

Road transport energy outlook

IEA IEF OPEC Symposium on Energy Outlook

19 February 2020, Riyadh

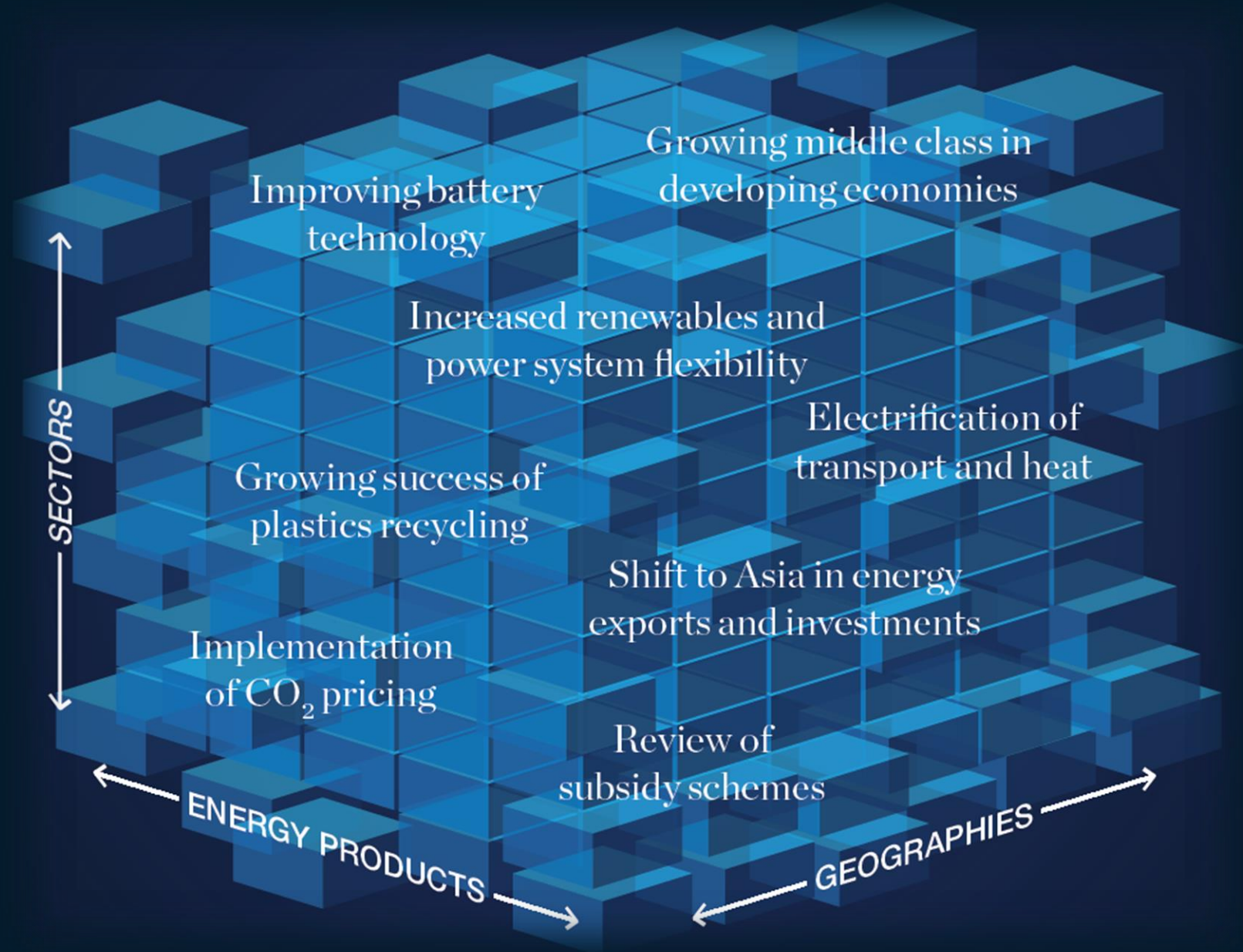


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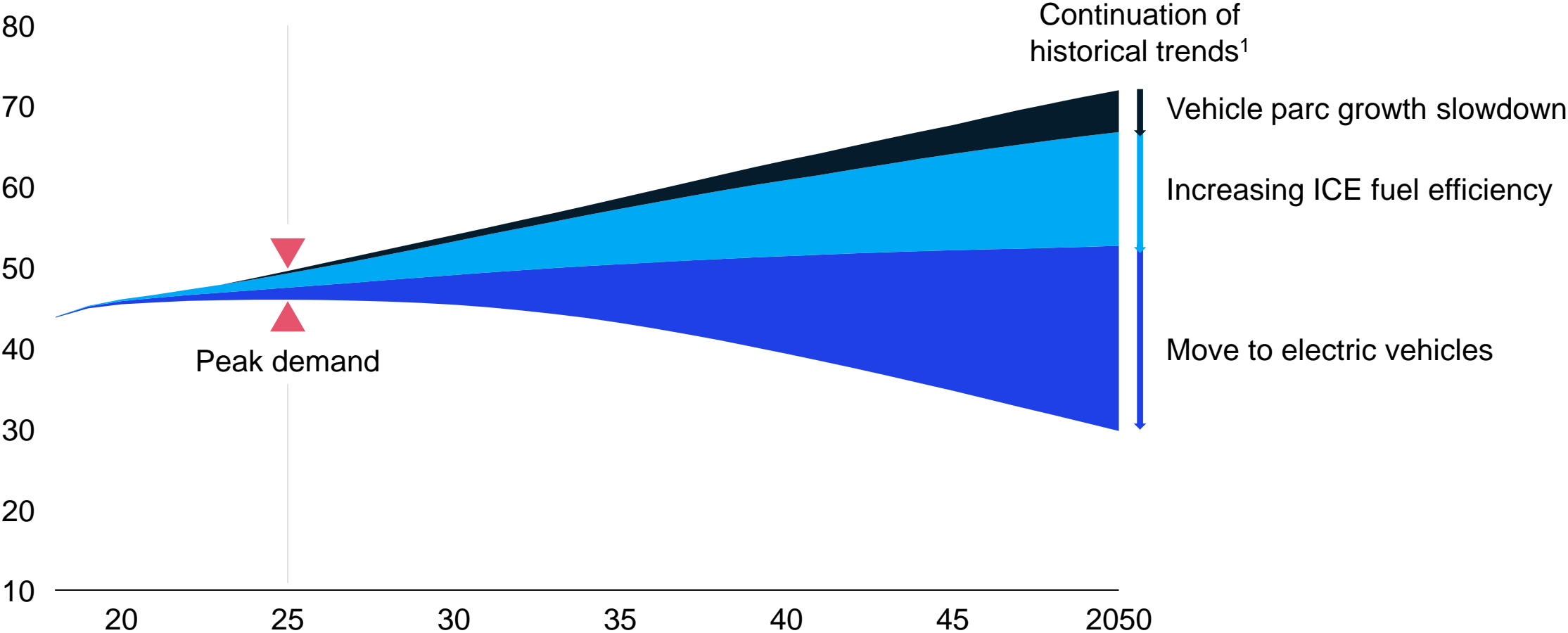
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We are in the midst of a global energy transition...

Energy systems are changing rapidly in all dimensions, across sectors, energy products, and geographies

