

PRESS RELEASE

BATTERY AND HYDROGEN (H₂) – JÜLICH RESEARCH CENTRE AND H₂ MOBILITY PUBLISH COMPARATIVE ANALYSIS OF INFRASTRUCTURE COSTS

- **Both technologies are vital for successful decarbonisation of the transport sector**
- **H₂ infrastructure works out cheaper as of one million vehicles**
- **Additional investment needed for 100% green hydrogen**
- **Battery charging network is more cost intensive than hydrogen in the long term**

Berlin, 25 January 2018 – The scenario analysis shows that, in the long run, the build-up of a hydrogen infrastructure is more cost friendly than investing in a system of battery charging points. Up to a fleet size of 100,000 vehicles, the scheduled costs for hydrogen mobility (FCEV) amount to around EUR 450 million. For battery electric vehicles (BEV), the costs are around EUR 310 million. However, because hydrogen dispensation is centrally organised at petrol stations, the H₂ option then starts to get cheaper: Once one million vehicles are on the road, the cost of H₂ infrastructure totals around EUR 1.9 billion while battery charging infrastructure amounts to EUR 2.8 billion. Hydrogen can become more expensive for an interim period during the changeover to 100% green hydrogen from surplus electricity, since this also requires the installation of large-scale storage technologies.

Once market penetration reaches 20 million vehicles, investments in a battery charging infrastructure would total around EUR 51 billion, making this option considerably more expensive than hydrogen mobility which comes in at around EUR 40 billion.

On presenting the comparative analysis of FCEV and BEV infrastructures, Professor Dr. Stolten, Director of the Institute for Electrochemical Process Engineering at Jülich Research Centre (JRC), stated that: 'We need to invest in both of them.' He then went on to say that, 'Both technologies require a moderate level of investment compared to other infrastructures, like road building and maintenance, for example. Therefore, we need an inclusive rather an exclusive approach if we are to maximise efficiency and make better use of renewable energies across the board in the transport sector.'

Together, drivetrain electrification and the switch to electricity-based fuels constitute a cornerstone for achieving Europe's transport sector climate targets and thus for significantly reducing vehicle CO₂ emissions. Electric drivetrains emit zero tailpipe emissions. Their carbon footprint only concerns actual power supply, but this can also be reduced to virtually zero by harnessing renewable energies. E-vehicles thus have the potential to considerably improve people's quality of life, especially in built-up areas. Electricity for e-vehicles can be stored in a battery or as hydrogen. Hydrogen also allows us to harness seasonal electricity surpluses from renewable sources.

The aim of the study was to provide a detailed analysis of Germany's BEV and FCEV infrastructure and scaling requirements and to reach a concrete conclusion about the level of cost

involved. The comparative scenario analysis was compiled by Jülich Research Centre's Institute for Electrochemical Process Engineering under Professor Dr. Stolten and financed by H₂ MOBILITY Deutschland GmbH & KG.

Download links

['Comparative Analysis of Infrastructures: Hydrogen Fueling and Electric Charging of Vehicles'](#)
(Full analysis, including a German abstract)

More information

JRC: Dr. Martin Robinius | + 49 (0) 2461 61 3077 | m.robinius@fz-juelich.de

H₂ MOBILITY: Sybille Riepe | +49 (0) 40 80 79 04 612 | riepe@h2-mobility.de

About H₂ MOBILITY

H₂ MOBILITY Deutschland GmbH & Co. KG is responsible for the Germany-wide rollout of HRS infrastructure (700 bar technology) for fuel cell electric vehicles (FCEV). Its first goal – through to 2018 – is to commission up to 100 stations in seven German urban centres (Hamburg, Berlin, Rhine-Ruhr, Frankfurt, Nuremberg, Stuttgart and Munich) and along major trunk roads and motorways. Up to 400 hydrogen stations are scheduled to open in line with FCEV market growth, thus securing a nationwide H₂ fuel supply. H₂ MOBILITY is in charge of all operative tasks, including network planning, authorisation, procurement, installation and commissioning.

H₂ MOBILITY's shareholders are Air Liquide, Daimler, Linde, OMV, Shell and TOTAL. H₂ MOBILITY also consults with the following associated partners: BMW, Honda, Hyundai, Toyota, Volkswagen and NOW GmbH (National Organisation for Hydrogen and Fuel Cell Technology).