

BP Energy Outlook

2017 edition



Mark Finley

EIA workshop: Financial and Physical Oil Market Linkages

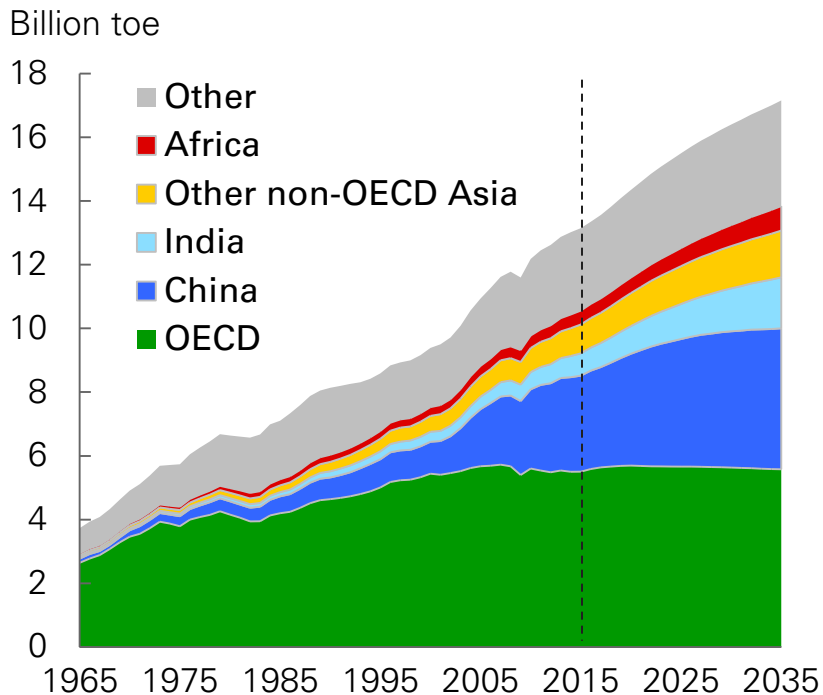
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Key features of the energy outlook

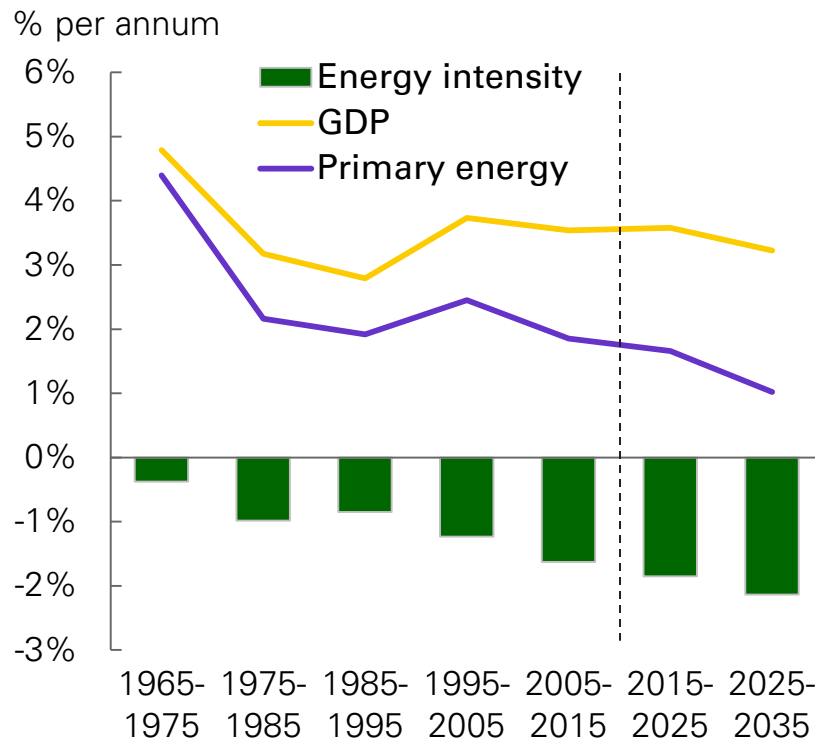
- Global energy demand continues to grow; gradually decarbonizes
- “Deep dive” into prospects for EVs and broader mobility changes to impact oil demand
- ...and potential producer responses

