



Decarbonising Europe's Trucks

How to Minimise Cost Uncertainty

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Potential technologies for heavy duty road freight

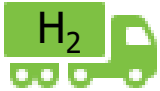
An assessment of total cost of ownership



Diesel Internal Combustion Engine Vehicle (ICEV)



Battery Electric Vehicle (BEV)



Hydrogen Fuel Cell Electric Vehicle (FCEV)



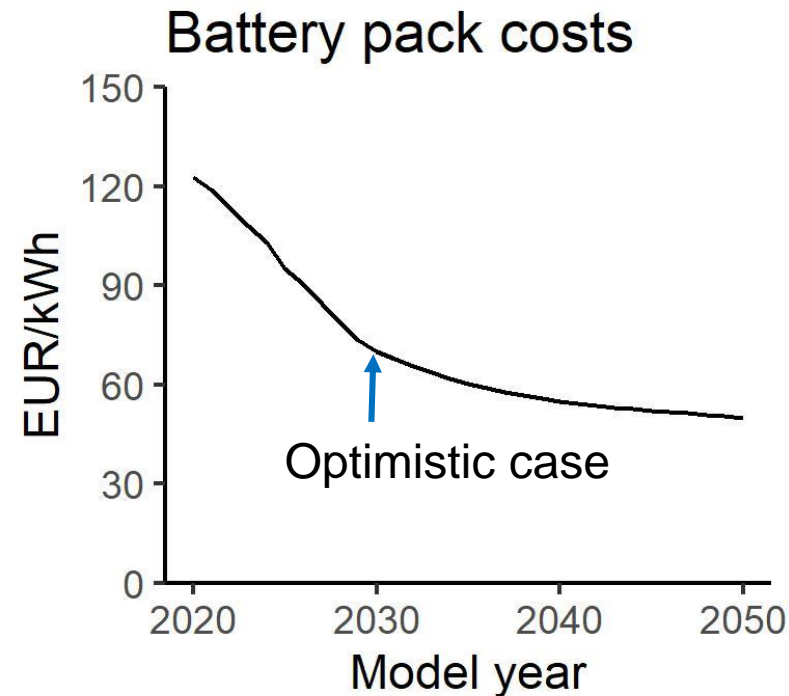
Catenary Electric Road System Vehicle (ERSV)

Navigating technological uncertainty

- Scenarios of the future are useful to evaluate policy decisions.
- However, scenarios are sensitive to assumptions. Risk unintentional bias.
- Exploring a range of futures can help to account for uncertainty.

