against the 1990 levels



- ▶ The use of alternative/clean fuels is one of the solutions that produce the most significant effects, mainly in the reduction of GHG emissions.
- ▶ This objective will be reachable by breaking the over-dependence of European transport on oil and then with the introduction of the necessary alternative fuels infrastructure.
- ▶ In 2012, transport in Europe was 94 % dependent on oil, 86 % of it being imported (DG MOVE -Expert group on future transport fuels -State of the Art on Alternative Fuels Transport Systems, 2015).
- ▶ The build-up of alternative fuel infrastructure will contribute to economic growth and support job creation in a sector of growing importance for Europe and worldwide. This will improve the competitiveness of EU industry in the fields of alternative fuel technologies for all modes of transport –in particular the automotive and shipping industries



- ▶ The build-up of a European alternative fuels infrastructure will also allow for free movement of goods and persons, with vehicles running on alternative fuels across the whole EU. This will facilitate the development of a single EU market for alternative fuels and vehicles which will permit the industry to benefit from economies of scale.
- ▶ The Directive promotes the use of private investments rather than public resources for the development of the alternative fuel infrastructure and introduces the following main measures:



Minimum levels of infrastructure across the EU

- ▶ Member States are required to submit to the Commission national policy frameworks and to deploy minimum levels of infrastructure – refuelling and recharging points – for alternative fuels such as electricity, hydrogen and natural gas.



▶ Minimum levels of infrastructure across the EU

Member States are required to submit to the Commission national policy frameworks and to deploy minimum levels of infrastructure – refuelling and recharging points – for alternative fuels such as electricity, hydrogen and natural gas.





▶ EU wide standards for the infrastructure

Common EU wide standards are essential for the development of alternative fuels. The agreement requires the use of common plugs for electric vehicles and standardised refuelling equipment for hydrogen and natural gas as well as the development of future standards for wireless recharging points, battery swapping technology and standardised plugs for buses and motorcycles. This will end the uncertainty that has been constraining supply and demand;



▶ Clear consumer information to facilitate use of alternative fuels

Clear and easy to understand information should be provided on the fuels available at refuelling stations and on the compatibility of the vehicle with different fuels or recharging points on the market in the European Union. Key information concerning the availability of recharging and refuelling points and any other information necessary for EU-wide mobility should be included, where applicable, within traffic and travel information services as part of the ITS. Last but not least, the Directive includes provisions regarding information enabling price comparison between different fuels.



- ▶ Much has been achieved since the EU adopted its first package of climate and energy measures in 2008. The EU is now well on track to meet the 2020 targets for greenhouse gas emissions reduction and renewable energy and significant improvements have been made in the intensity of energy use thanks to more efficient buildings, products, industrial processes and vehicles. The 20/20/20 targets for greenhouse gas emissions, renewable energy and energy savings have played a key role in driving this progress and it is now time to reflect on the policy framework we need for 2030.

Greenhouse gas emissions reductions (20%), share of renewable energy (20%) and improvements in energy efficiency (20%)



- ▶ In the specific field of transport externalities and emissions the European Union has set concrete objectives for Member States. The main EU objective is an overall reduction of CO₂ emissions of 80-95% by the year 2050, with respect to the 1990 level (White Paper 2011 - European Union, 2011).
- ▶ In the transport sector, strong efforts would be required to drastically reduce the oil dependency and the CO₂ emissions in the transport sector, in line with the goals put forward in the 2011 White Paper on Transport that has foreseen a 20% reduction in the CO₂ emissions by 2030 relative to 2008 levels and a 60% reduction by 2050 relative to 1990 levels



- ▶ An improvement of transport efficiency is necessary to support the reduction of CO₂ emissions, and to enable the use of renewable resources in the transport sector. Transport is one of the sectors most resilient to efforts to reduce CO₂ emissions due to its strong dependence on fossil energy sources and its steady growth, offsetting the considerable vehicle efficiency gains made.



- ▶ It is expected that alternative fuels will play an important role in the next years in view of the EU objectives of gradually substituting fossil fuels with fuels of renewable origin, transport decarbonisation and diversification of the energy sources.
- ▶ However, there is currently a lack of attractiveness of fuel alternatives for consumers and businesses, and no clear market signals with regards to the potential of the different new alternative fuels.