Global energy demand

Energy consumption by region



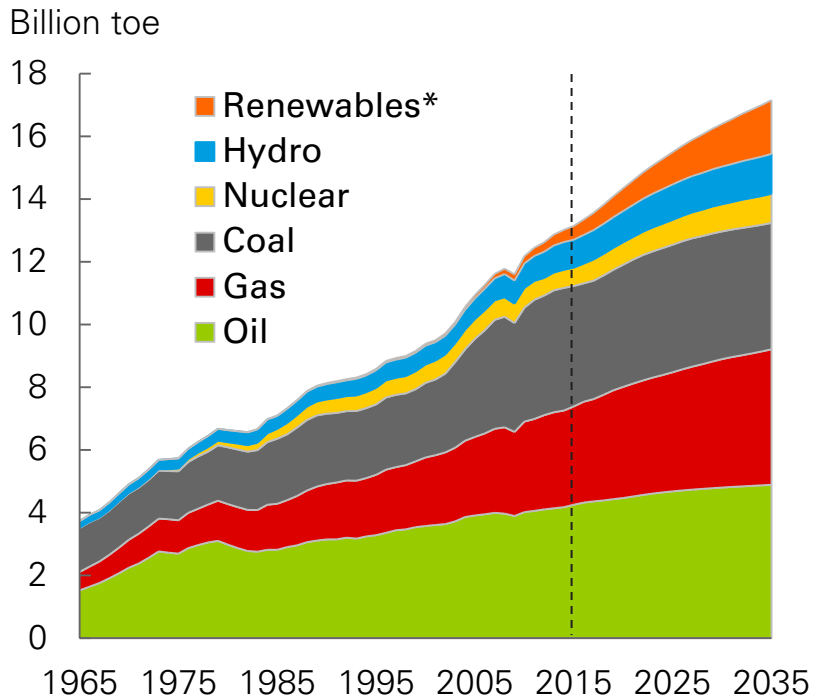
Growth in GDP and primary energy



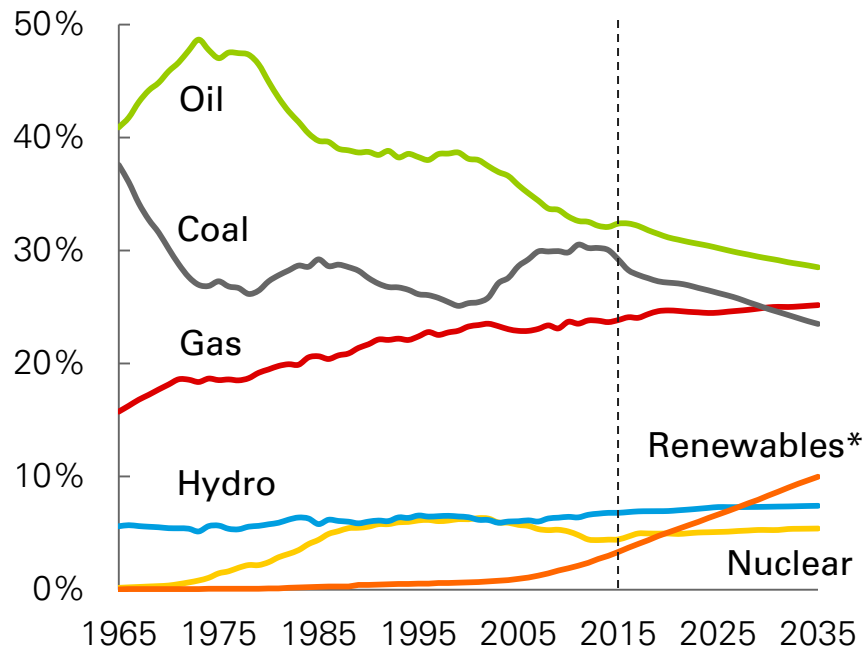
Fuel mix



Primary energy consumption by fuel



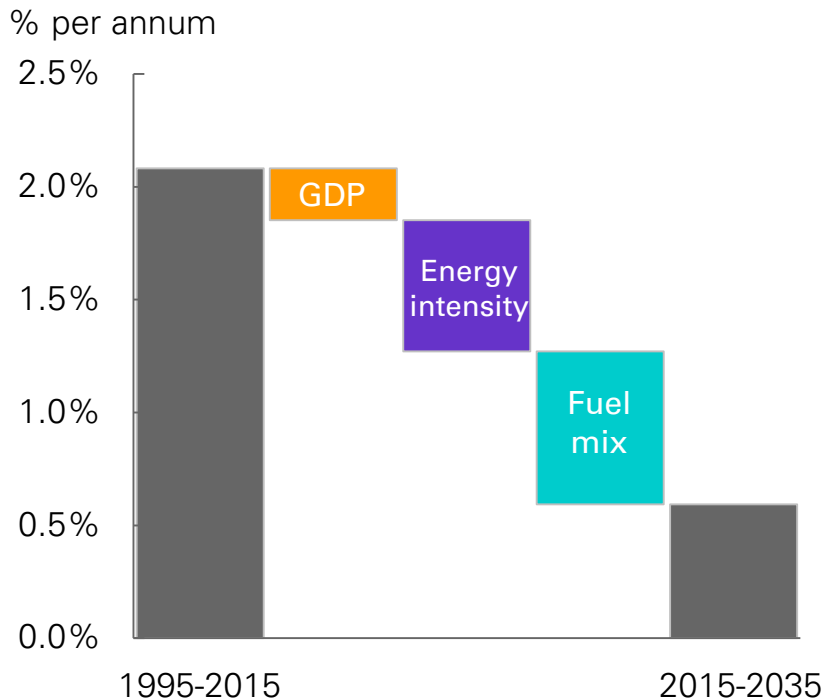