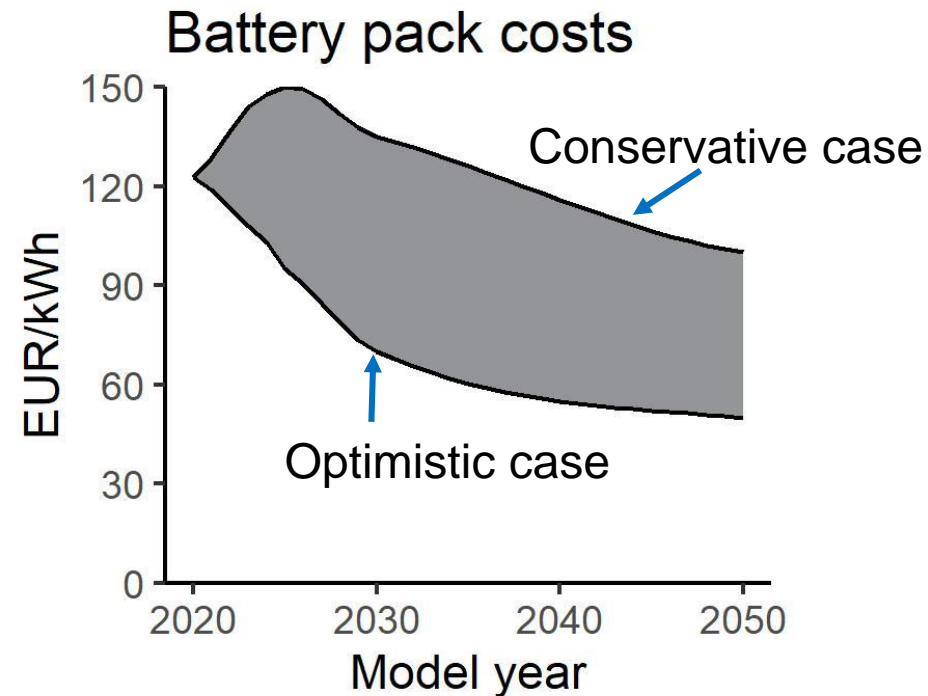
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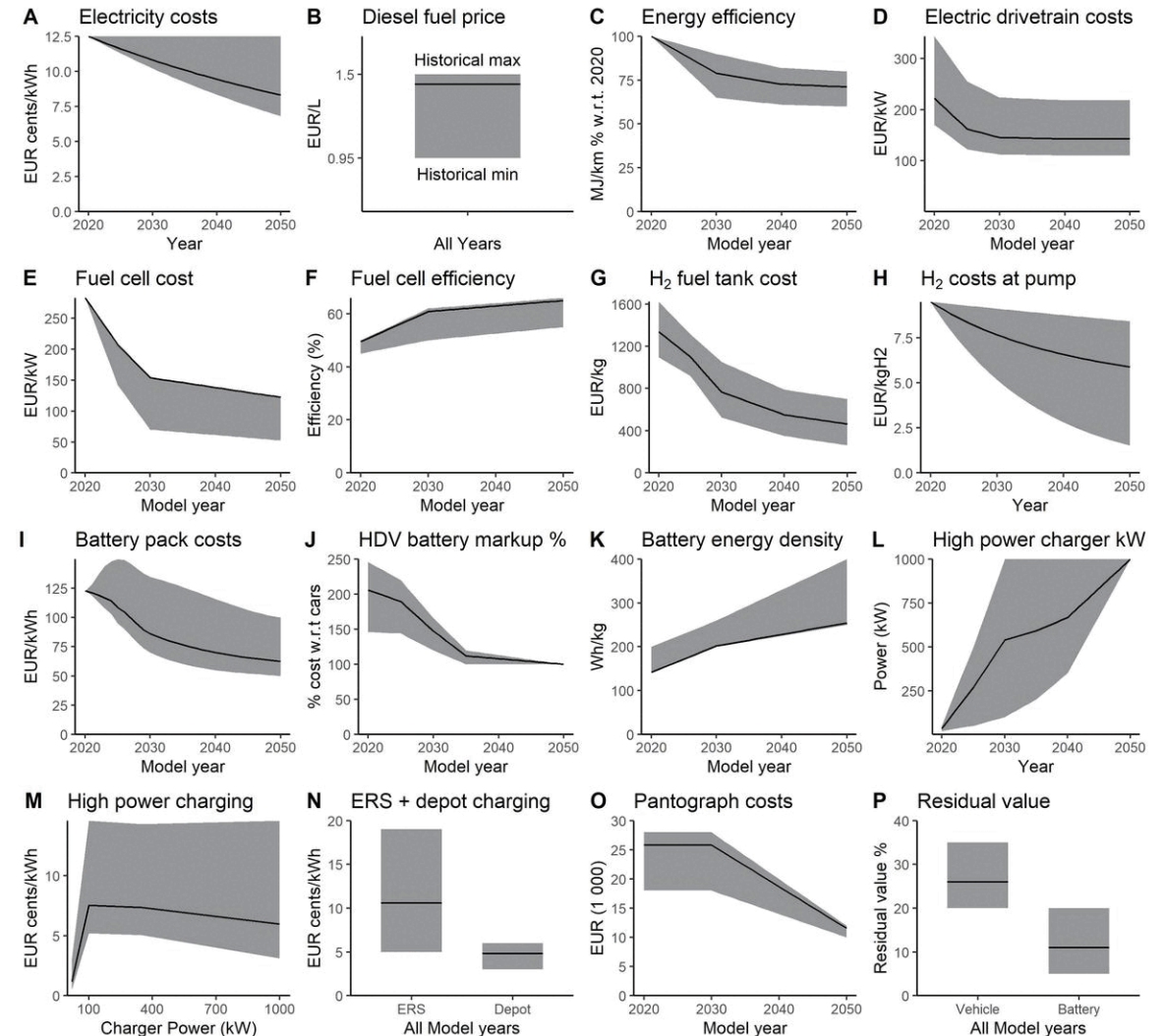
