

- 1. Should the vision agreed in the CARS 21 mid-term review be now adjusted? (i.e. 2020 perspective of improved combustion engine's market dominance combined with growing market penetration of electric and hydrogen vehicles and hybridisation conceived as the bridging technology and 2050 perspective of transport decarbonisation)**

No, it still resembles the most feasible approach.

- 2. What is the potential of different clean automotive propulsion technologies (improved fuel efficiency, hybridisation and alternative powertrains) for contributing to decarbonisation objective in the short, medium and long term?**

In the short run the most potential lies within improved fuel efficiency, as hybridisation as well as alternative powertrains have not penetrated the market in significant numbers. Given the necessary infrastructure can be provided, the latter two will without any doubt be the key to a successful decarbonisation in the long term.

What is the decarbonisation potential of the complementary measures in the short, medium and long term (e.g. guidelines on eco-driving, application of Intelligent Transport Systems) and how reliable are these potentials?

All in all, complementary measures do indeed have a small decarbonisation potential. Yet, their efficiency needs to be carefully evaluated. Complementary measures must not become a mandatory requirement, whose fulfillment leaves little vacancies for R&D efforts for alternative propulsion technologies, which by far have a higher decarbonisation potential.

- 3. What are the implications of new propulsion technologies in a lifecycle analysis perspective as regards vehicles, and in a well-to-wheel perspective as regards energy supply chains?**

No major implications due to alternative fossil fuels e. g. CNG/LPG are to be expected as the combustion process and therefore all related engine components do not vary much from current diesel/otto powertrains. Despite heavily funded field projects in terms of hydrogen and electric vehicles (see "Better Place"), there still is very little experience on the durability of such vehicles under normal, realistic conditions, making it difficult to give a fact based expertise.

New propulsion technologies require new energy resources, which will cause a reorganization amongst the global energy suppliers. Besides setting up a thorough infrastructure the most difficult challenge will be the guaranteed, unconditional provision of energy. A strong supplier biased dependency ought to be avoided to prevent unexpected shortfalls.

What are the resource implications in introducing innovative propulsion technologies?

Being by far the largest gas supplier in the world, Russia would tremendously gain in importance on the global fossil fuels market with gas propelled vehicles increasing more and more in numbers. Especially the EU will not be able to avoid dependency on a reliable resource supply from Russia, which inevitably will be of major significance on economic as well as political levels.

As for all other innovative propulsion technologies, it is obvious that as long as the generation of their individual energy sources require more resources than the generation of petrol or diesel, contemporary propulsion technologies will not even vanish in the long run.

4. What are the state of play and the future scenarios of technological developments in alternative powertrains (electric and hydrogen) and their market penetration?

Currently only feasible in highly funded kick-off projects and hence, not yet reality in the caravanning industry. Thus, no market penetration to be expected in the medium run.

What are major risks and opportunities associated for different stakeholders?

Any decrease in engine power caused by either downsizing or alternative powertrains will pose a major problem to the caravanning industry. Not only might motor caravans face a less efficient weight/power ratio, but also the choice of potential drawing vehicles i. e. medium & large sized passenger cars for touring caravans might decrease.

What will be the economic, societal, employment and environmental impacts brought by these developments?

Not just the caravanning industry but also the entire camping related business within Europe will be substantially compromised by the a. m. potential negative developments.

5. How can a trade-off situation be avoided where electrifying the power train would reduce or reverse improvements made in conventional technologies in the framework of existing and upcoming legislation on the CO2 emissions of road vehicles?

A trade-off situation might be avoided by acknowledging significant improvements within the conventional technologies, which should not be categorically restricted in their development potential by overambitious legislative restrictions.

6. What actions should be best taken at regional/ national /European or international level to promote technology development and market uptake of alternative powertrains (electric and hydrogen)?

First and foremost, the successful introduction of a wide coverage and easily accessible network of fueling and (accumulator) exchange service stations must be provided. Second, unless drastic monetary government incentives, both for the industry as well as for customers, are granted, the market uptake will inevitably be prolonged.

For further questions please contact:

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