Shares of primary energy



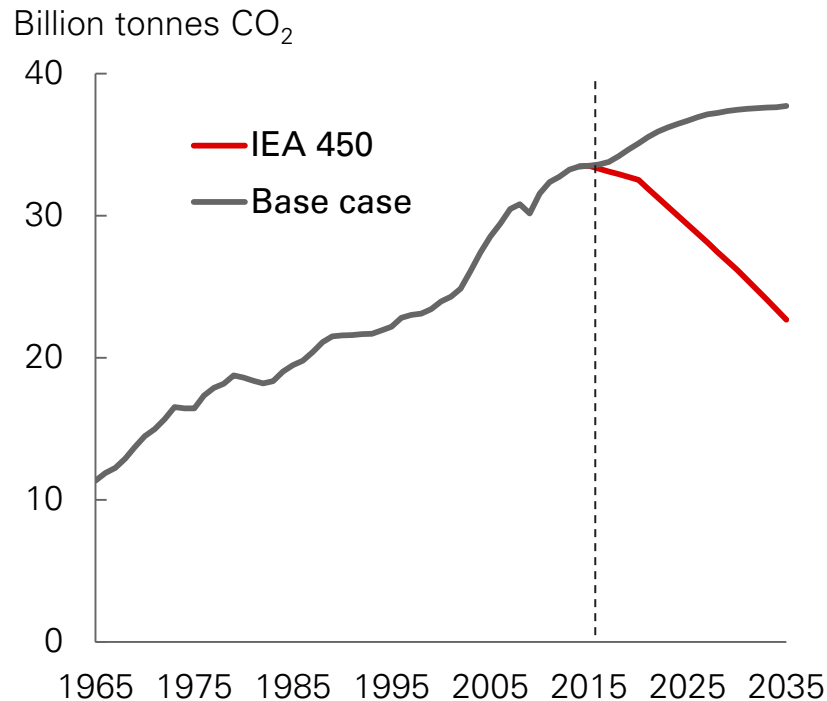
*Renewables includes wind, solar, geothermal, biomass, and biofuels

Carbon emissions

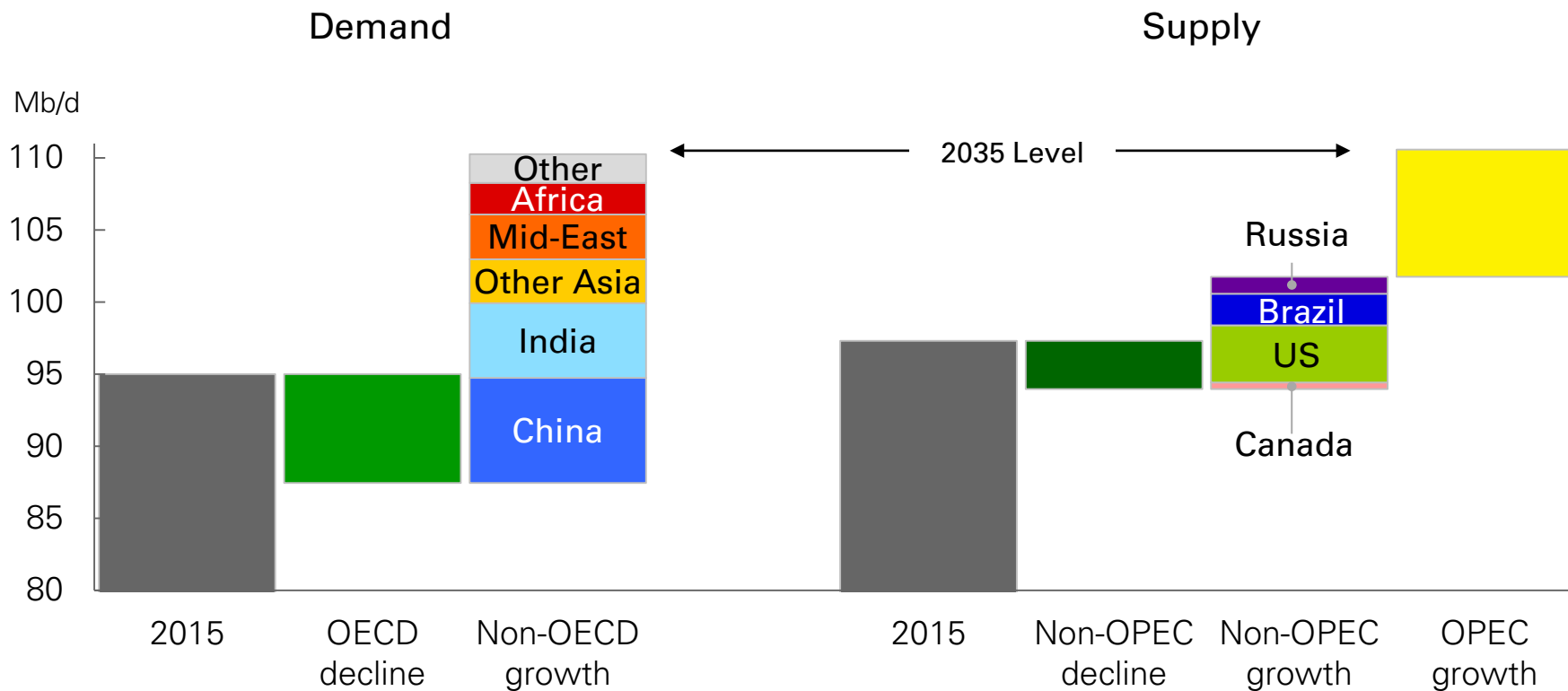
Contributions to slower growth of carbon emissions