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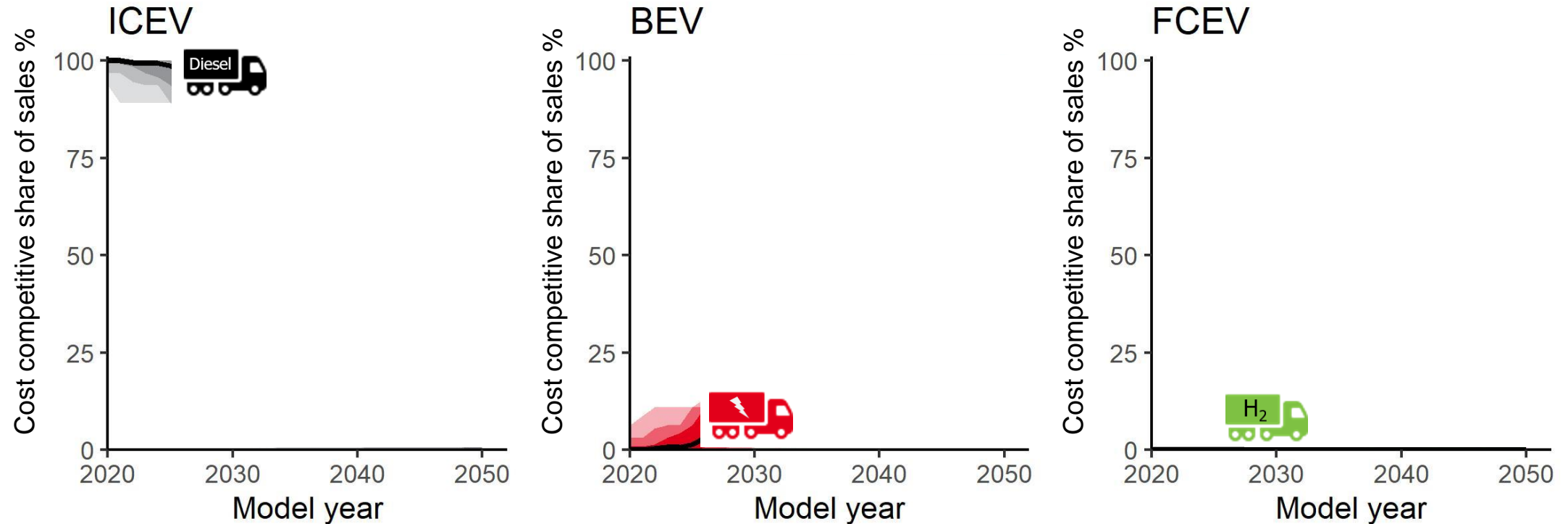
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The future of road freight is electric