- ▶ Based on the consultation of stakeholders and national experts, as well as the expertise reflected in the Communication from the Commission of 24 January 2013 entitled 'Clean Power for Transport: A European alternative fuels strategy', electricity, hydrogen, biofuels, natural gas, and liquefied petroleum gas (LPG) were identified as currently the principal alternative fuels with a potential for long-term oil substitution, also in light of their possible simultaneous and combined use by means of, for instance, dual-fuel technology system.



- ▶ Biofuels are currently the most important type of alternative fuels. They can also contribute to a substantial reduction in overall CO₂ emissions if they are produced sustainably. They could provide clean power to all forms of transport. They are fully compatible with existing refuelling infrastructure.



Electricity

Electricity is an energy carrier that can be converted domestically from a wide variety of primary energy sources. A certain quantity of electricity can be produced from renewable energy sources, offering a nearly well-to-wheel zero-emission pathway, although this is not always the case; e.g. when a combination of renewable and non-renewable sources is used. Electricity will continue to become increasingly low-carbon as the power sector continues to reduce in carbon intensity.



- ▶ The expansion of electrification of road transport to urban buses is a growing trend in Europe with electric buses expected to reach market maturity soon. The full battery electrification of heavy-duty vehicles and long-haul bus and coach fleets is not likely to be a realistic option in the near future. However, these technologies could be considered in a longer-term perspective as such fleets are very likely to become at least partially electrified by the use of plug-in hybrid technology.
- ▶ The technological maturity in relation to battery propelled maritime ferries, is relatively low in comparison and additional feasibility cost studies have to be carried out in order to analyse the necessary supply infrastructure and overall implementability.



Natural Gas and Biomethane

Natural gas and bio-methane are considered as a single fuel. It can be sourced from fossil natural gas and as bio-methane from renewables or feedstock of non-biological (gasification) and biological (anaerobic digestion and gasification) origin, such as energy crops, agricultural wastes and residues, animal manure organic fraction of municipal waste, sewage sludge, . In addition to gasification of organic and non-organic feedstock, it can also be produced as synthetic gas via the methanization of hydrogen made from electrolysis of excess electricity (e-gas).



Natural gas and biomethane can be used in established combustion engines, with performances equivalent to gasoline or diesel units and cleaner exhaust emissions. Compressed Natural Gas (CNG) and Liquefied Natural Gas (LNG) refueling infrastructure is necessary for running these vehicles.

The technology is mature for the dedicated natural gas engines in cars, vans, buses and trucks and the engine technology has been constantly improved since the first passenger cars produced in the 1990's.



Hydrogen

Similar to electricity, hydrogen is an energy carrier that can be produced from a wide variety of primary energy sources. Currently, hydrogen is predominantly produced by steam reforming of methane, via a chemical transformation process generally involving decarbonisation of a hydrocarbon. Hydrogen can also be produced from renewable or nuclear energy using electrolysis or biomethane reforming, via organic feedstock and splitting of water (here we will refer to “thermal” hydrogen), which offers zero or close-to zero-emission pathways from well to wheel.



The technology for hydrogen production is mature and cheap production pathways are in place. It still needs significant efforts to set up the necessary hydrogen refuelling station infrastructure. However, it does not require a change in user habits in terms of mobility and refuelling, and it offers substantial benefits in terms of environmental and energy sustainability.

Hydrogen is used in fuel cell electric vehicles where the electricity is not stored in a battery but it is produced on board by a fuel cell using oxygen from the air and hydrogen stored in the tank



This technology is mature, safe and ready for deployment in road transport. The commercialisation process has begun within some specific market segments such as passenger cars, buses and materials-handling vehicles.

However, the levels of cost competitiveness and performance required for large-scale deployment in road transport have not yet been achieved, neither for the vehicles nor for the refuelling points.



In order to foster the deployment of alternative fuels infrastructures and to reduce the European dependency on oil in the transport sector, Member States may allocate a specific budget for the alternative fuels infrastructure deployment to support manufacturing plants, broken down by alternative fuel and by transport mode (road, rail, water and air).



Thank you for your attention





▶ <https://ec.europa.eu/transport/sites/transport>