Carbon emissions



Oil: Growing EM demand met by OPEC, US

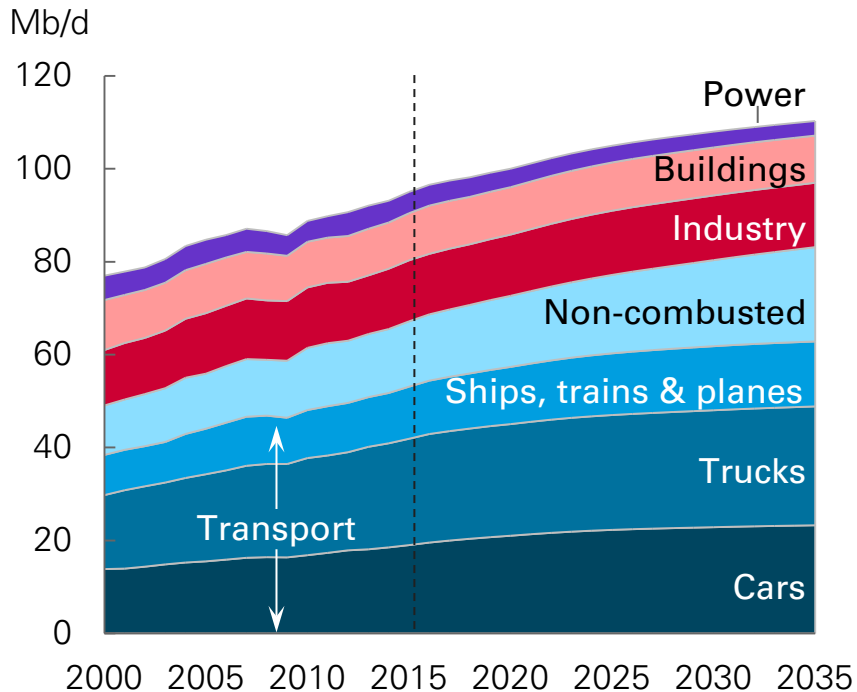


Oil

- How might electric cars and the broader mobility revolution affect oil demand?
- How might the abundance of oil resources affect the behavior of low-cost oil producers?