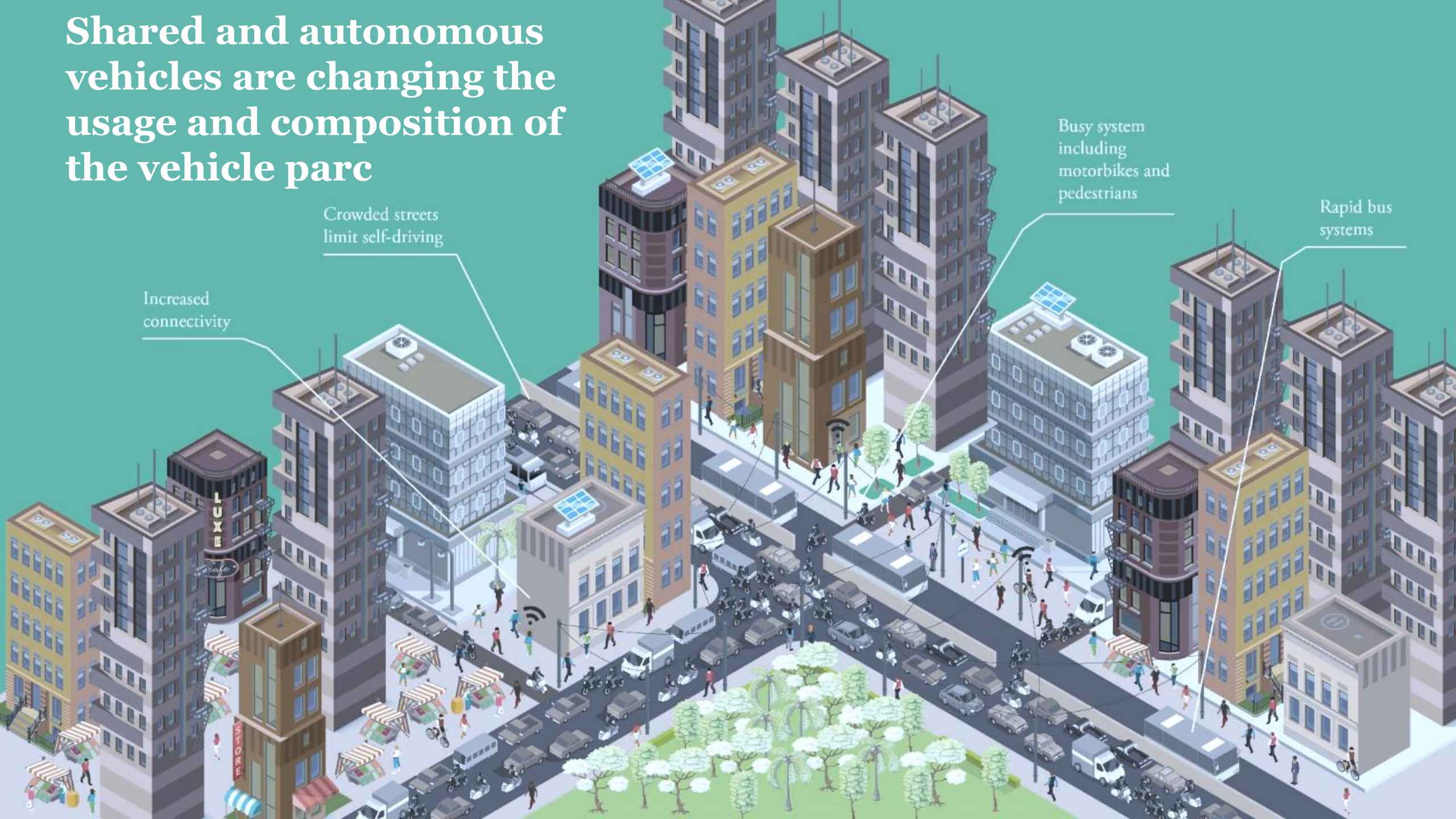


Three global trends disrupt outlook for road transport oil demand



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



Increased connectivity

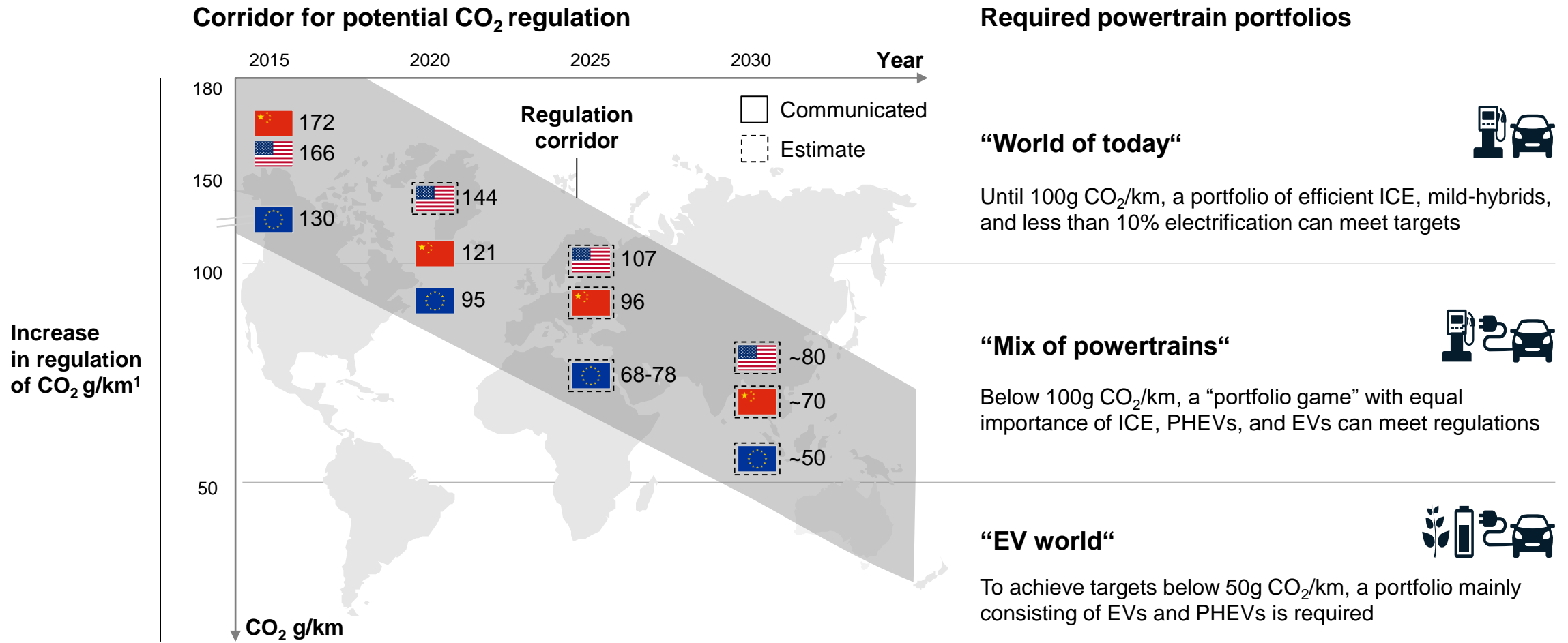
Crowded streets limit self-driving

Busy system including motorbikes and pedestrians

Rapid bus systems

Regulations drive three phases in OEM portfolios - from efficiency improvements to shift to EVs

