

bp Energy Outlook
2024 edition

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Head of Transport & Future Mobility
Economic & Energy Insights

Plan for today

Some key aspects of our main Energy Outlook presentation

- Two scenarios to explore the outlook
- Common trends
- Implications of delay
- Accelerating the energy transition

A short focus on transportation

- Road Transportation
- Aviation and sustainable fuels
- Evolving our marine modelling

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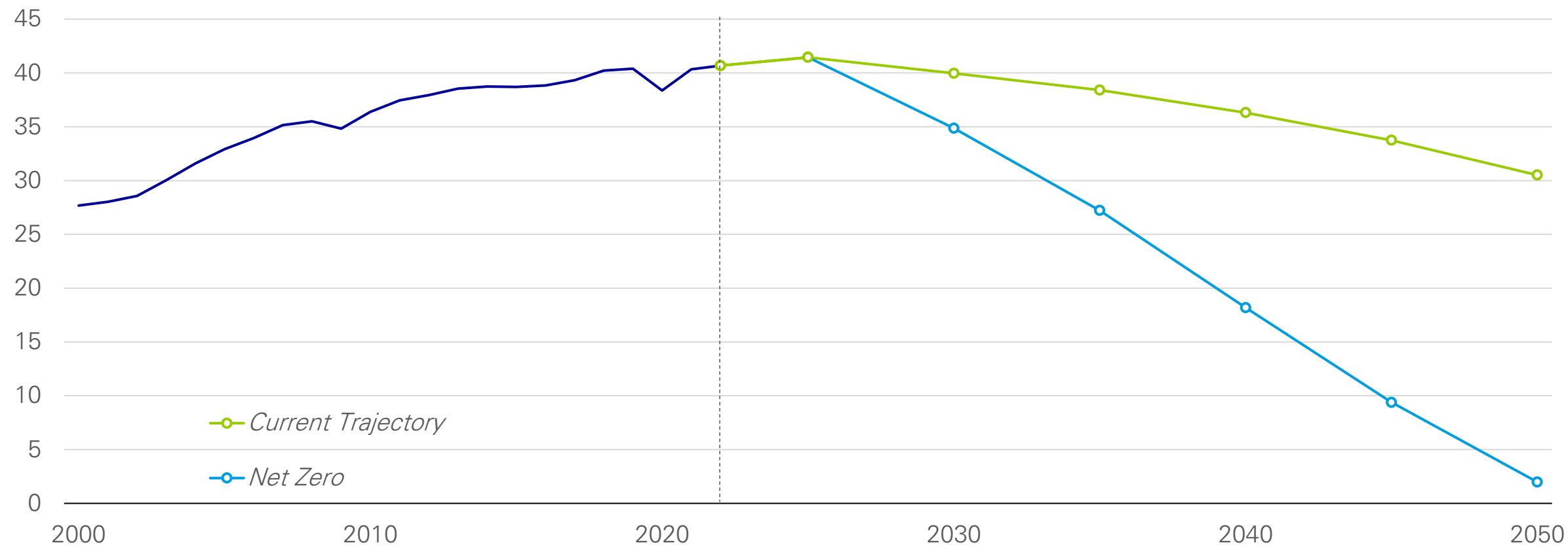
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Two scenarios to explore the *Energy Outlook*

Global carbon emissions

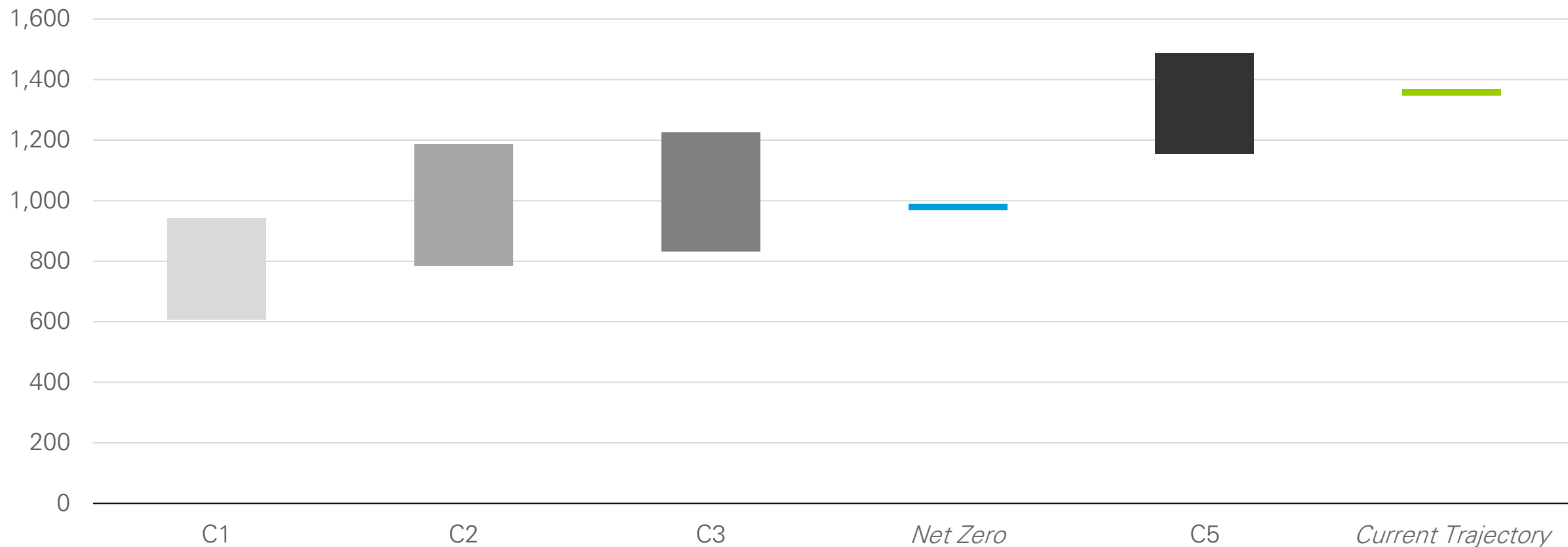
Gt of CO₂e



Comparing *Current Trajectory* and *Net Zero* with IPCC scenarios

Cumulative carbon emissions in IPCC scenarios 2015-2050

Gt of CO₂e



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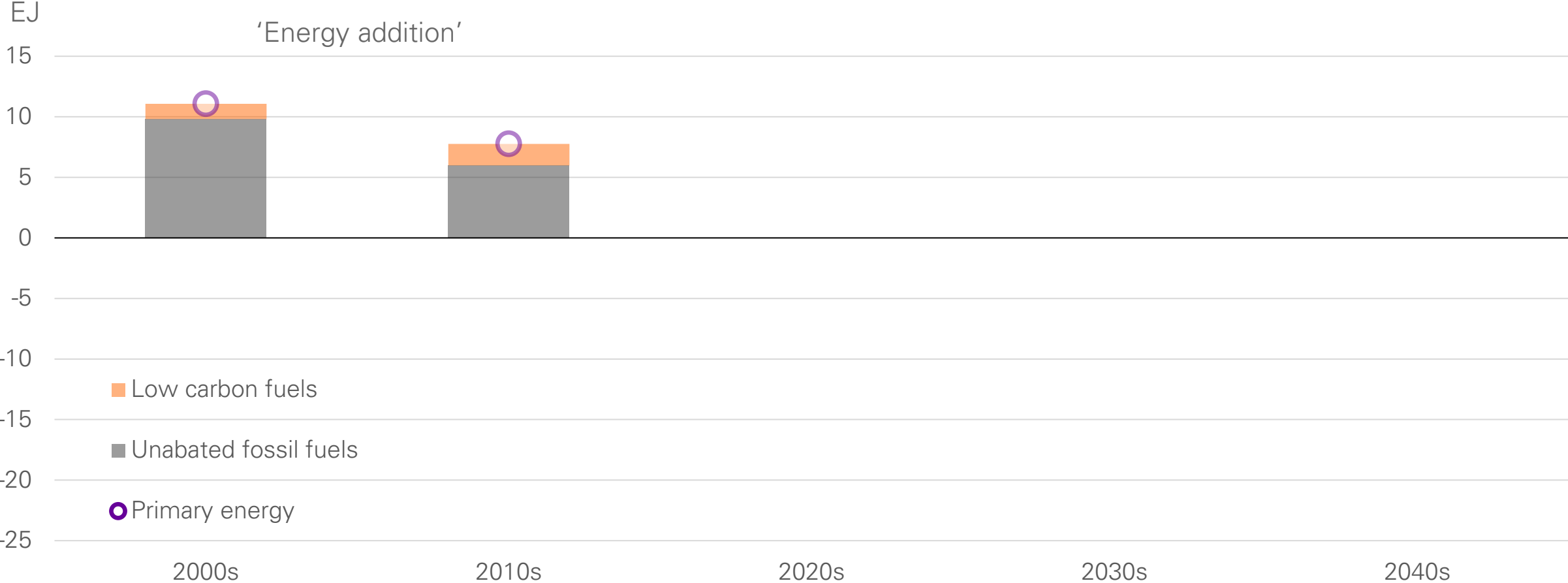
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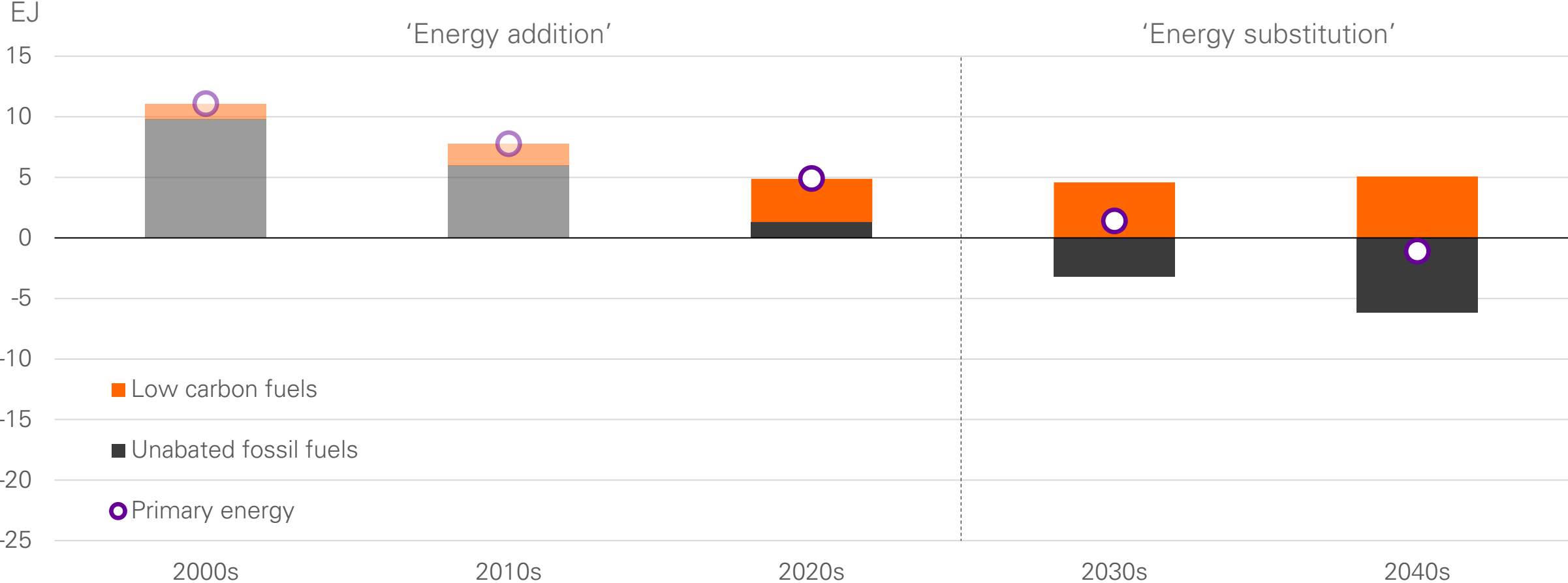
From 'energy addition' to 'energy substitution'