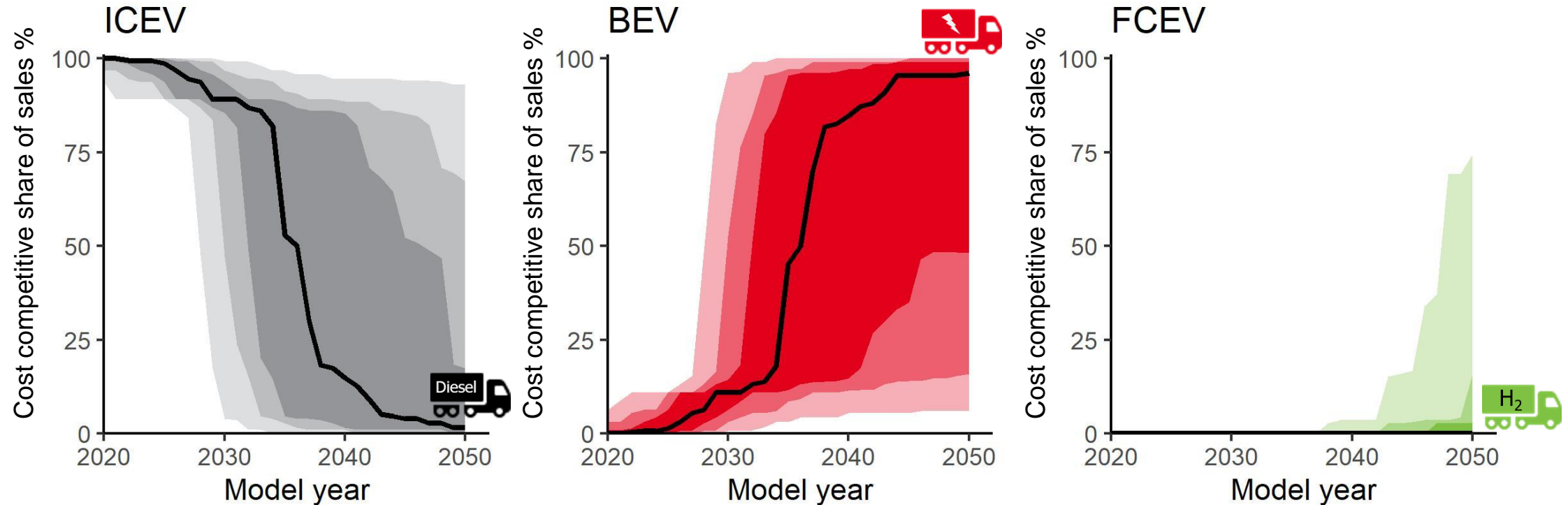
The share of the HDV market that each technology could theoretically attain by having the lowest TCO.



