Policy brief: Comprehensive Energy Efficiency Potentials in Transport and Mobility

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POLICY BRIEF

Comprehensive Energy Efficiency Potentials in Transport and Mobility

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Key messages

- *Energy-efficient urban development will reduce the passenger kilometres driven by a car by 16 % compared to traditional urban development. In order to achieve this, new investments need to be made predominantly in more efficient modes of transport and that higher transport demands are not induced in in-efficient modes of transport.*
- *Targeted policies to promote urban densification and efficient demand growth, whereby Member States are encouraged to develop local planning mechanisms for limiting continued urban sprawl and sharing platforms for energy efficiency urban development knowledge and best practices are established.*
- *Stop activities generating the basis for more CO_2 emissions and energy inefficient transport: stop urban sprawl, stop the expansion of highways, and stop the expansion of airports.*
- *Concentrate urban development on reusing brownfields in larger cities, and invest in railways – especially concerning the larger cities.*
- *Invest in local transit solutions for commuters.*
- *Invest in infrastructure for cyclists and pedestrians and regulate car use in larger cities with parking fees and road pricing tools.*
- *Energy-efficient urban development combined with extensive electrification will reduce the primary energy demand for the transport sector in Europe by 50% compared to the baseline in 2050.*
- *Extensive electrification of transport vehicles, in general, is key for efficiency gains and avoiding additional costs. In 2020 2.7 million passenger EVs were on the streets of Europe, in 2030 it will be 93 million and finally in 2050: 254 million EVs.*
- *All light-duty transport vehicles shall be electrified.*
- *Electrification of the parts of heavy-duty trucks, short-distance navigation and aviation possible.*
- *Electric Road Systems (ERS) provide a good alternative for heavy-duty road transport where battery electrification is limited.*
- *Electrofuels and other Power-to-X based fuels should be prioritized for navigation and aviation.*

The proposed development does not only reduce the primary energy use, but there is also a number of non-energy benefits – for instance health benefits by replacing car driving with bicycle riding. The transport related health costs in Europe will be reduced from 205.5 billion € in 2015 to 54 billion € in 2050.

Key findings and key recommendations

The development of energy-efficient urban development scenarios builds on extensive literature and document study. According to this, the most important factors for maintaining accessibility while reducing transport volumes and promoting a shift from energy-demanding travel modes to modes requiring less energy per person kilometre travelled or ton kilometre of freight are: High population density for the city as a whole (the continuous urbanized area, i.e. the morphological city); residential location close to the main centre of the city/the metropolitan area; and location of specialized, labour-intensive or visitor-intensive jobs close to the main centre of the city/the metropolitan area. Literature on induced traffic concludes that highway expansion should be avoided, and if combined with several other factors, it is possible to assess the impact of urban energy-efficient development. Furthermore, several actual cases of (partly) energy-efficient urban development in Europe are described in report 2.1.

The energy-efficient urban development is combined with energy-efficient vehicle technologies leading to several different scenarios depending on the composition of the energy used for the vehicles. It is found that

the combination of energy-efficient urban development with extensive electrification is the most energy-efficient – and the most cost-efficient – scenario. The final energy demand is reduced by around 50% without increasing the annual transport system costs. This is documented in report 2.3 and shown in the figure below.

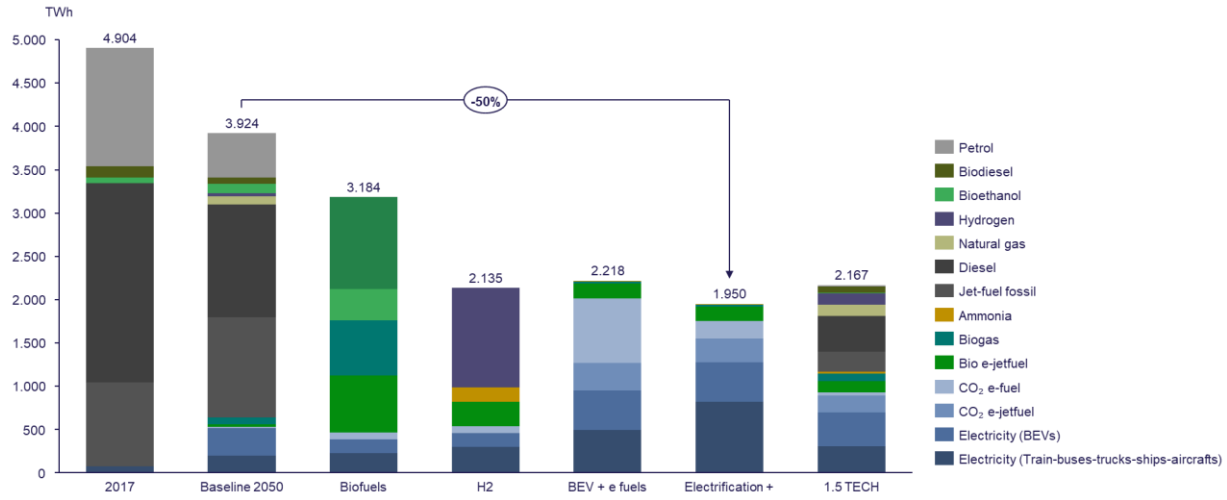

Figure 1. Final energy demand for EU27+UK transport sector

The proposed development also has a large number of non-energy benefits, most of them positive. Replacing car driving with sod mobility has a large impact on health as the lack of physical exercise is one of the large contributors to a number of severe diseases. The additional impacts are documented in report 2.4.

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