Average annual change in primary energy



From 'energy addition' to 'energy substitution'

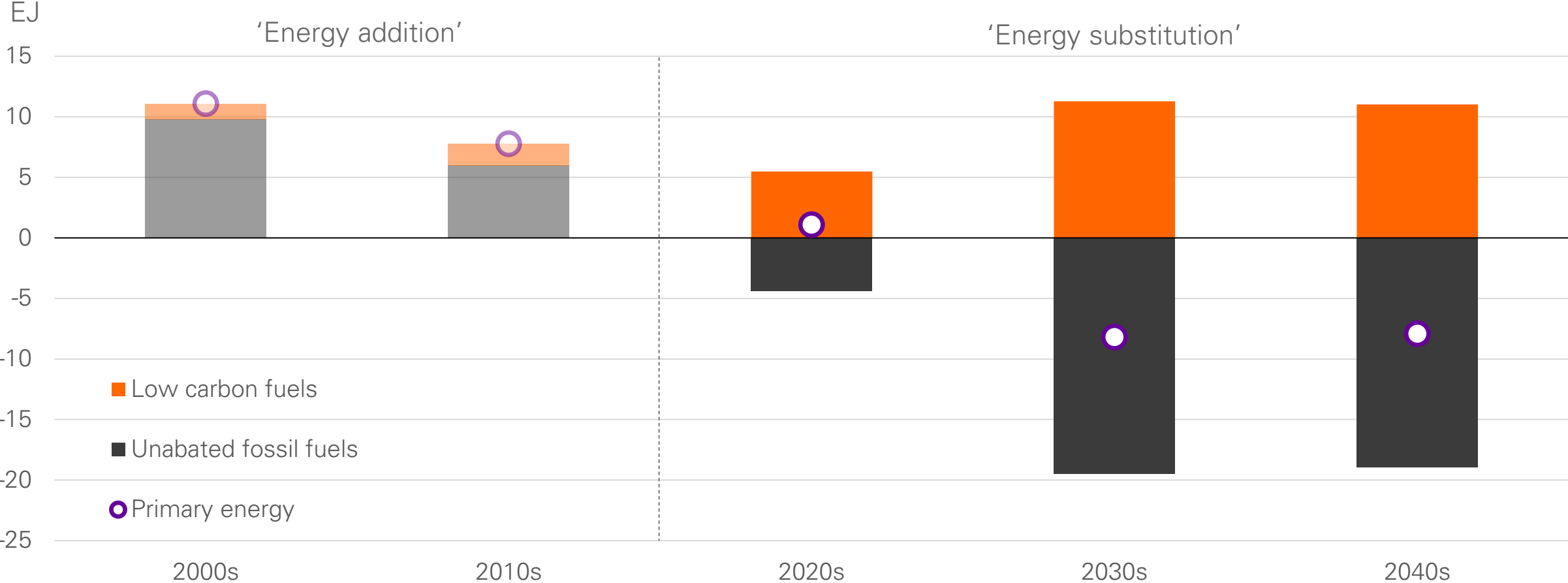
Average annual change in primary energy in *Current Trajectory*



Calculation does not include 2020 due to impact of Covid-19

From 'energy addition' to 'energy substitution'

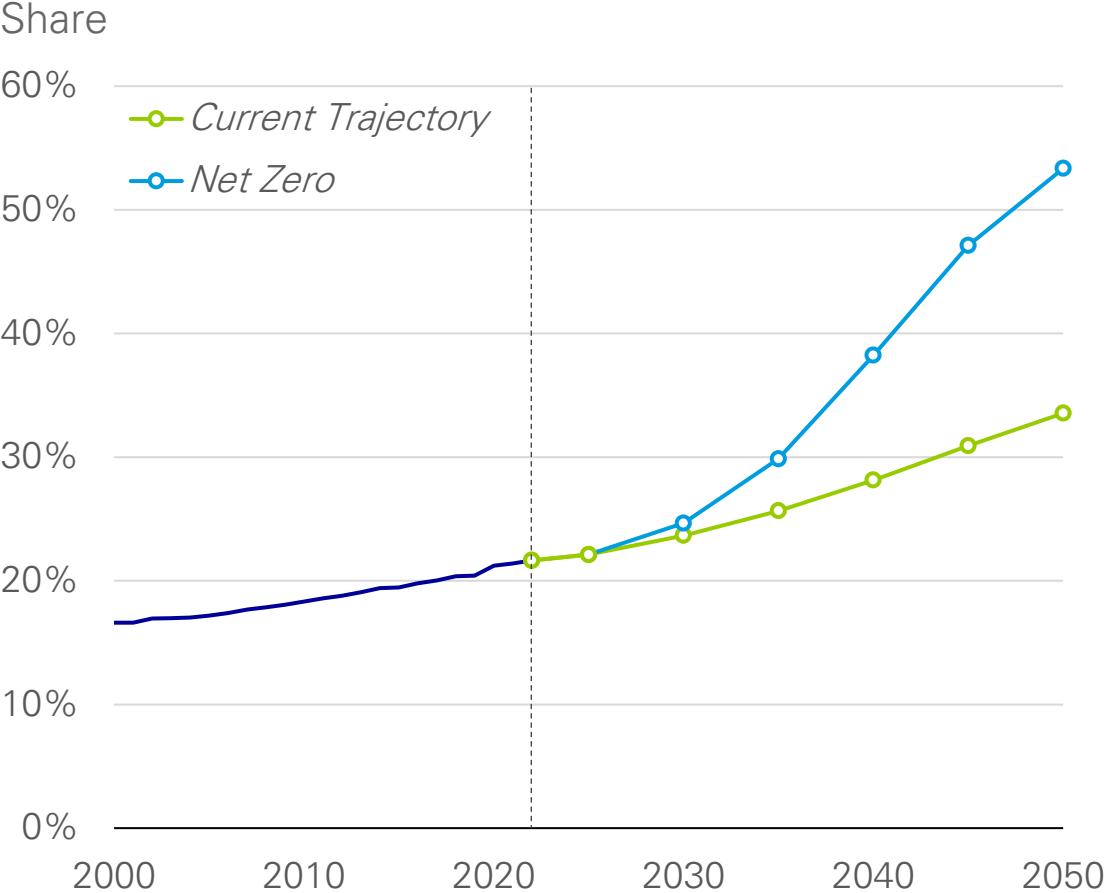
Average annual change in primary energy in *Net Zero*