Notes: Black line denotes the median scenario, shading denotes 50th, 75th and 95th percentiles of the multiple scenarios explored.

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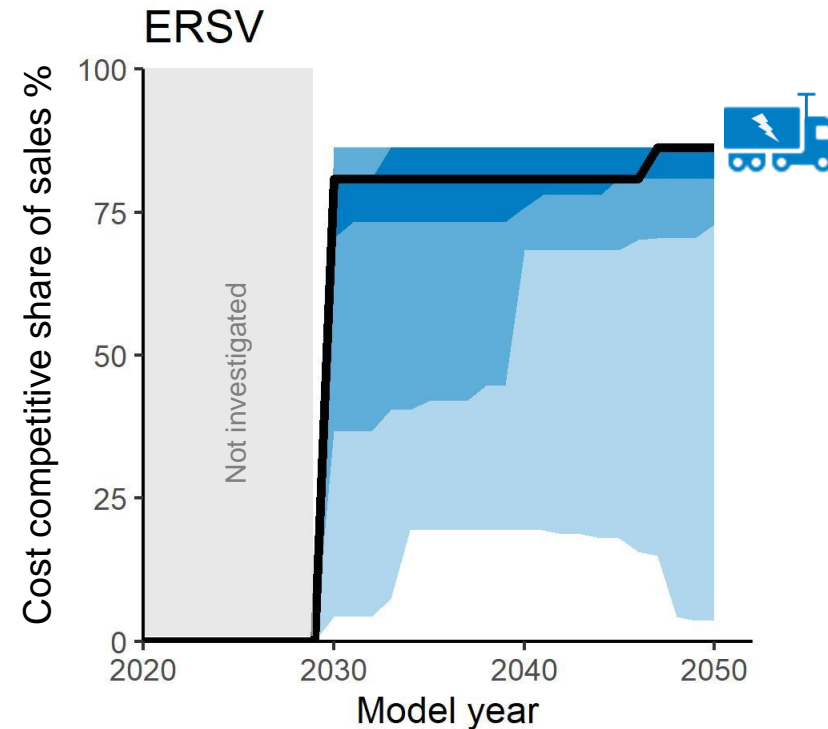


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Key point: **BEVs** have the potential to outcompete **ICEV** and **FCEV** options, even without incentives.

