

Mobility and Energy

Specific Challenge

The transport sector in Europe is over 90 % fossil fuel dependent. It is crucial that we change this in order to decarbonise our transport systems and increase energy independence. There is no single fuel type that can easily replace the diesel and petrol that is used in internal combustion engines (ICE) today, but a range of different fuels and propulsion techniques can be used depending on the transport requirements. Electric vehicles are particularly apt for use in urban areas due to zero tailpipe emissions, lower noise emissions and higher energy efficiency at lower speeds.

Replacing ICEs with cleaner fuel-propulsion solutions requires new vehicle technologies (including retro-fitting), charging/refuelling supply as well as demand for the fuels. To enable this requires new partnerships, business models and new infrastructure (often in the public realm).

The widescale (and fast) adoption of electric vehicles in urban areas poses challenges not least relating to appropriate charging infrastructure covering a wide variety of transport patterns and needs (e.g. taxi, truck, small delivery vehicles, bus, boat, moped, e-bike as well as private car). This impacts the electricity grid, and infrastructure improvements need to be made, for example in building new electricity substations in often dense urban areas. Load-balancing solutions are needed in order to ensure that demand matches supply.

Refuelling stations also need to be in place for other cleaner fuels, e.g. hydrogen for fuel-cell electric vehicles, CBG, LBG, and for P2X. In most cases these are related to longer distance and/or heavier transport and would be located in peri-urban areas.

Uptake of cleaner fuels has been slow in most European cities, faced with challenges related to business models, new cooperation models, high capital costs for new technologies, required infrastructure upgrades, behavioural change, to mention a few.

Expected outcomes & impacts

The expected outcome would be increased use of cleaner fuelled vehicles in one or more European city. The measure implemented should have the potential for replication and scaling in other European contexts. Alignment is expected with national and European policy on cleaner fuels. The expected impacts are reduction in greenhouse gas emissions, increased quality of life in urban areas and better use of urban space.

Examples

Some examples of specific topics that can be addressed include:

- Innovative measures to increase the demand for zero-emission vehicles, showing a clear take-up of vehicles in fleets.
- Demonstration of innovative charging solutions to test new load balancing techniques, fast and slow charging solutions, and behavioural incentives (e.g., lower cost for lower power), access to company/private parking lots for residents in off-peak hours, battery storage to shave peak load, V2G, etc.
- Implement and test universal charging of universal cableless solutions for all mobility vehicles e.g., with multimodal interchanges being clear example of early adoption sites.
- Demonstration of solutions where different energy players and stakeholders align on single-use urban access with user-friendly design and simple terms of use and payment.
- Demonstration of smart grid /micro grid energy infrastructure with green energy production for all types of Vehicles of the Future including solar, hydrogen and biofuels.
- Installation of easily relocatable mid-size high-capacity energy storage solutions to upgrade existing or planned charging infrastructure movable from place to place. Clear consideration needs to be made of the fit with surrounding urban environment and accessibility to charging points.
- Innovative cooperation models and business model development to create refuelling stations for cleaner vehicles, jointly with transport purchasers, procurers, municipalities, energy companies, etc.