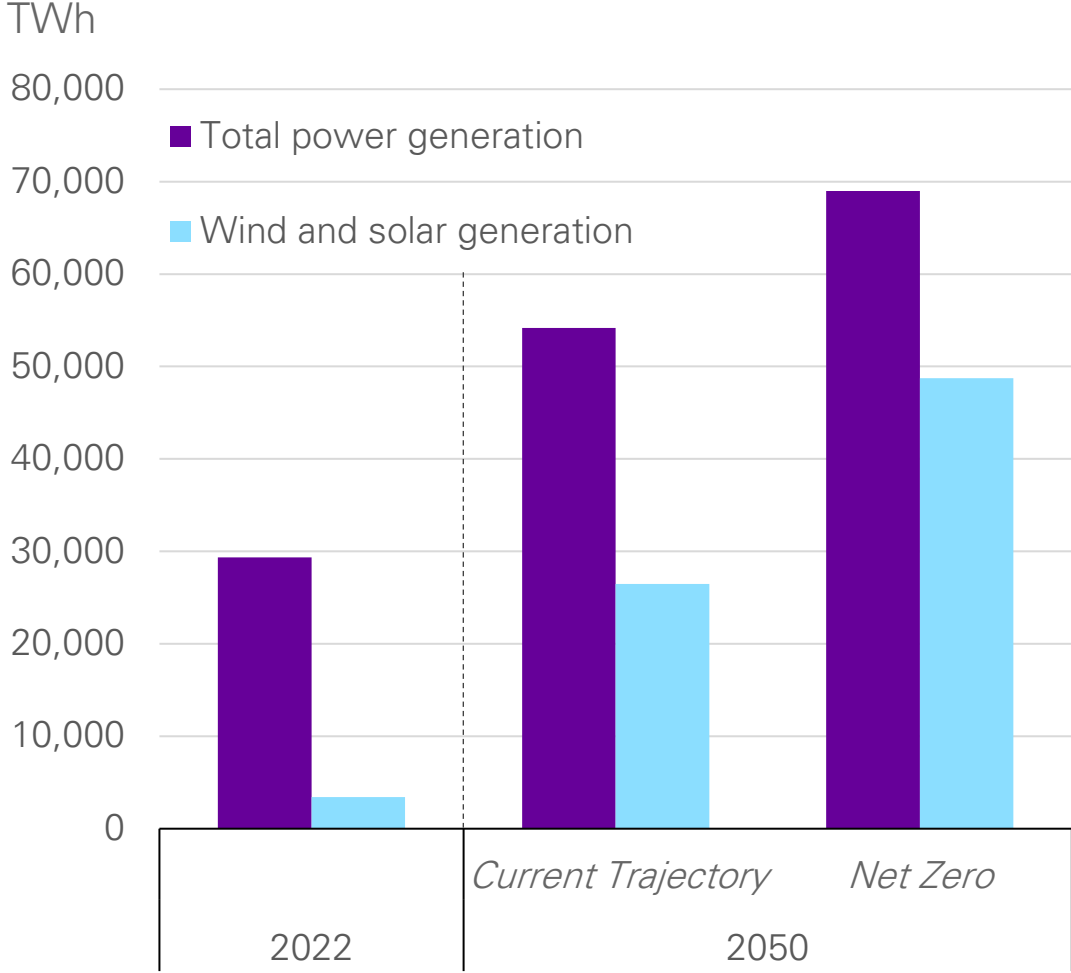
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Energy system increasingly electrifies, driven by wind and solar power