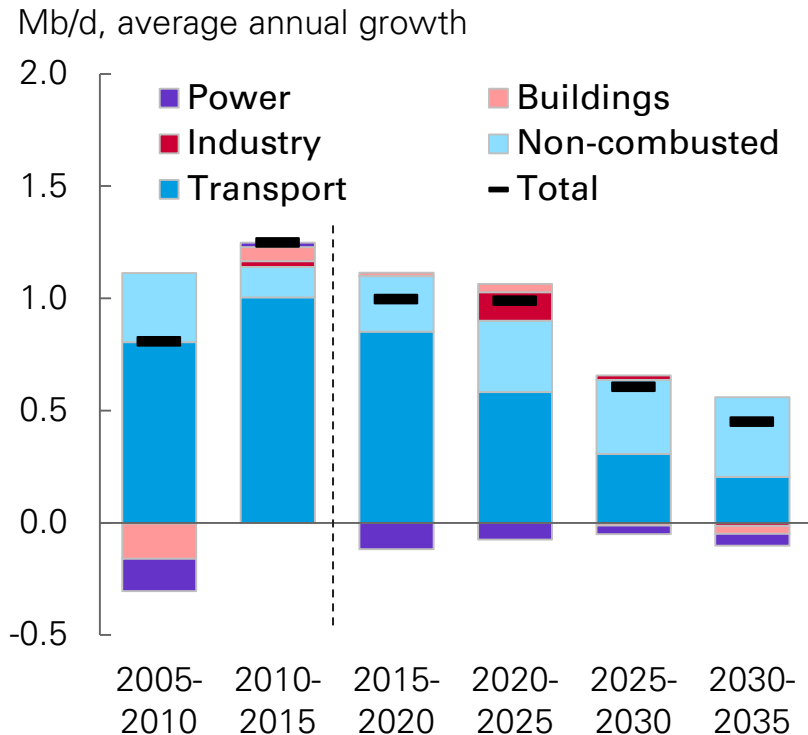
Oil demand

Liquids demand



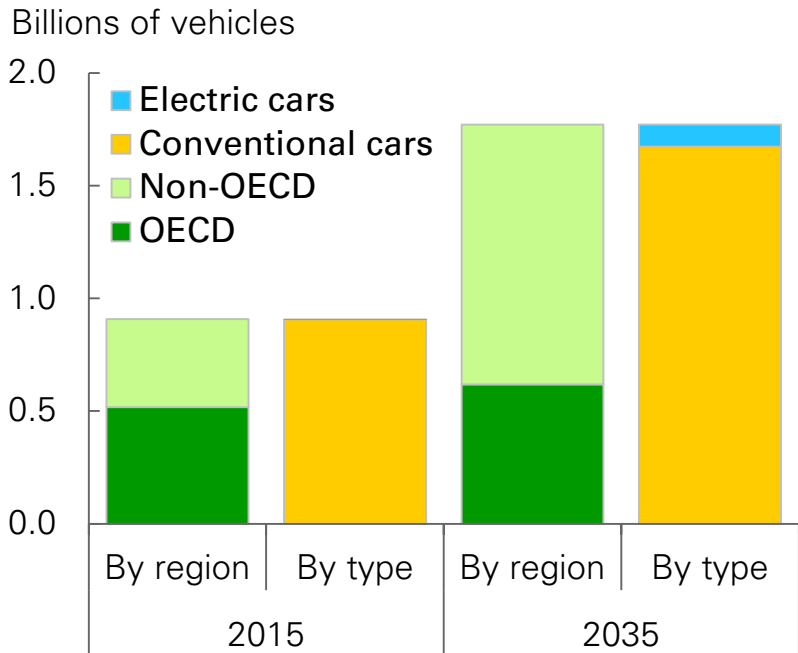
Liquids includes oil, biofuels and derivatives of coal and natural gas