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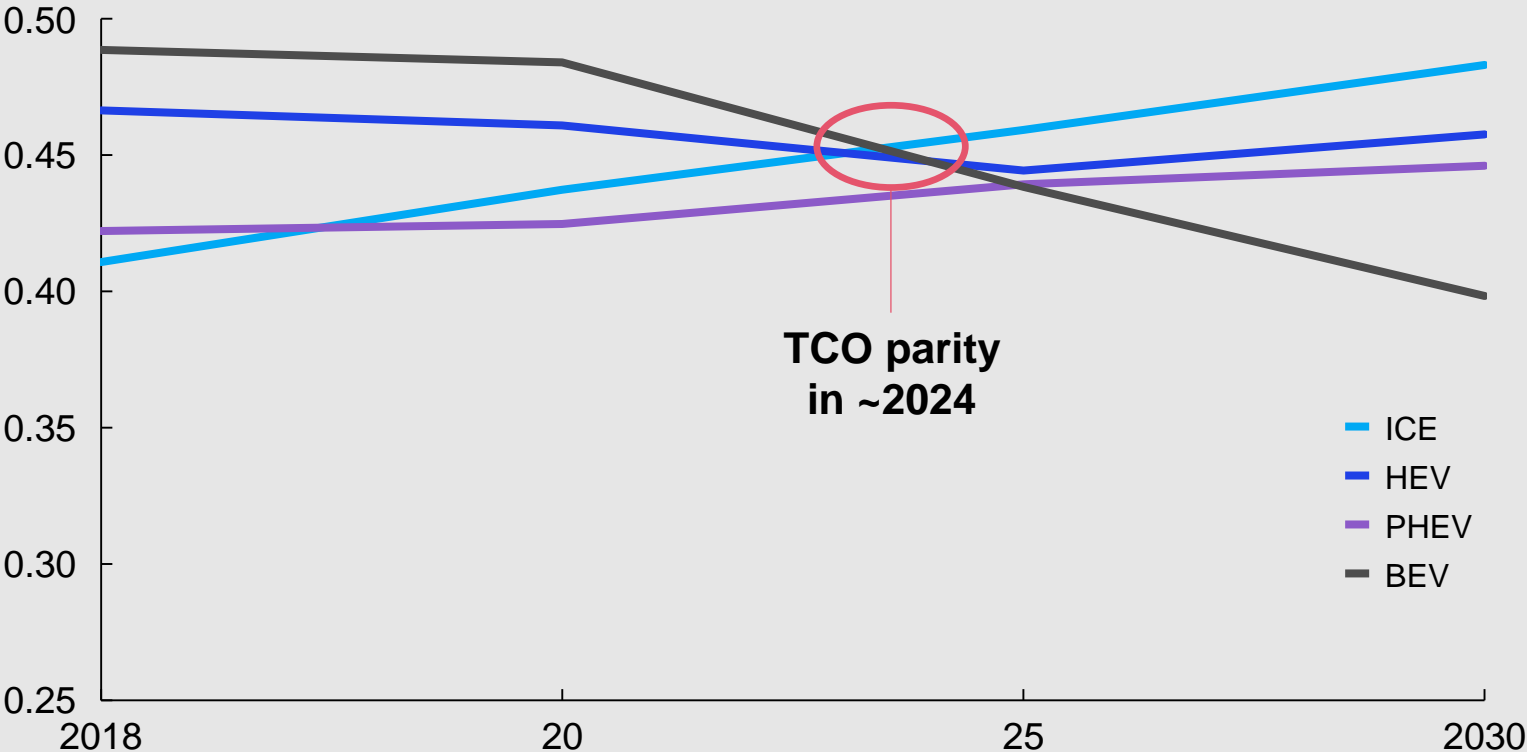
1 To ensure comparability, CO₂ figures are cycle-adjusted and normed (to NEDC)