Electricity as share of final energy demand

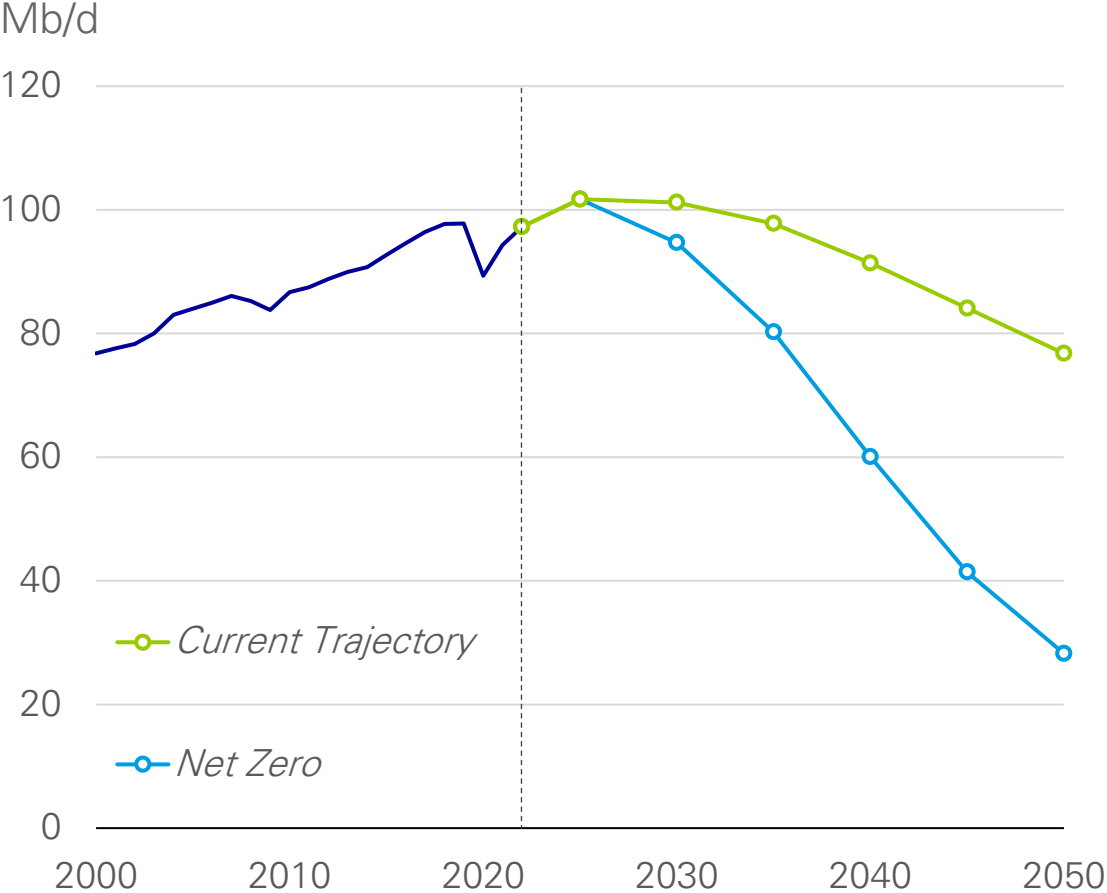


Total power generation vs wind and solar

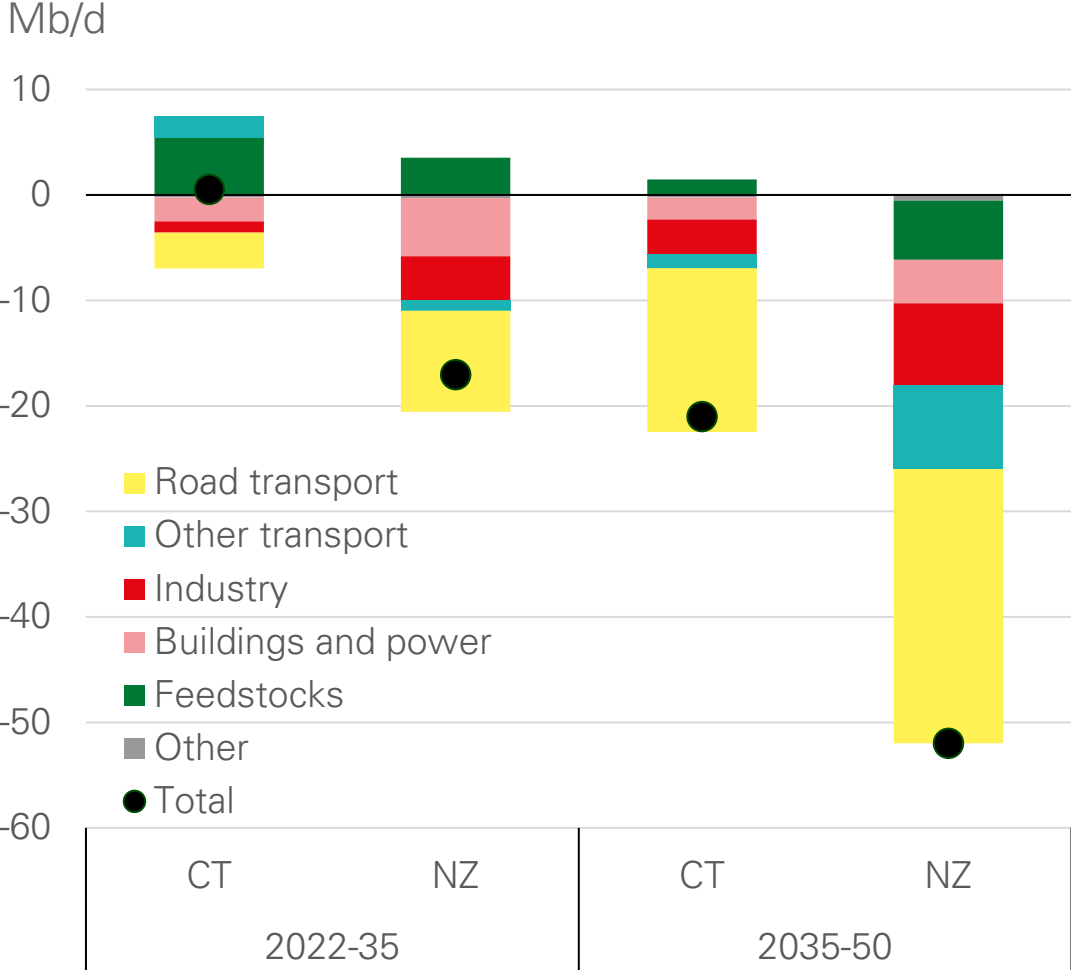


Oil demand

Oil demand



Change in oil demand by sector



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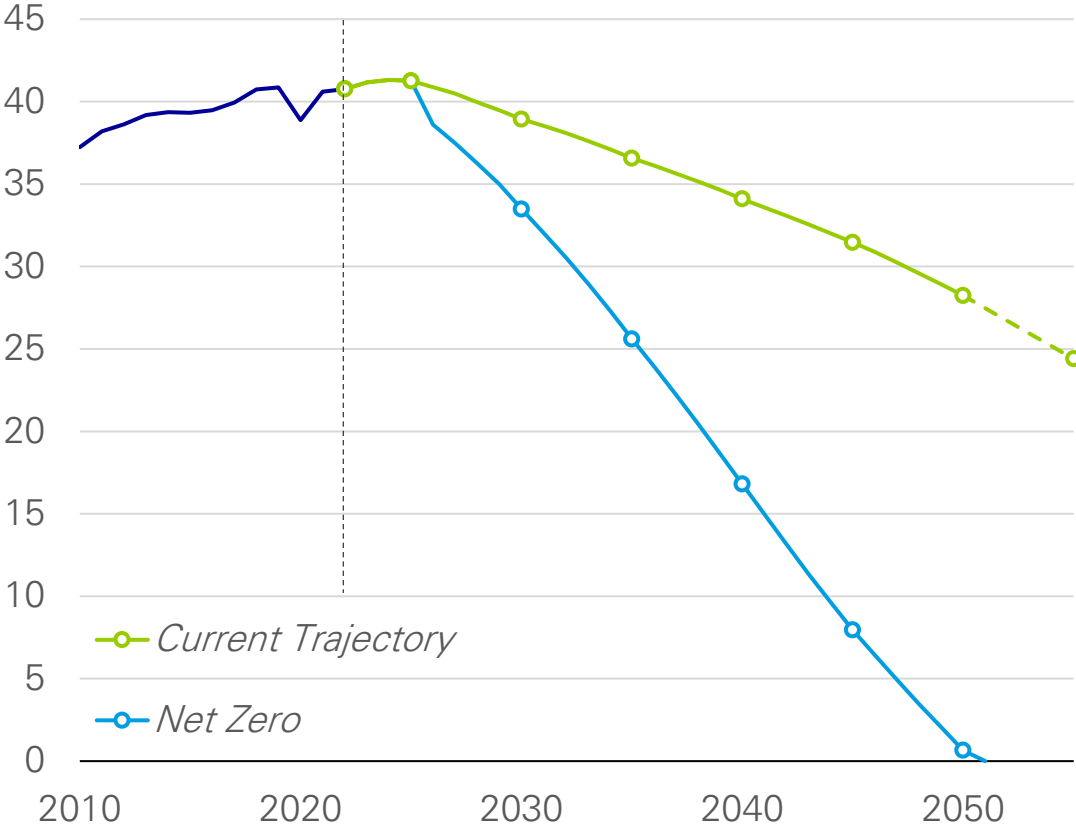
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Implications of delay

