Road transport energy outlook

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We are in the midst of a global energy transition...

Energy systems are changing rapidly in all dimensions, across sectors, energy products, and geographies.
Three global trends disrupt outlook for road transport oil demand

1. Extrapolation of current vehicle ownership trends, no fuel efficiency increase, constant share of electric vehicles

Shared and autonomous vehicles are changing the usage and composition of the vehicle parc.
Regulations drive three phases in OEM portfolios - from efficiency improvements to shift to EVs

**Corridor for potential CO₂ regulation**

- **2015**: 172, 166
- **2020**: 144, 121
- **2025**: 107
- **2030**: 96, 68-78

**Required powertrain portfolios**

- **“World of today“**
  - Until 100g CO₂/km, a portfolio of efficient ICE, mild-hybrids, and less than 10% electrification can meet targets

- **“Mix of powertrains“**
  - Below 100g CO₂/km, a “portfolio game” with equal importance of ICE, PHEVs, and EVs can meet regulations

- **“EV world“**
  - To achieve targets below 50g CO₂/km, a portfolio mainly consisting of EVs and PHEVs is required

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1 To ensure comparability, CO₂ figures are cycle-adjusted and normed (to NEDC)

Source: McKinsey Sustainable Mobility Team, 2018
Favorable outlook on TCO of EVs

C/D segment reach TCO parity in Europe in the early 2020s

TCO for C/D\textsuperscript{1} segment, 3-year TCO (2015-2030E)
USD/km, including subsidies

TCO parity in ~2024

1. C/D class for passenger cars: size between 4-5 meter, price between 25-49k EUR (referring to ICE vehicles)

Source: McKinsey Powertrain Model, McKinsey Future Center of Mobility, Breakthrough scenario
Global EV sales are expected to make up >50% of sales in most vehicle segments by 2035

Uptake by segment for EV, % of global vehicle sales

Global EV pass car parc, million vehicles

EV = BEV + PHEV + FCEV

Historically, EV projections have been increasing year over year.
What to watch...

Electric vehicle uptake

In an accelerated EV transition case, oil demand would reduce by additional 18 MMb/day by 2050.