Favorable outlook on TCO of EVs

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



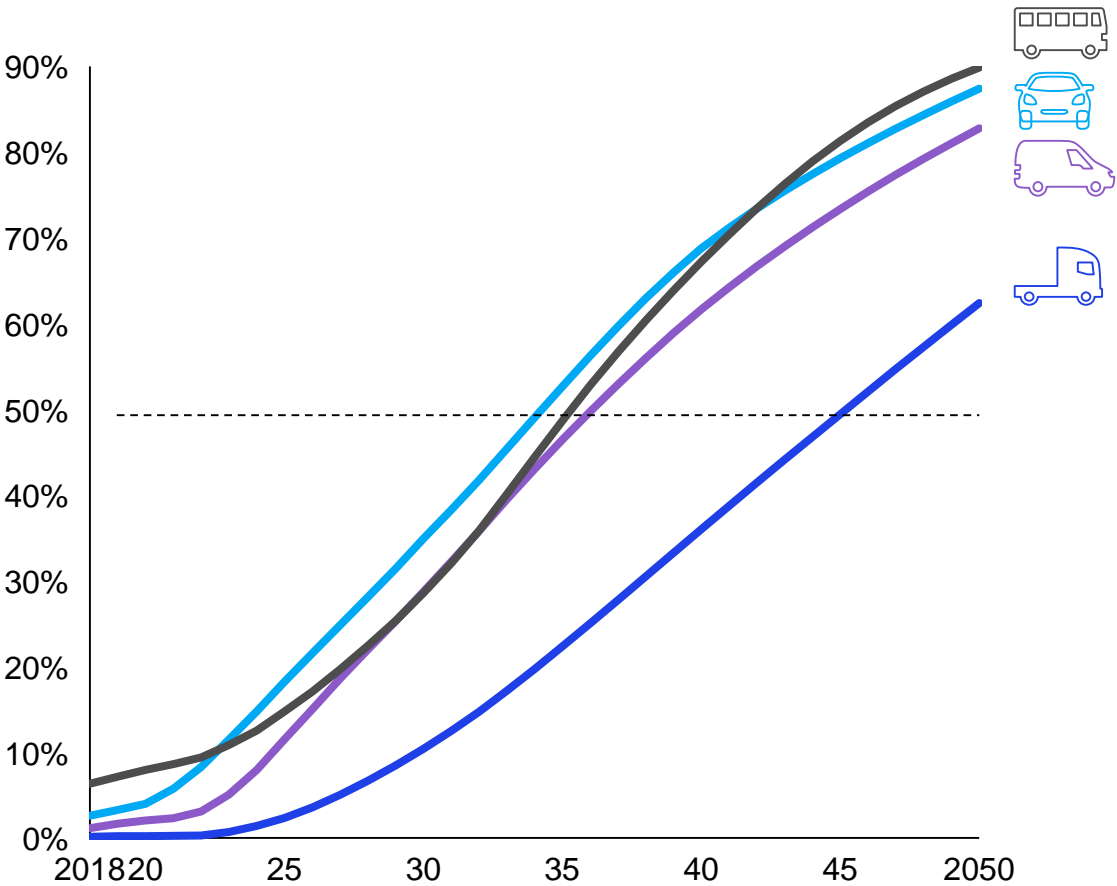
TCO for C/D¹ segment, 3-year TCO (2015-2030E)
USD/km, including subsidies



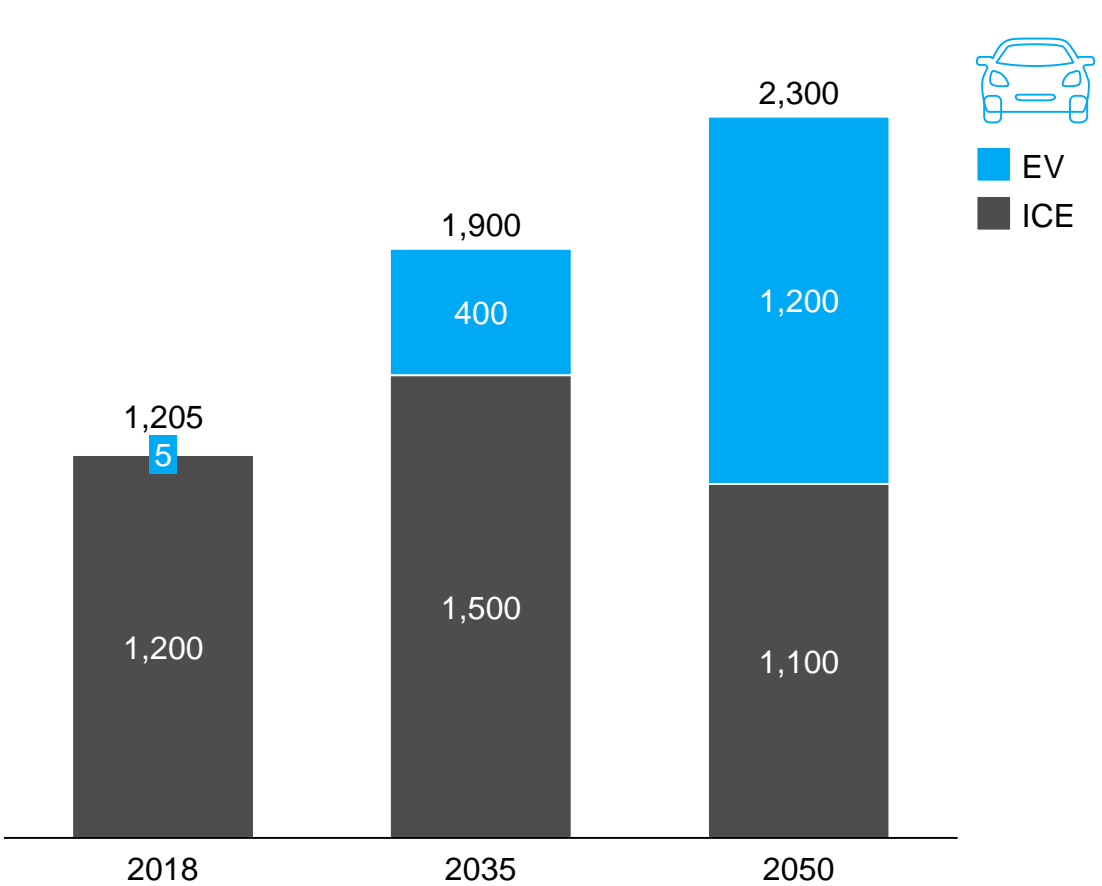
1. C/D class for passenger cars: size between 4-5 meter, price between 25-49k EUR (referring to ICE vehicles)
Source: McKinsey Powertrain Model, McKinsey Future Center of Mobility, Breakthrough scenario

