Call for Papers – Short abstract

Possible topic: Green transport (session 1, November 19)
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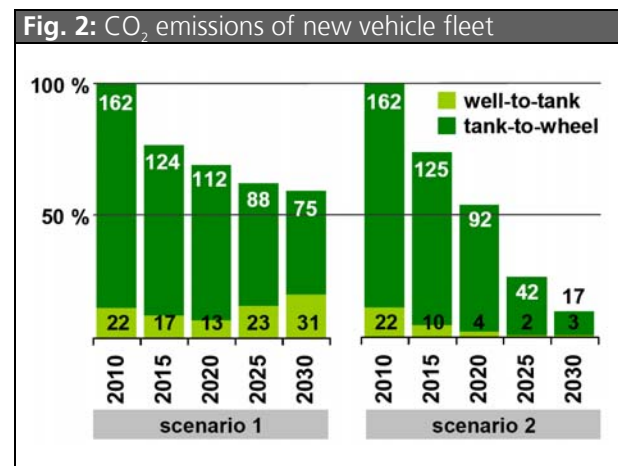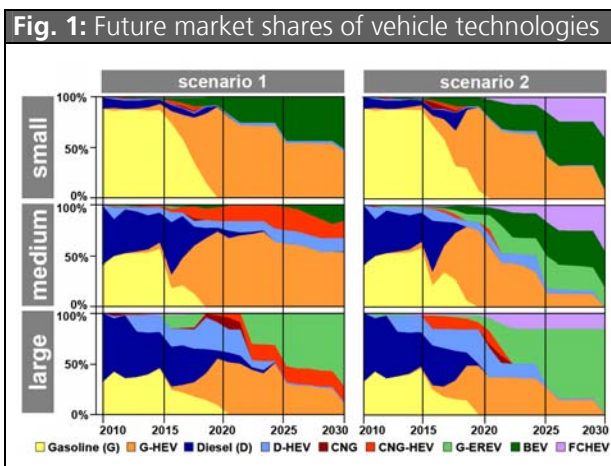
Market prospects of passenger vehicle technologies and their effect on CO_2 emissions up to the year 2030 – A model based approach

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A method for assessing the potential and costs of various technologies for CO_2 emission reduction of passenger cars, using a newly built computer model, is presented. A variety of vehicle technologies, each with different attributes regarding CO_2 emissions and costs, is simulated for the supply side, as well a variety of different synthetic customer groups for the demand side within the model. An econometric based selection process calculates the number of each type of new vehicle sold in any year of the simulation. Hence, deriving future market shares of vehicle technologies and overall CO_2 emissions is possible.

The detailed technology database used for calculations includes conventional vehicle propulsion technologies as well as innovative vehicle concepts. Cost degression effects for new technologies are incorporated using learning curves, with costs depending on the cumulative number of vehicles sold. Different types of fuels and influence of crude oil price on fuel prices are taken into account, as well as different taxation systems.

Using the model, different scenarios for future development of CO_2 emissions of the new vehicle fleet as well as the vehicle stock are evaluated for the time period 2009-2030.

Fig. 1: Future market shares of vehicle technologies

Fig. 2: CO_2 emissions of new vehicle fleet

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