Liquids demand growth

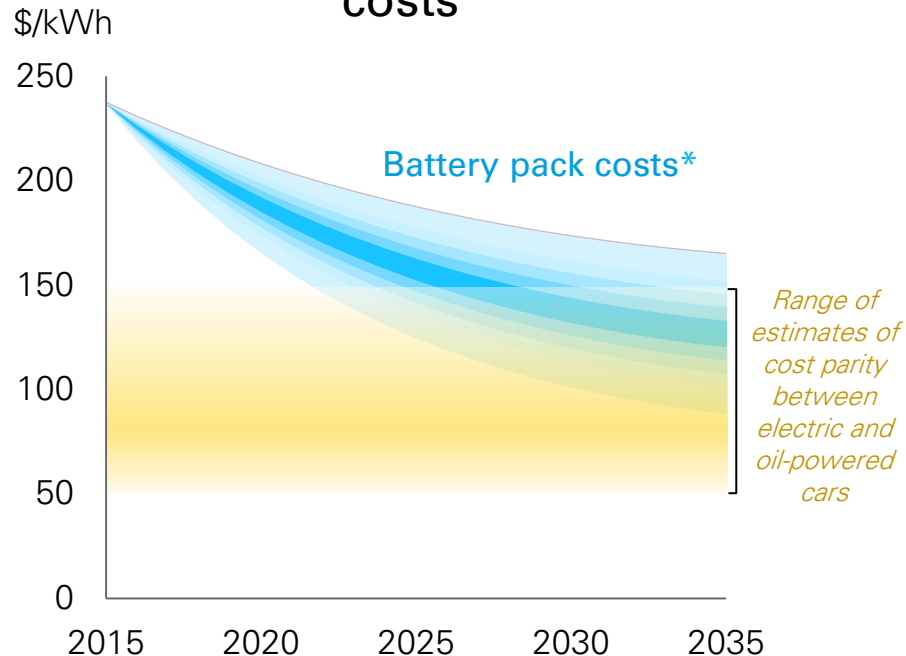


Growth of electric cars

The global car fleet: 2015-2035



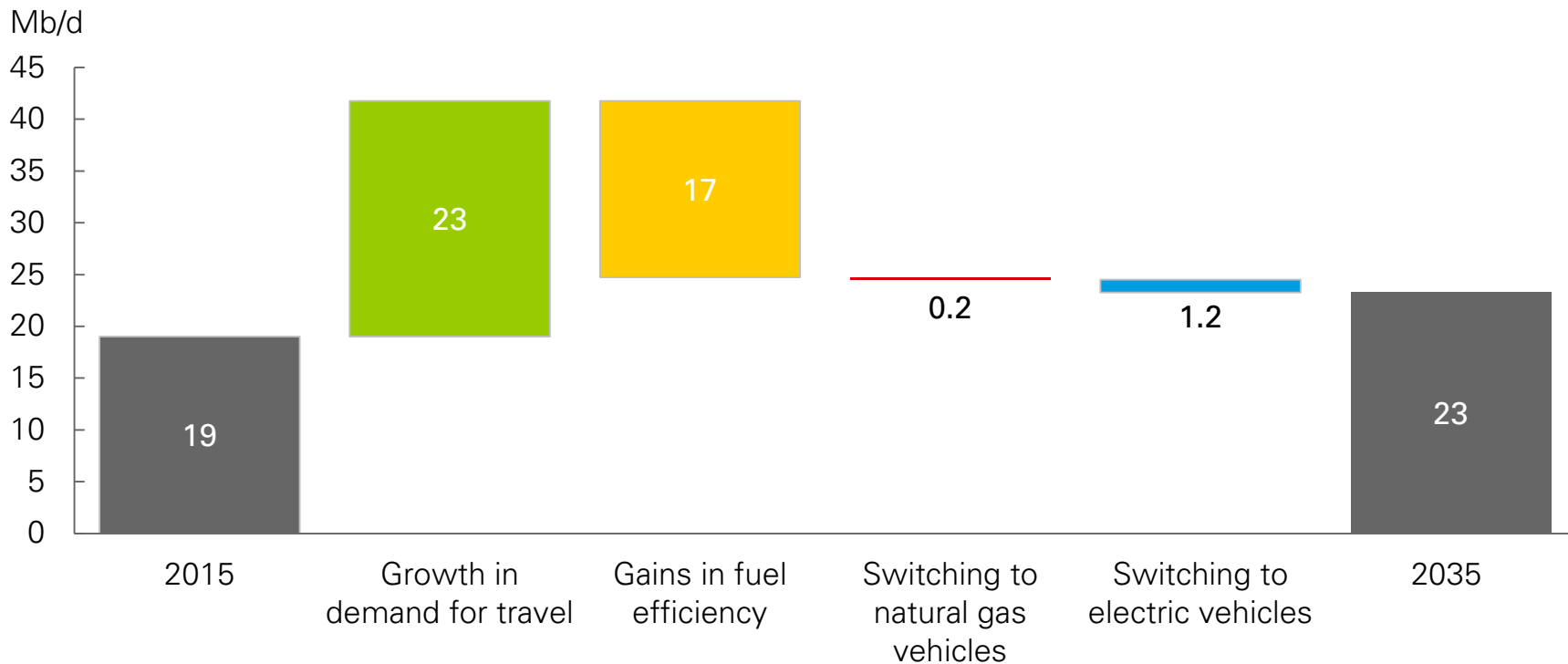
Illustrative path for battery pack costs



*For a Battery Electric Vehicle with a 60 kWh pack. Cost projections depend heavily on the degree of EV uptake, which is uncertain, so ranges should be treated as illustrative only. Current estimates of battery costs also vary widely, but this uncertainty is not shown

Liquid fuel demand from cars

Decomposing changes in liquids demand from cars: 2015-2035



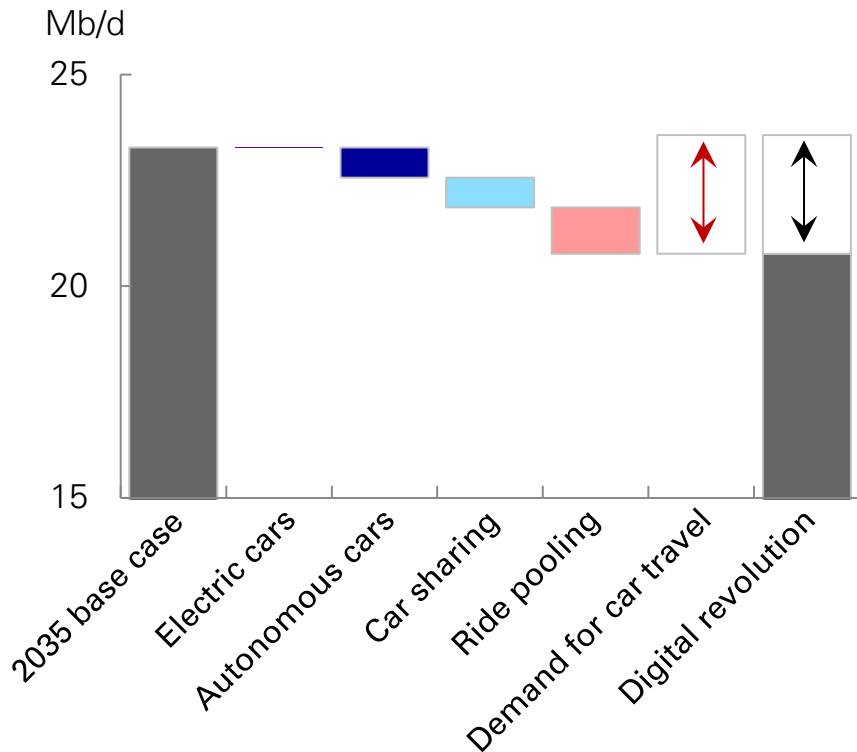
Mobility revolution

- **Electric cars:** lead to a switch away from conventional cars
- **Autonomous vehicles:** improve fuel efficiency via efficient driving
- **Car sharing:** can amplify the effects of new-technology cars
- **Ride pooling:** reduce total miles driven by pooling journeys