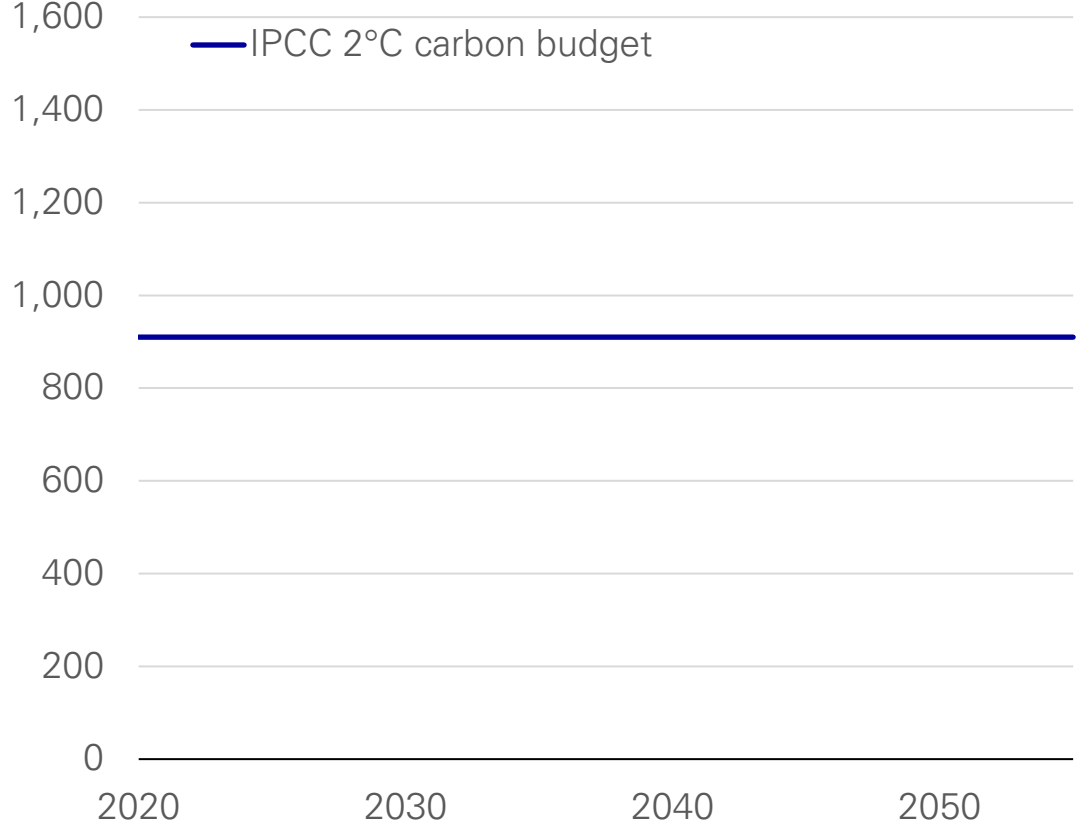
CO₂ emissions

Gt of CO₂



Cumulative CO₂ emissions, 2020 onwards

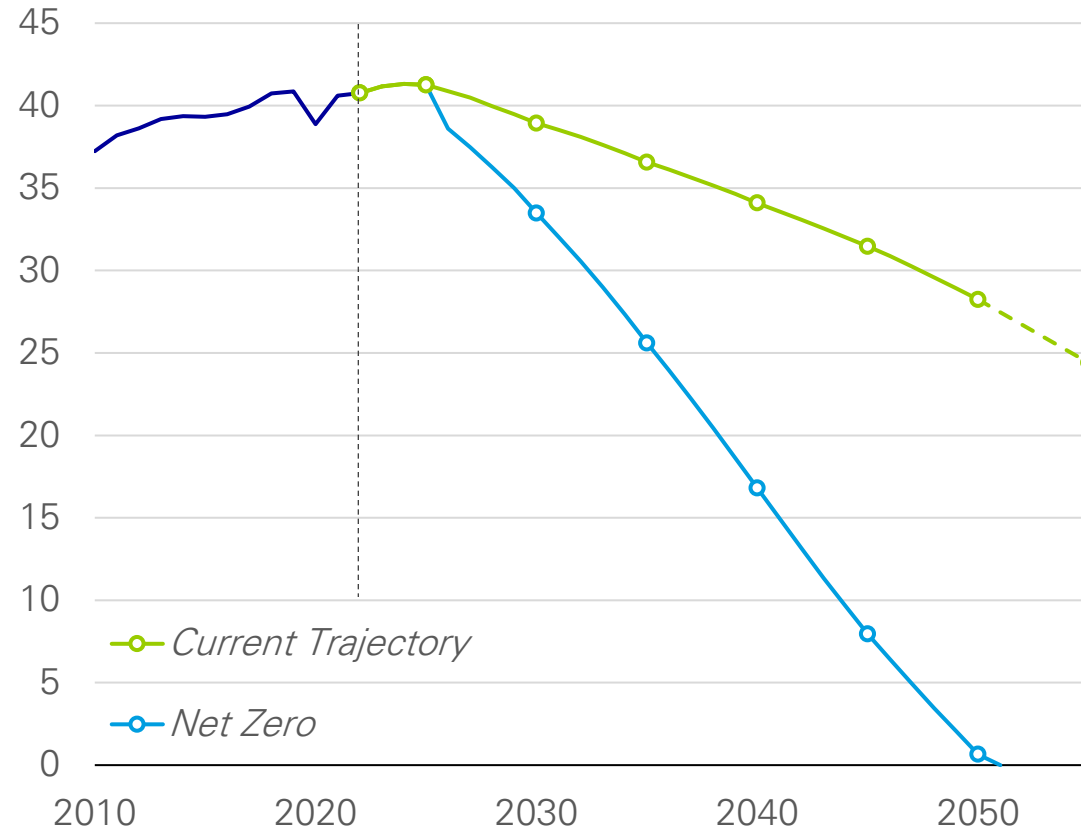
Gt of CO₂



Implications of delay

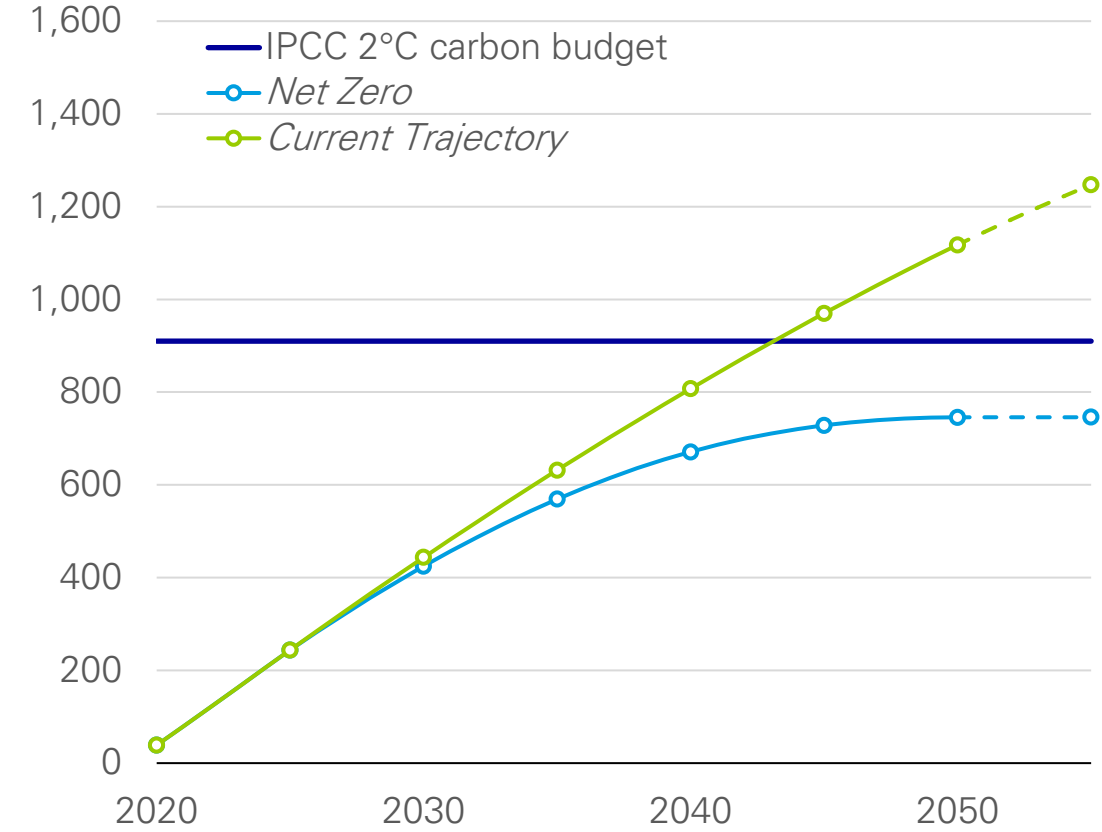
CO₂ emissions

Gt of CO₂



Cumulative CO₂ emissions, 2020 onwards

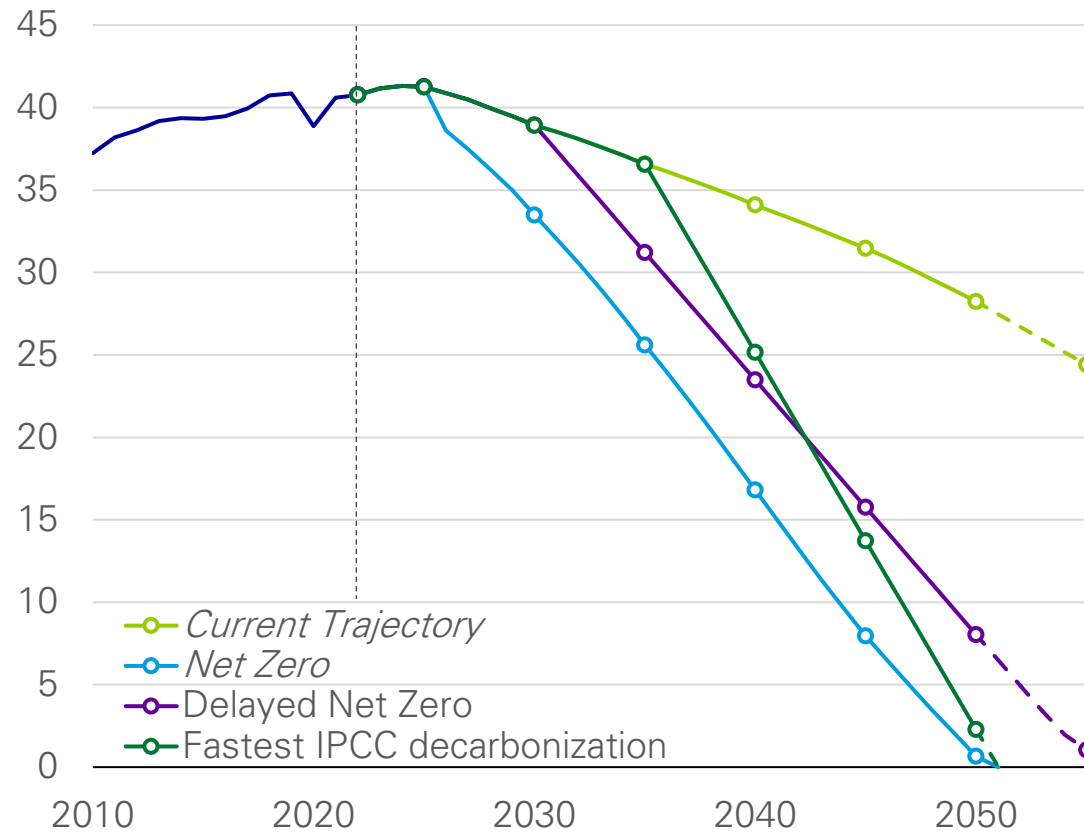
Gt of CO₂



Implications of delay

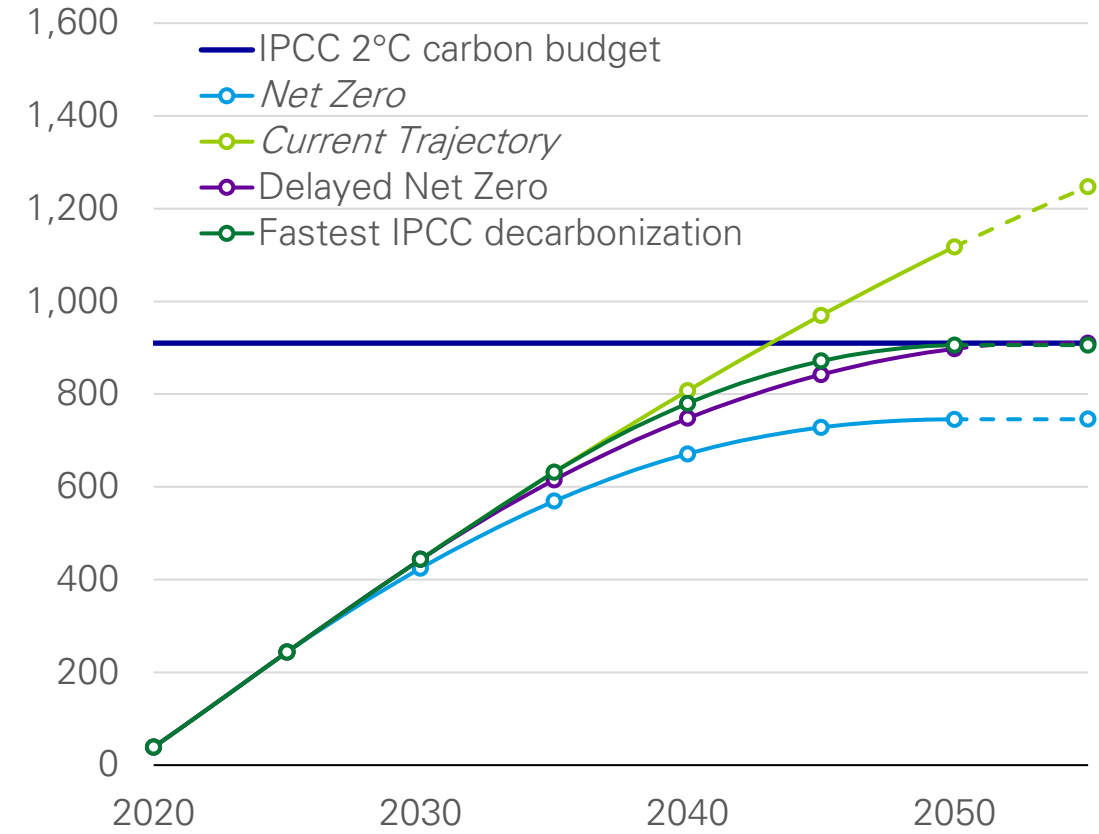
CO₂ emissions

Gt of CO₂



Cumulative CO₂ emissions, 2020 onwards

Gt of CO₂



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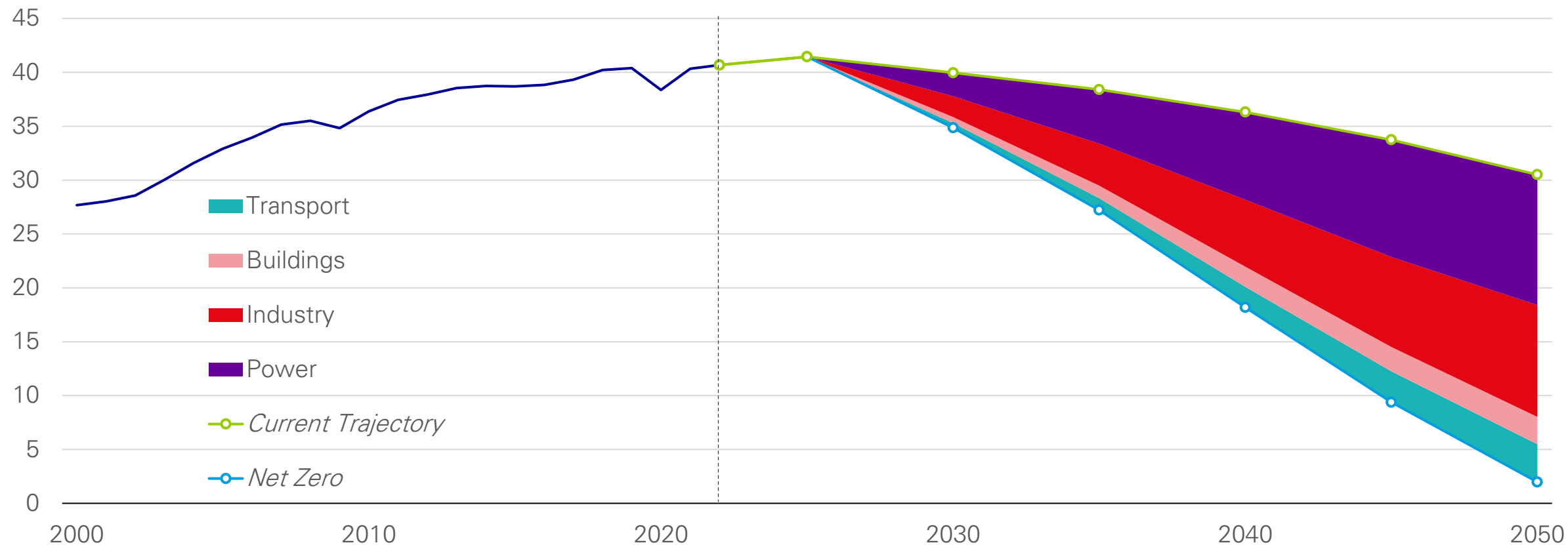
A short focus on transportation

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- Endnote