Electric road systems could be cost competitive

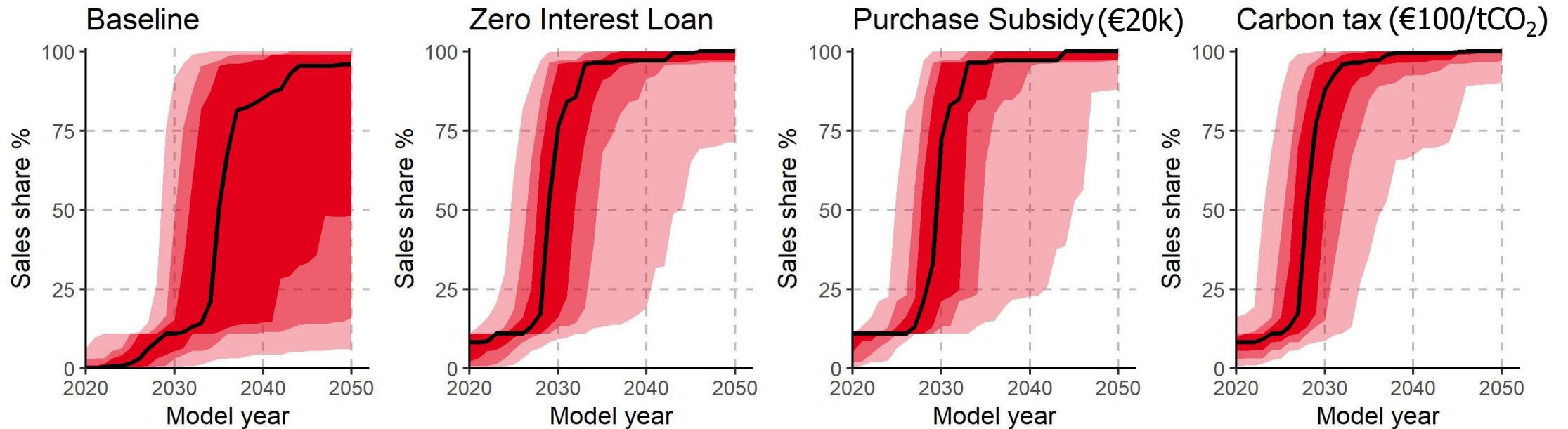
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Key point: **ERSVs** could be cost competitive but their utilisation and speed of deployment are uncertain.