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



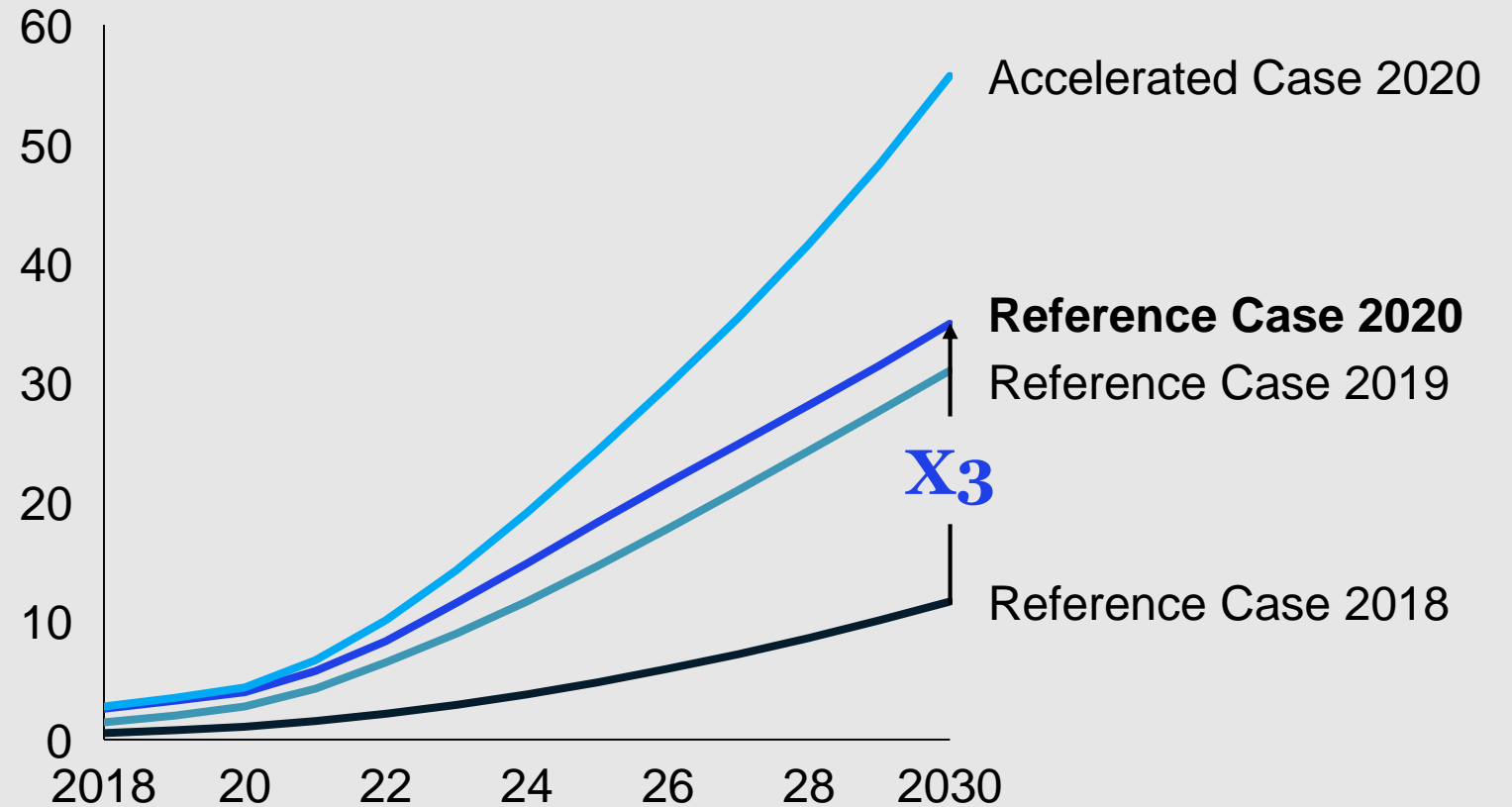
EV = BEV + PHEV + FCEV

Source: McKinsey Energy Insights' Global Energy Perspective, January 2020