The faster transition in Net Zero relative to Current Trajectory is driven largely by greater decarbonization in the power and industrial sectors

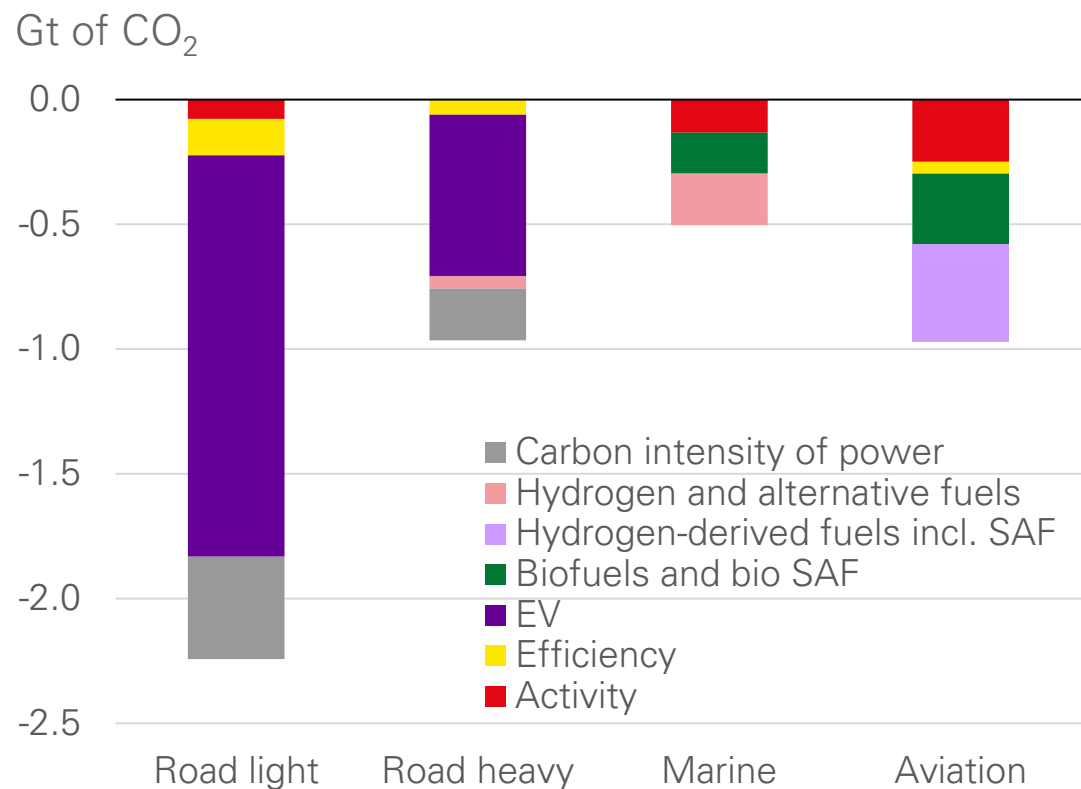
Global carbon emissions

Gt of CO₂e

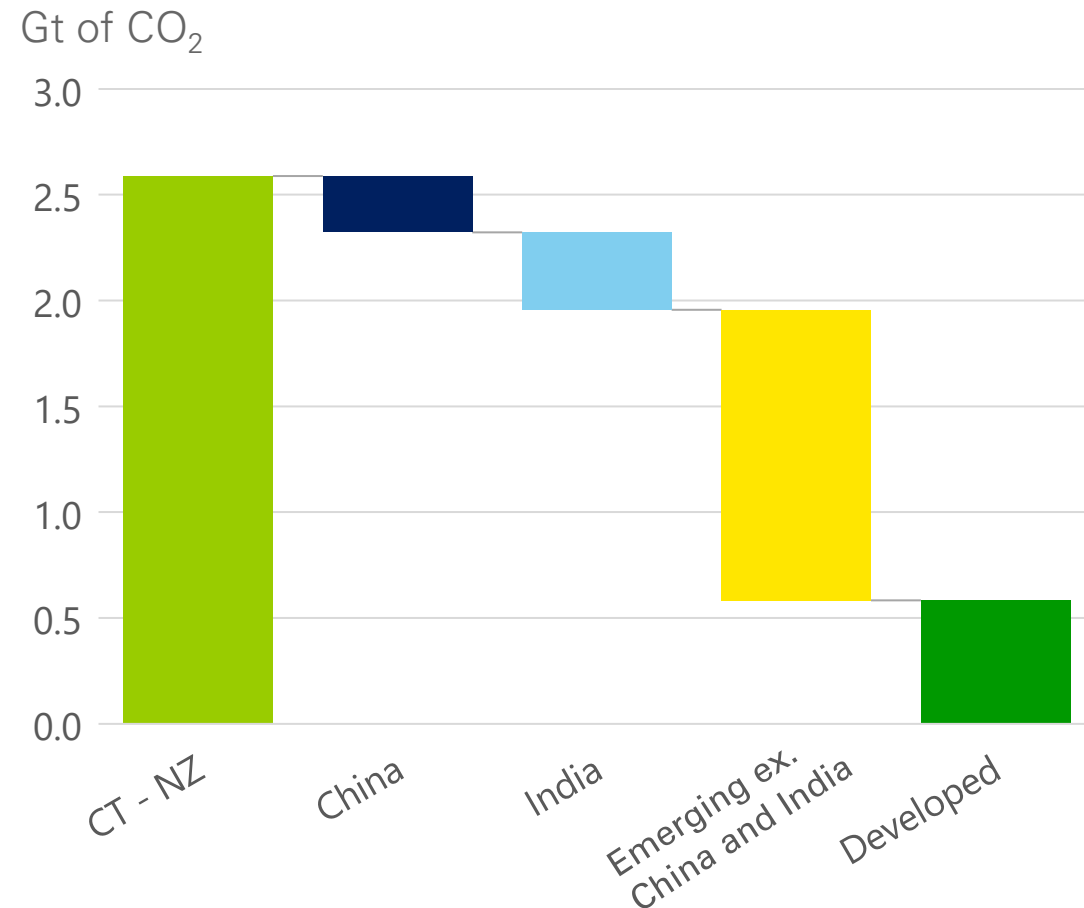


The greater electrification of road transport largely accounts for the faster pace of transport decarbonization in Net Zero relative to Current Trajectory

Transport subsectors: factors accounting for differences in emissions in 2050 (NZ vs CT)



Road transport: differences in emissions in 2050 by region (NZ vs CT)



Four key elements to accelerate the energy transition

- Whole world needs to decarbonize
- Energy efficiency
- Decarbonize power systems
- Application not invention

