**Well2Wheel – what is favorable – generating electricity of fossil fuels or sue fossil fuels in a vehicle**

**Goal:** To quantify the total CO2 emission when propelling a vehicle a certain distance and according to a certain drive cycle. Both when using fossil fuel on-board and also when producing electricity at a central power plant and drive the vehicle on electricity.

**Background:** Electrification of vehicles has today entered an intensive phase. Limiting the tail-pipe emission is an objective that has lead to strong support from political decision makers. However, an electric car might from a global perspective be less favourable from a CO2 perspective than a hybrid electric vehicle, until all electricity can be generated in a sustainable way, and until then there is perhaps 100 years left. Thus, for a long while, the extra km driven using electricity will always come from fossil energy production.

**Plan:** Study previous work on Well2wheel, as well as energy consumption in hybrid electrical cars. Determine for various driving cycles and some selected cars, the electricity and fuel needed for propelling the vehicle for a certain distance. Then determine the fossil fuel needed to produce the same electricity amount for the electrical car, and compare the resulting CO2 emission. Quantify during which conditions, which solution that gives the lowest CO2 impact.

**Number of Students:** 1-2

**Start time:** January 2019

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