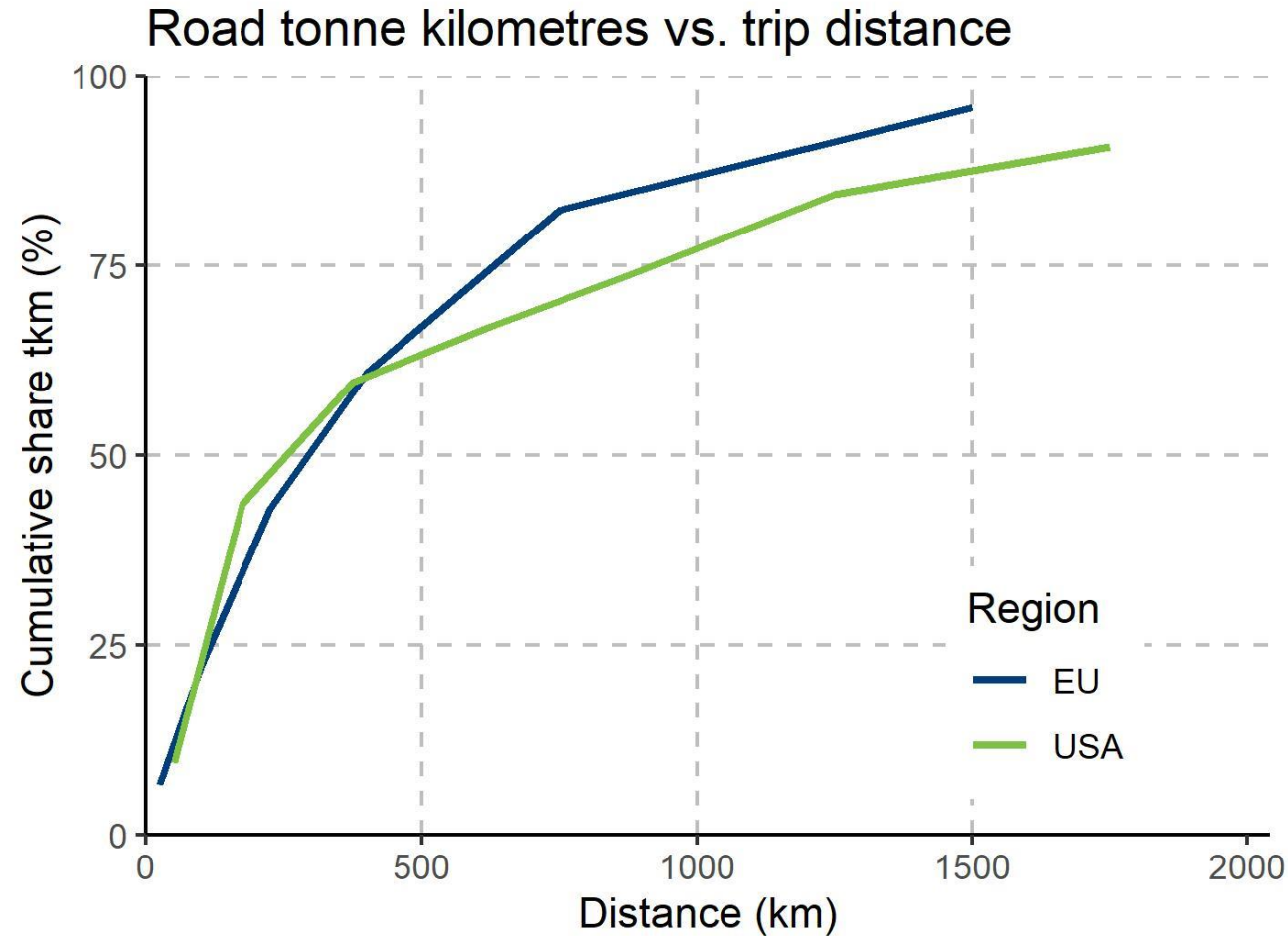
The impact of policy measures



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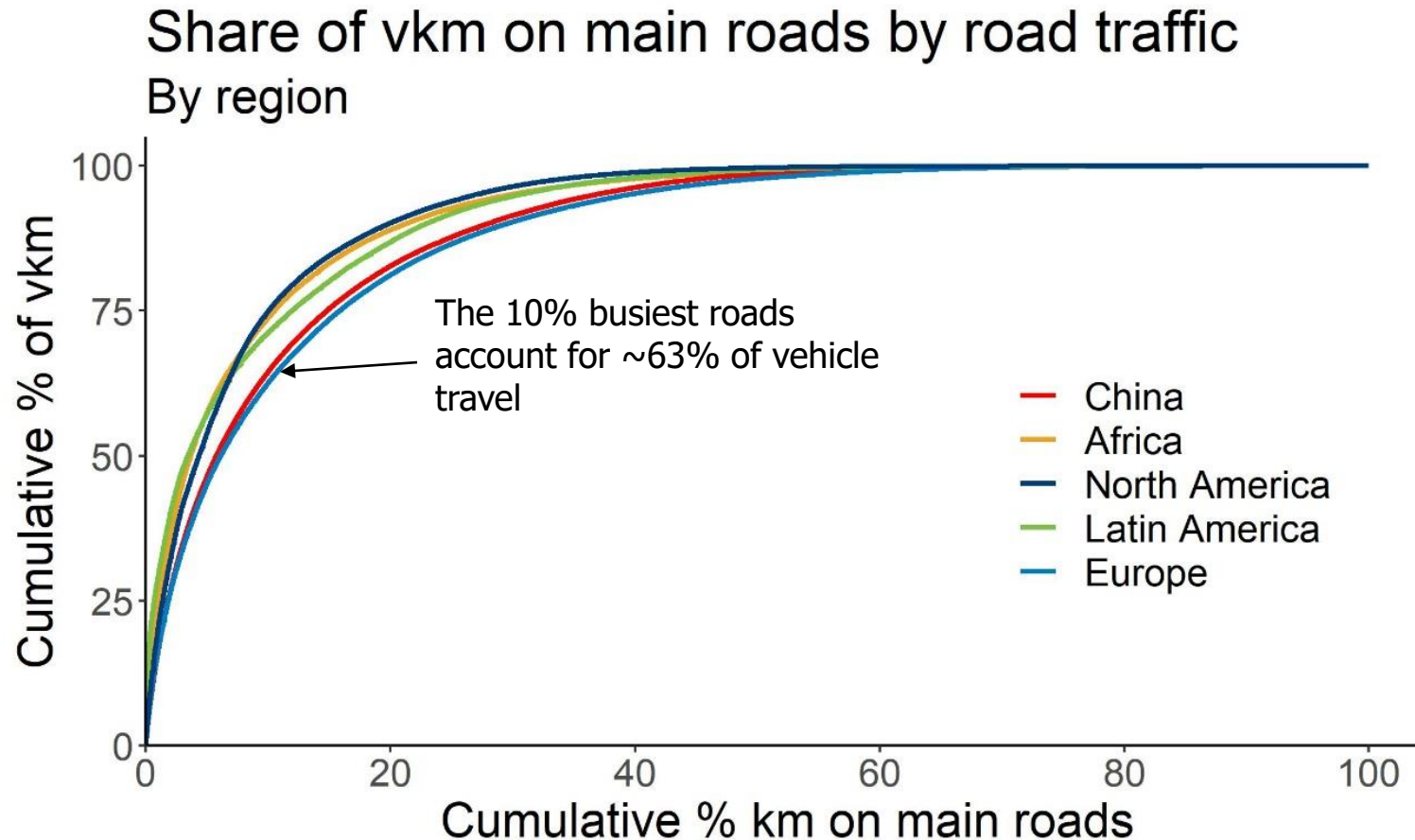
Key point: Policy support of various kinds can shift the range of uncertainty, unlocking high ambition possibilities

How does Europe compare to North America? (1)



Key point: North America has slightly longer distances but majority of journeys are still <1000 km (625 miles)