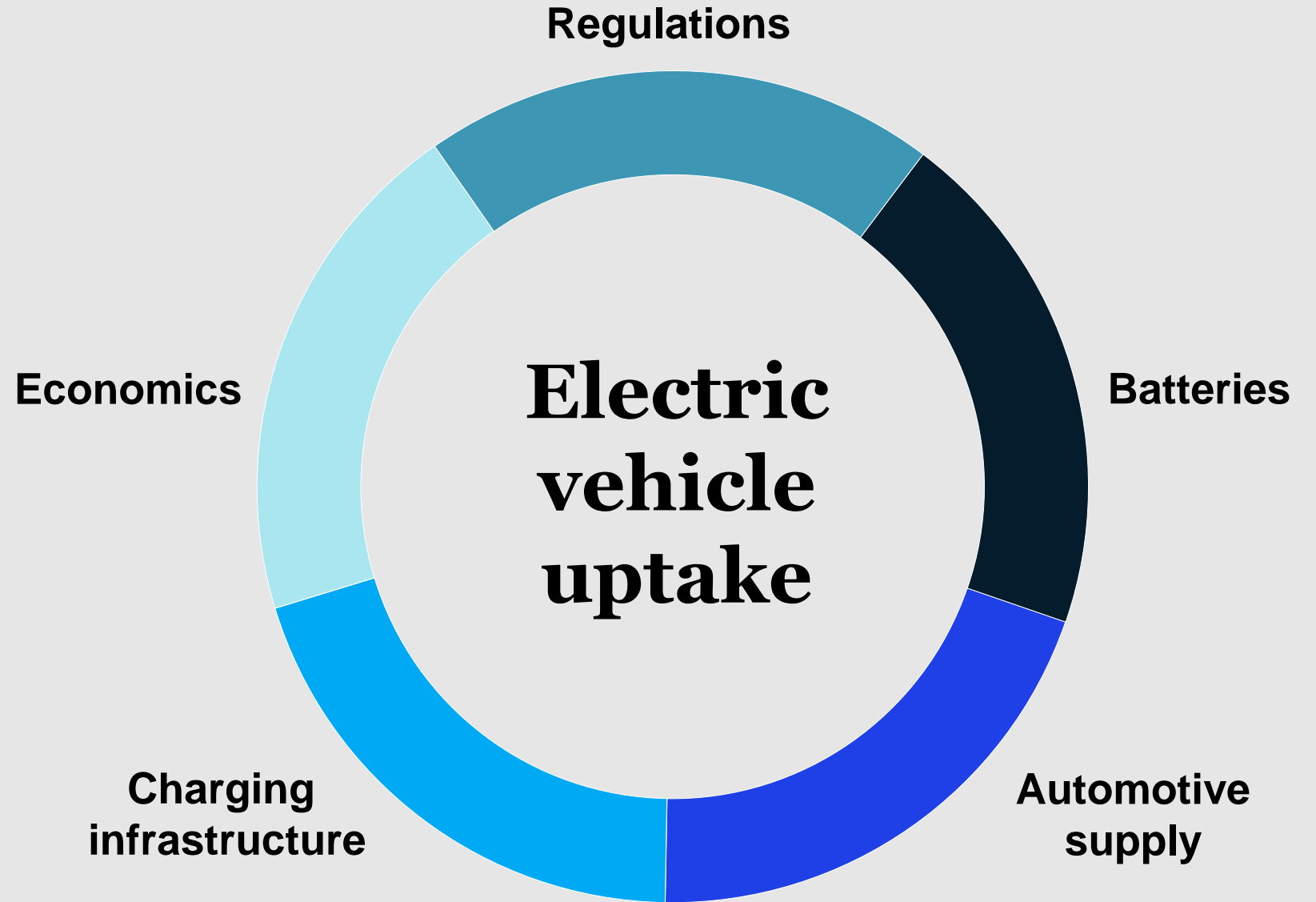
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Historically, EV projections have been increasing year over year