Mobility revolution scenarios

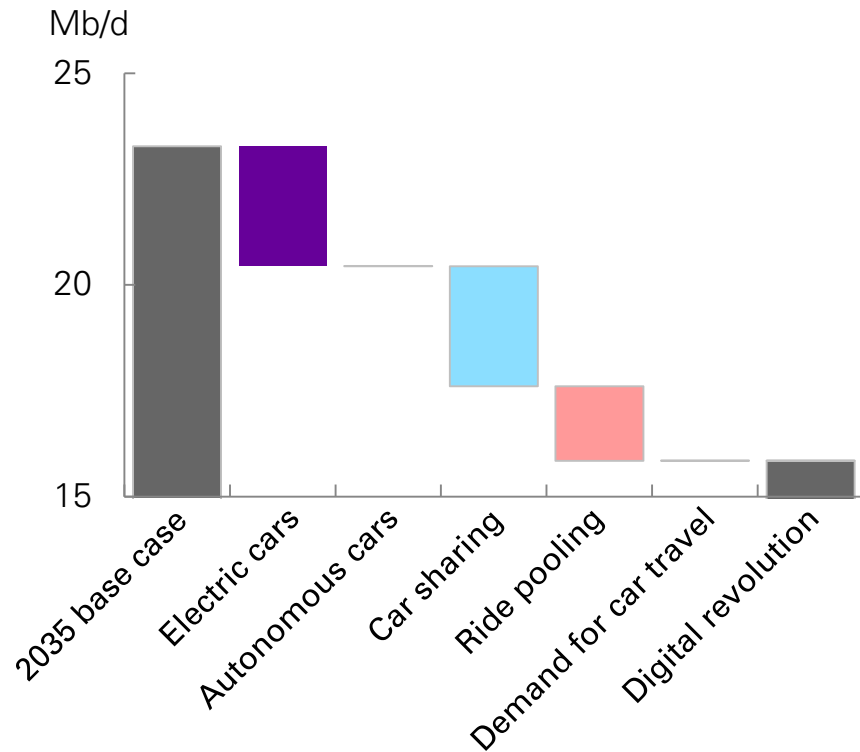
Digital revolution:

Impact on oil demand in cars in 2035



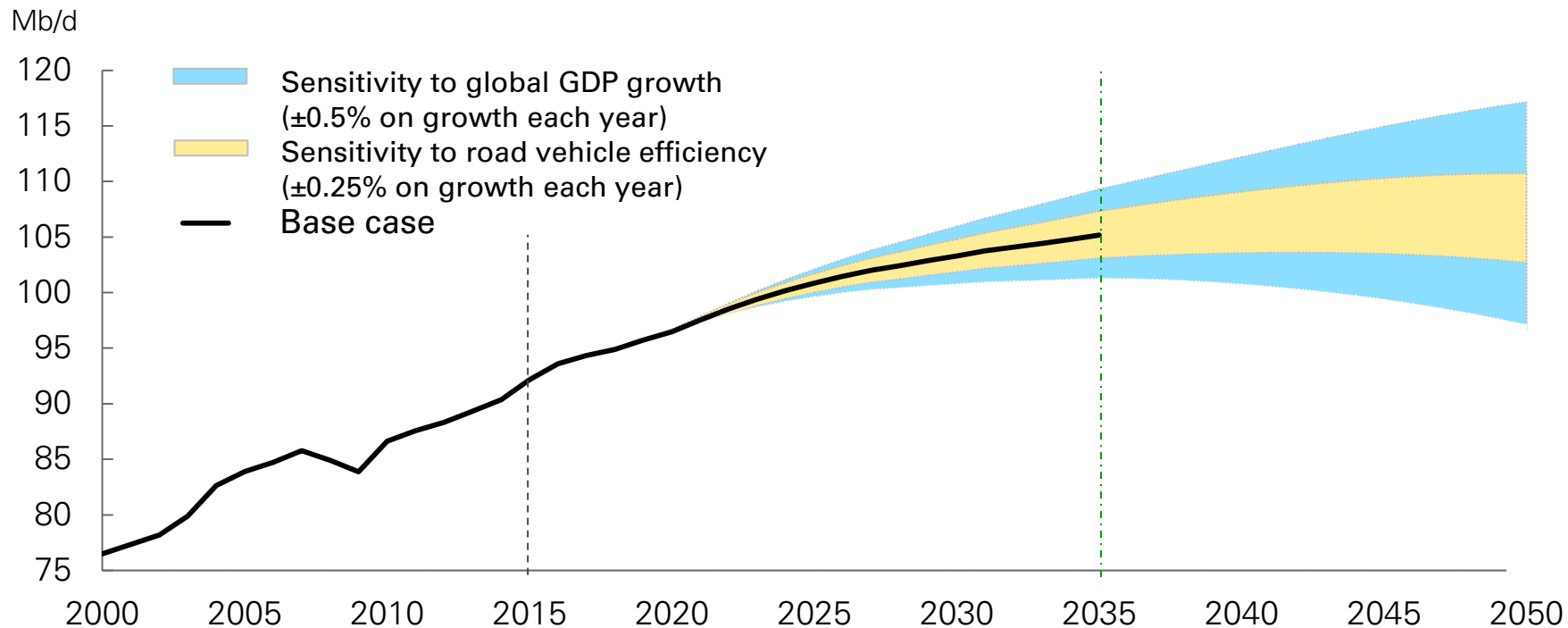
Electric revolution:

Impact on oil demand in cars in 2035



When will global oil demand peak?