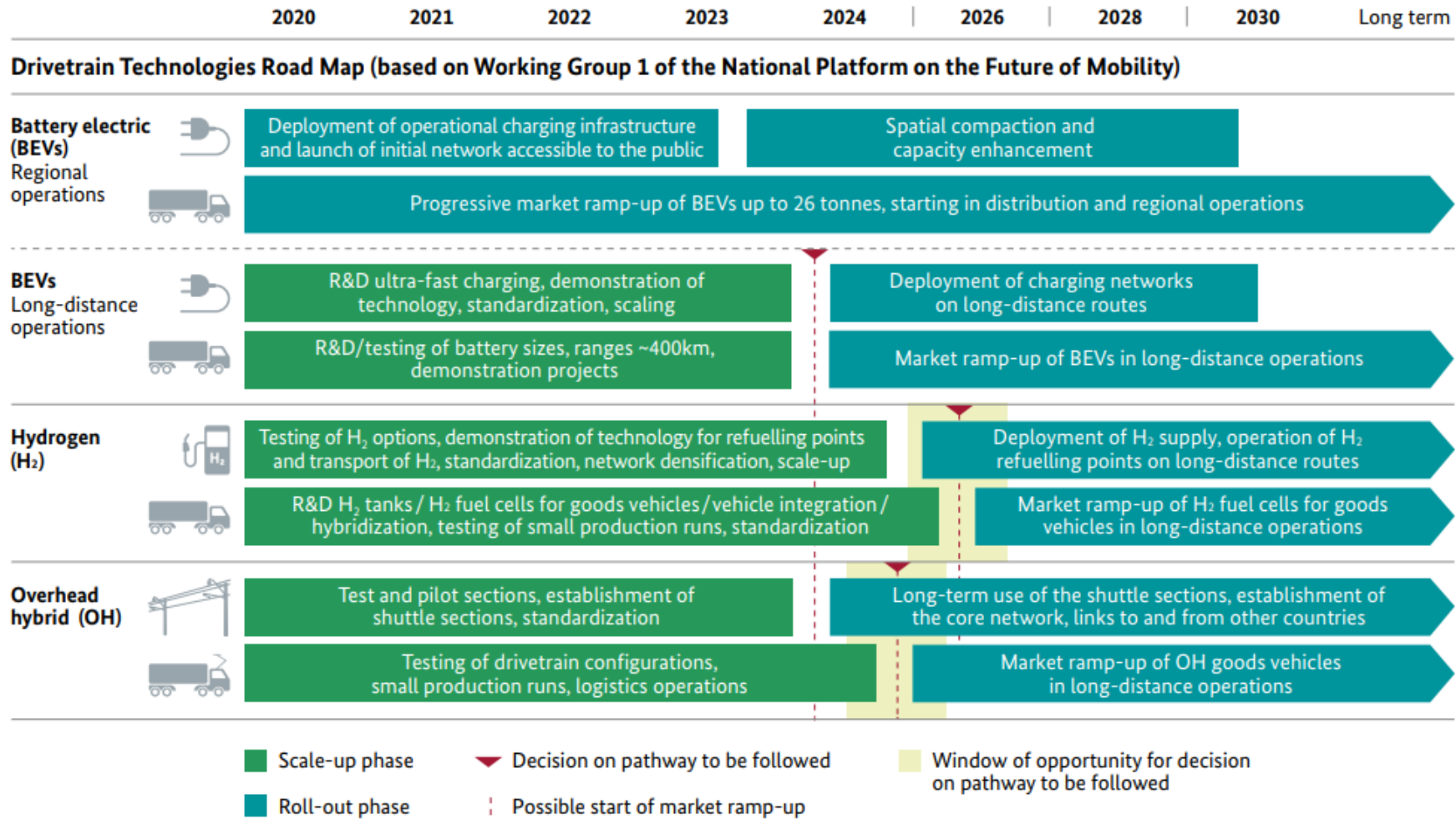
How does Europe compare to North America? (2)



Source: ITF Cleaner Vehicles (2021)

Key point: In all regions, most truck travel is on a small share of highly used roads.

An example from Germany



<https://bmdv.bund.de/SharedDocs/EN/publications/overall-approach-climate-friendly-commercial-vehicles.pdf>

Key point: Trial multiple technologies, (quickly) choose which has the highest potential, reserve government funding for highest performing and scale as quickly as possible.

Policy Recommendations

- Introduce policies that accelerate the deployment of zero-emission vehicles and their infrastructure.
- Ensure that policies to promote direct electrification of trucks remain technology-neutral.
- Launch targeted studies and pilot projects to assess the merits of electric road systems for road freight decarbonisation.
- Further investigate decarbonisation technologies for particularly challenging road freight applications.