

What EU vehicle CO₂ regulation says about biofuels? Ignored!

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Abstract

Car CO₂ regulation measures actual CO₂ content from a tailpipe during a test run. It does not make difference is CO₂ originated from fossil or biobased fuel. CO₂ of electric cars is zero regardless how electricity is produced since there is no tailpipe. Regulation is called "tank-to-wheels" even though life-cycle or "well-to-wheels" CO₂ defines climate change effects.

Cars have to meet max 130 gCO₂/km on average with NEDC test run until 2020 which is achieved with good fuel economy and fossil fuels. From 2020 limit is 95 gCO₂/km, from 2025 about 81 gCO₂/km (-15 % compared to 2021) and from 2030 about 59 gCO₂/km (-37.5 % compared to 2021). Values force to electrification as the only solution since biofuels are not accepted as tools for reducing cars' CO₂. Corresponding regulation exists for vans and is coming for trucks from 2025.

Car regulation is heritage from 1980's when CO₂ was a desired outcome from complete combustion and not any pollutant. CO₂ was used for comparing fuel efficiency of cars running with fuels having different densities like gasoline, diesel fuel and natural gas. Fuel directives RED and FQD from this millennium recognize "well-to-wheels" approach for mitigating climate change. They also use a principle that CO₂ of biofuel's final combustion is zero. So, there is a serious mismatch between fuel and vehicle regulations since vehicle regulations do not at all recognize benefits of biofuels.

Technically and scientifically a proper method would be gCO₂/MJ carbon footprint for fuel or energy, and MJ/km energy efficiency for vehicles. Multiplying these together would give well-to-wheels CO₂.

Regulation should be updated in order to get cost-effective and technically and commercially neutral solutions since the current one ignores biofuels and defines electrification (or hydrogen) to be the only solution for reducing CO₂ of vehicles.

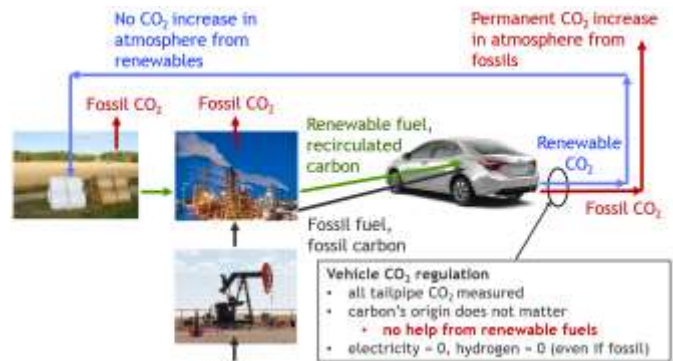


Figure 1. Current tank-to-wheels vehicle CO₂ regulation ignores benefits of biofuels and is going to force more and more towards electric or hydrogen vehicles.

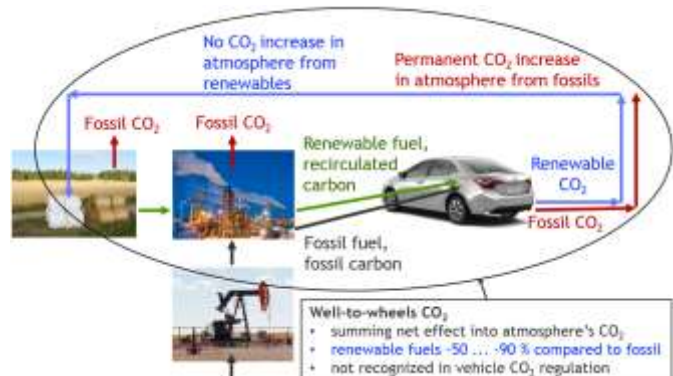


Figure 2. Well-to-wheels approach should be the ultimate tool for tackling climate change.

Biography

Seppo Mikkonen has over 30 years' experience in diesel fuel, gasoline and biofuel specifications, vehicle CO₂ and exhaust emission regulations as well as fuel quality effects on vehicle operation and durability. He is a member of several working groups in European fuel industry associations and fuel standardization bodies.