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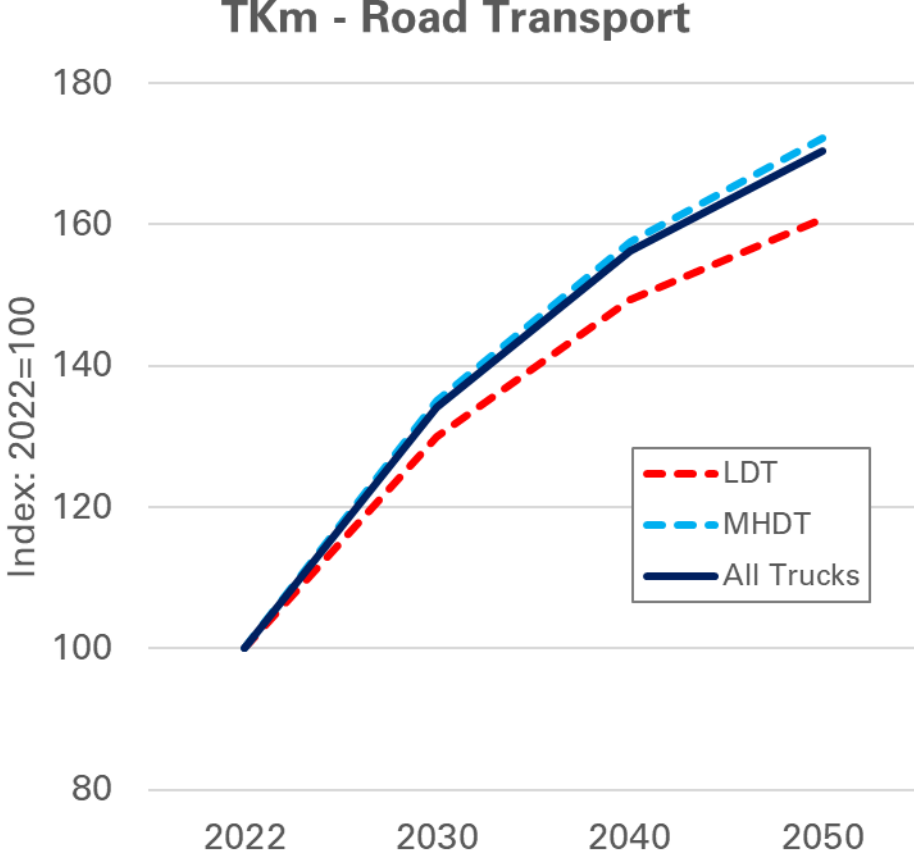
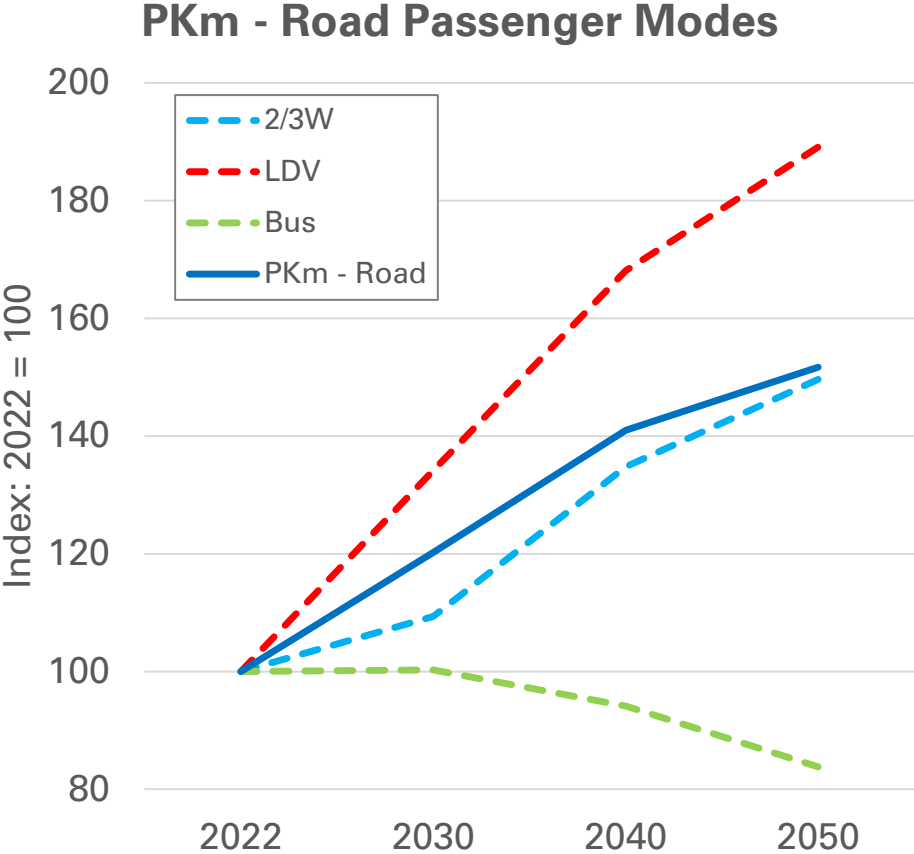
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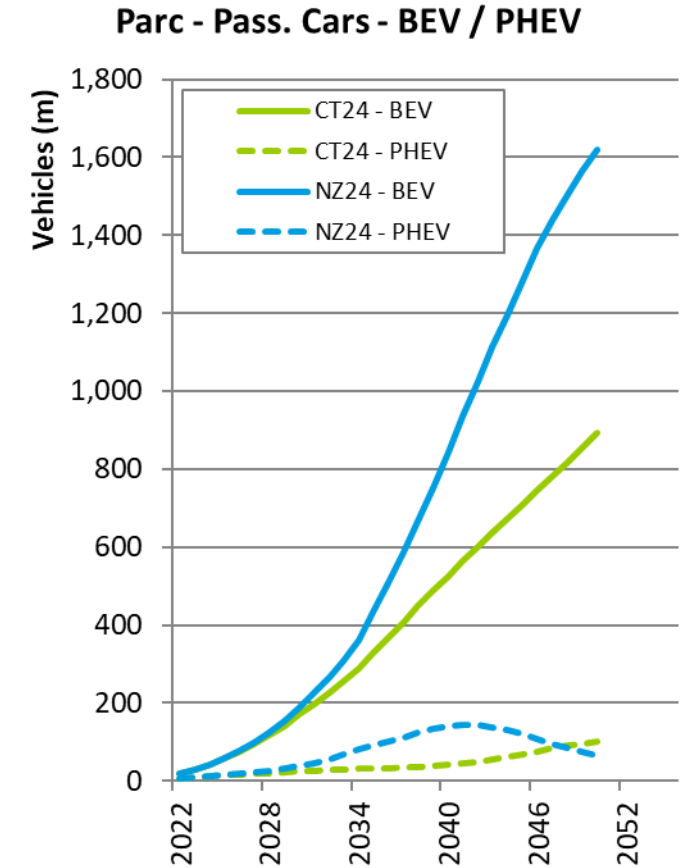
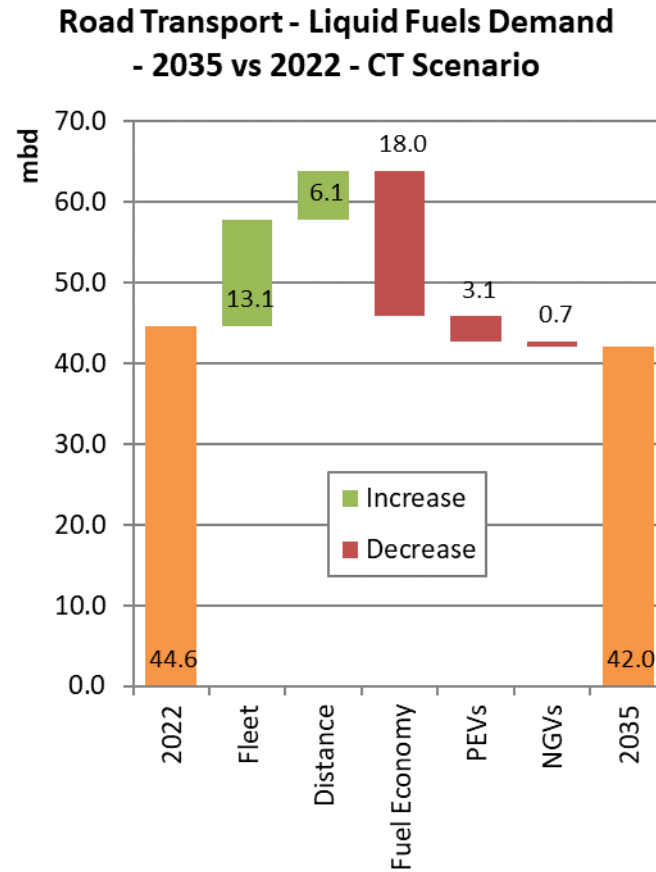
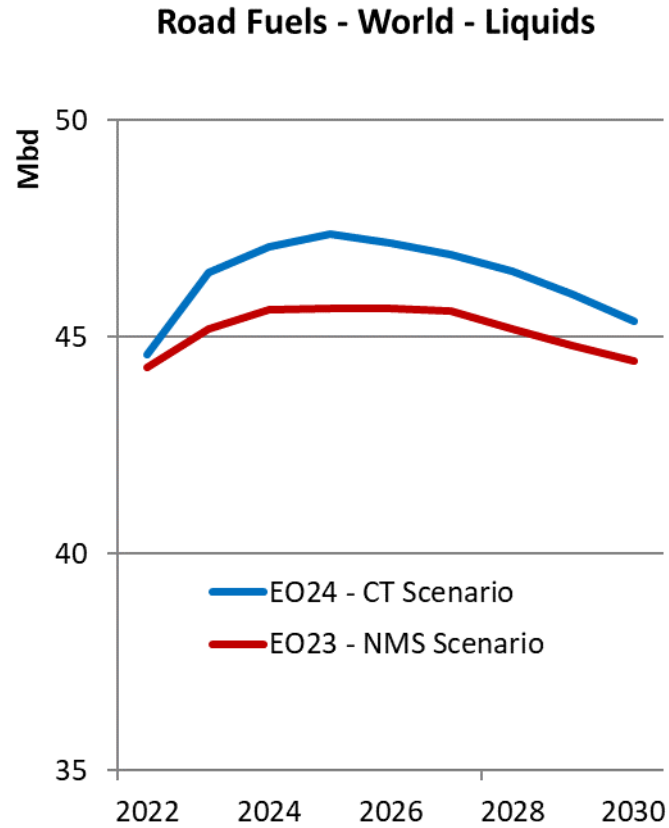
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- Marine and future fuel choices