Illustrative paths for oil demand under different assumptions

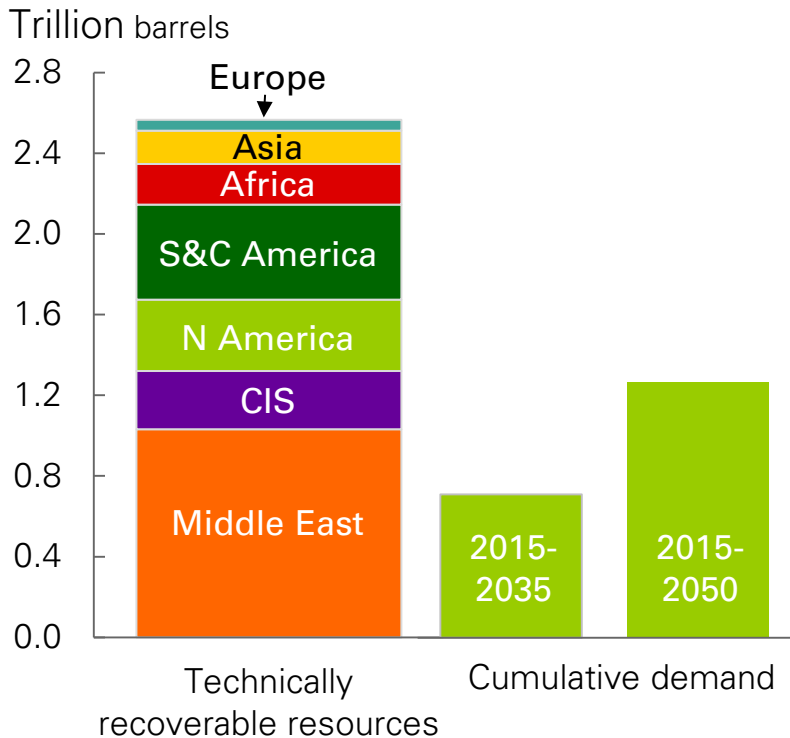


Oil

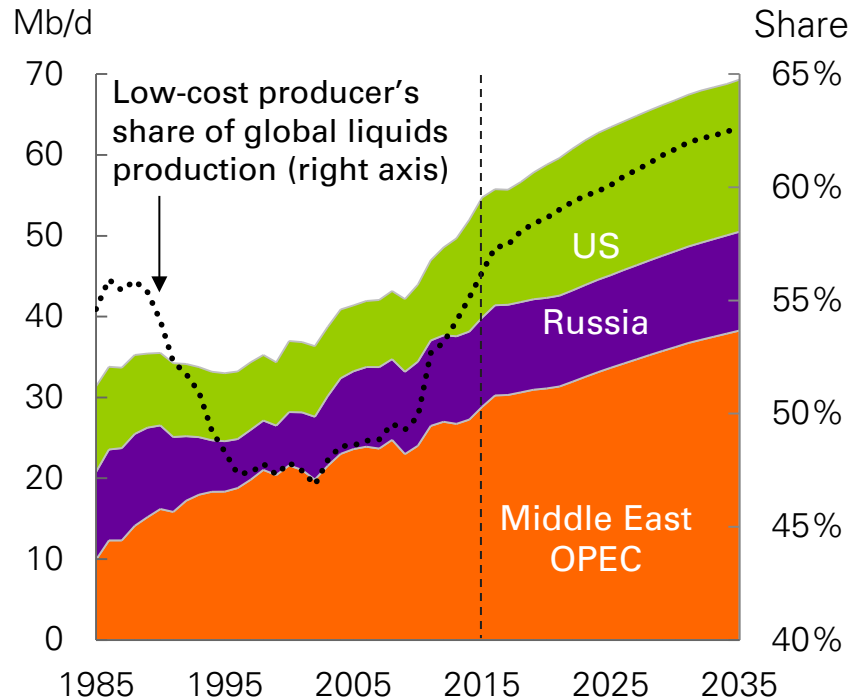
- How might electric cars and the broader mobility revolution affect oil demand?
- How might the abundance of oil resources affect the behavior of low-cost oil producers?

Abundance of oil resources

Estimates of technically recoverable resources and cumulative oil demand



Oil supply of lower-cost producers



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