Global annual EV passenger car sales
Million units

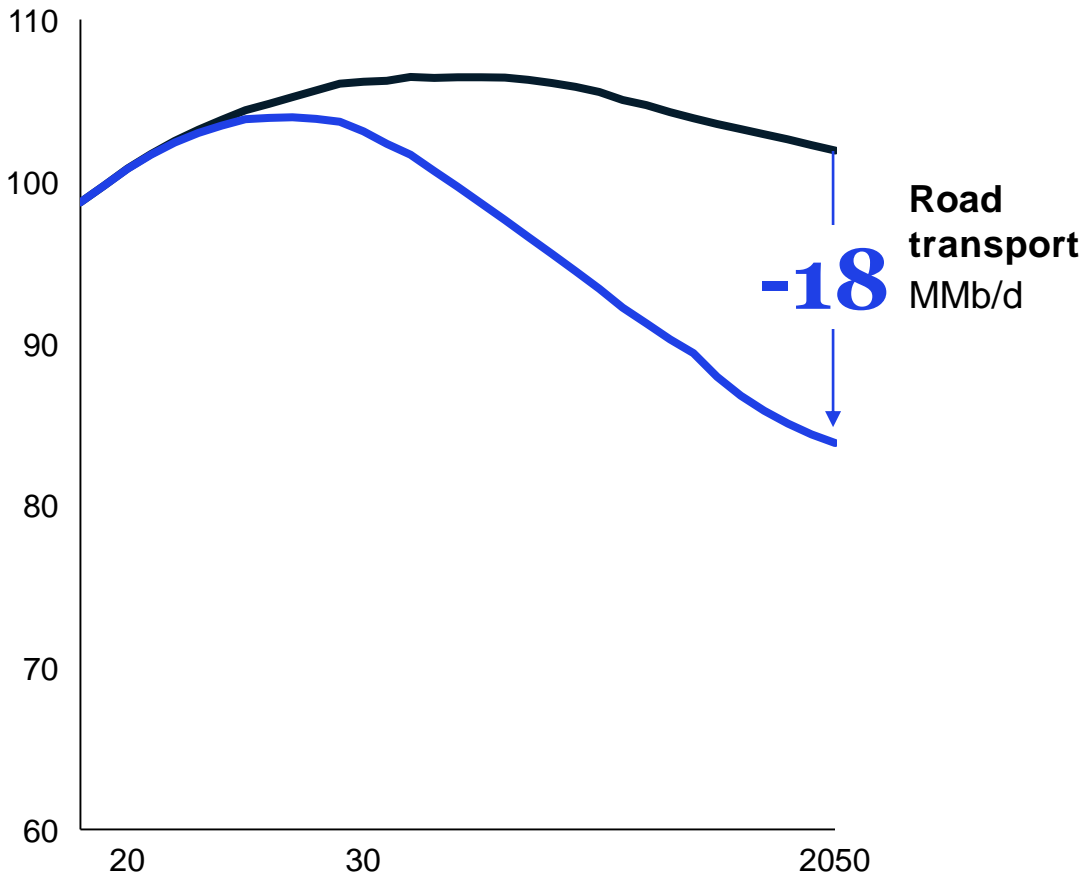


What to watch...

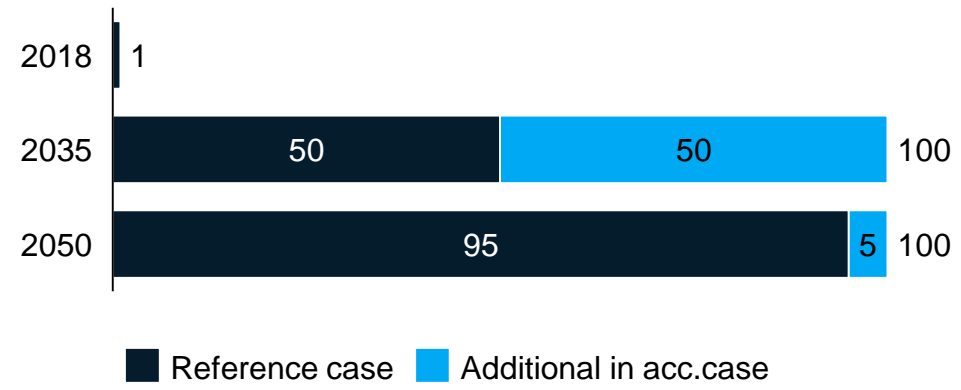


In an accelerated EV transition case, oil demand would reduce by additional 18 MMb/day by 2050

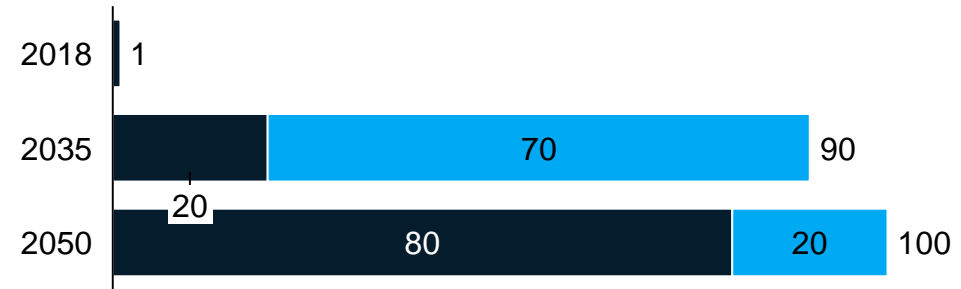
Global liquids demand, MMb/d



EV passenger car penetration
EVs as % of new passenger car sales (EU + China)



EV commercial vehicle penetration
EVs as % of new truck sales (China + EU)



Source: McKinsey Energy Insights Global Energy Perspective April 2020