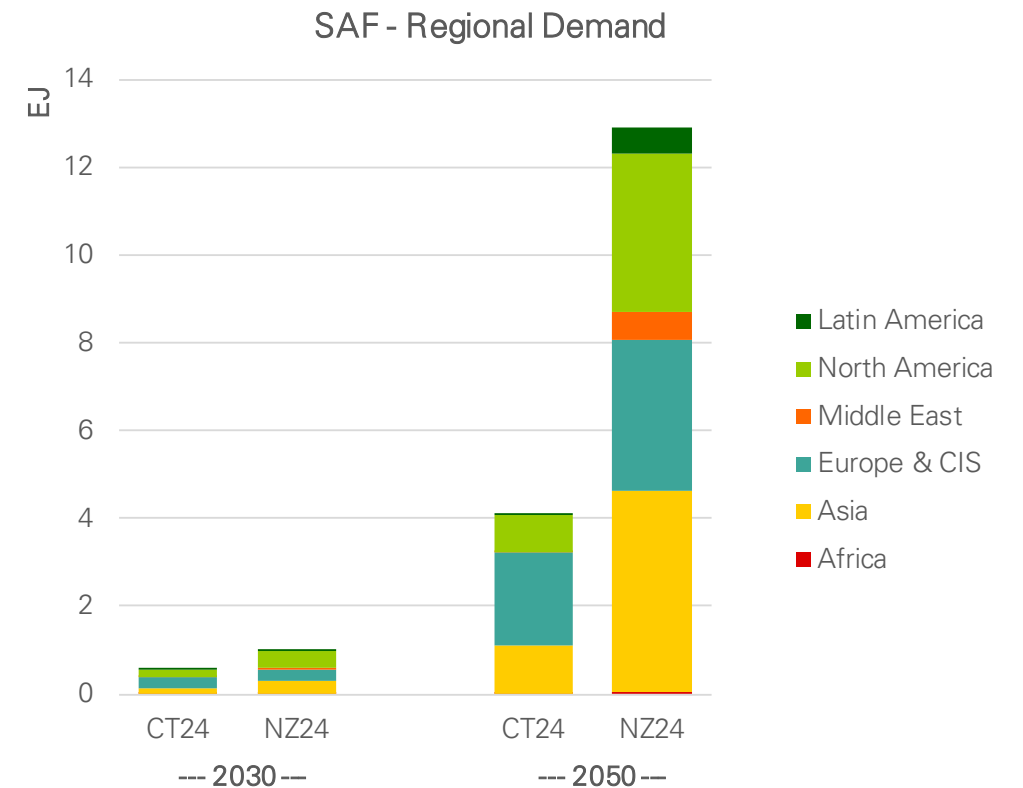
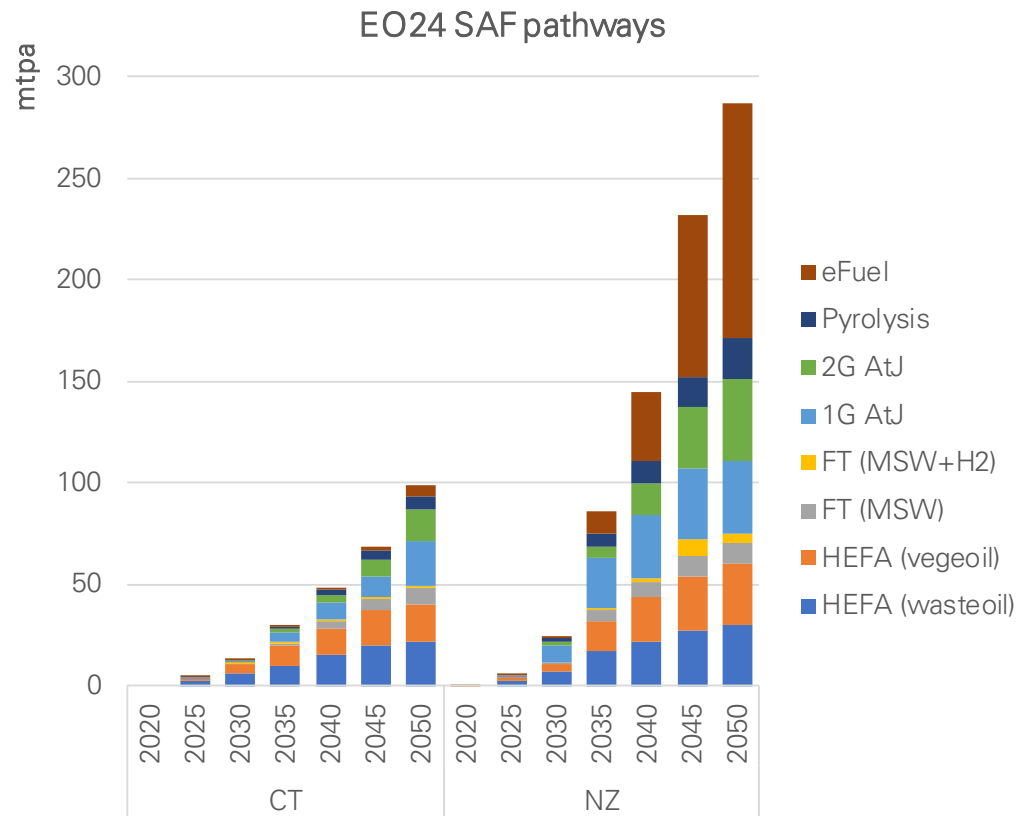
Decarbonising while activity grows



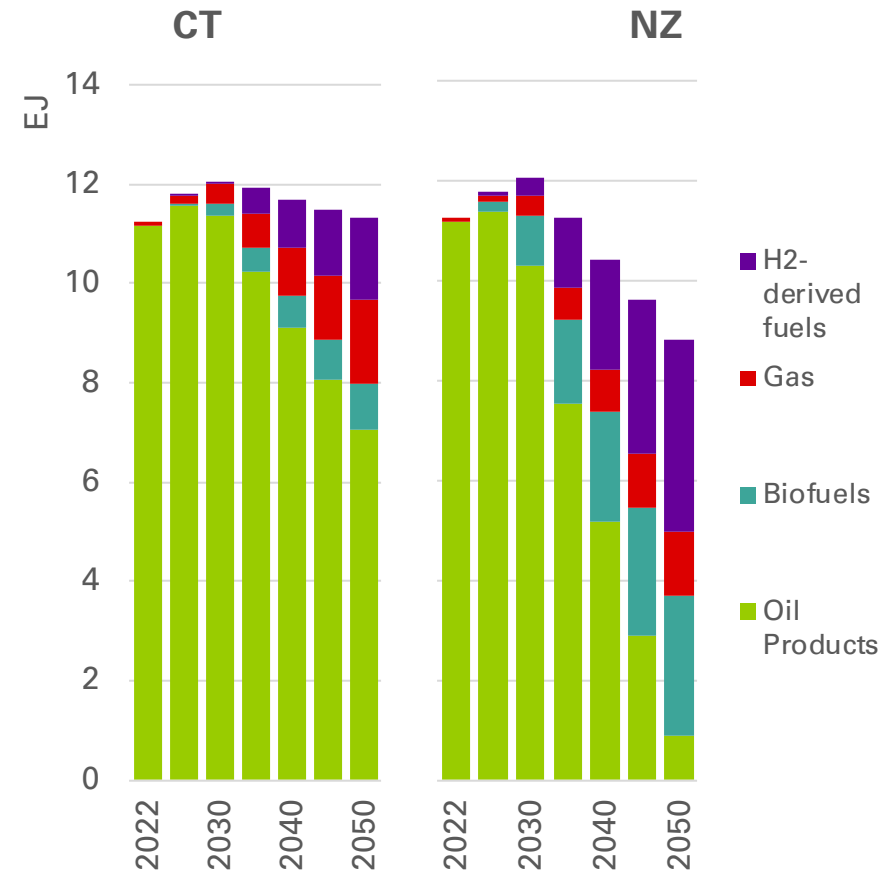
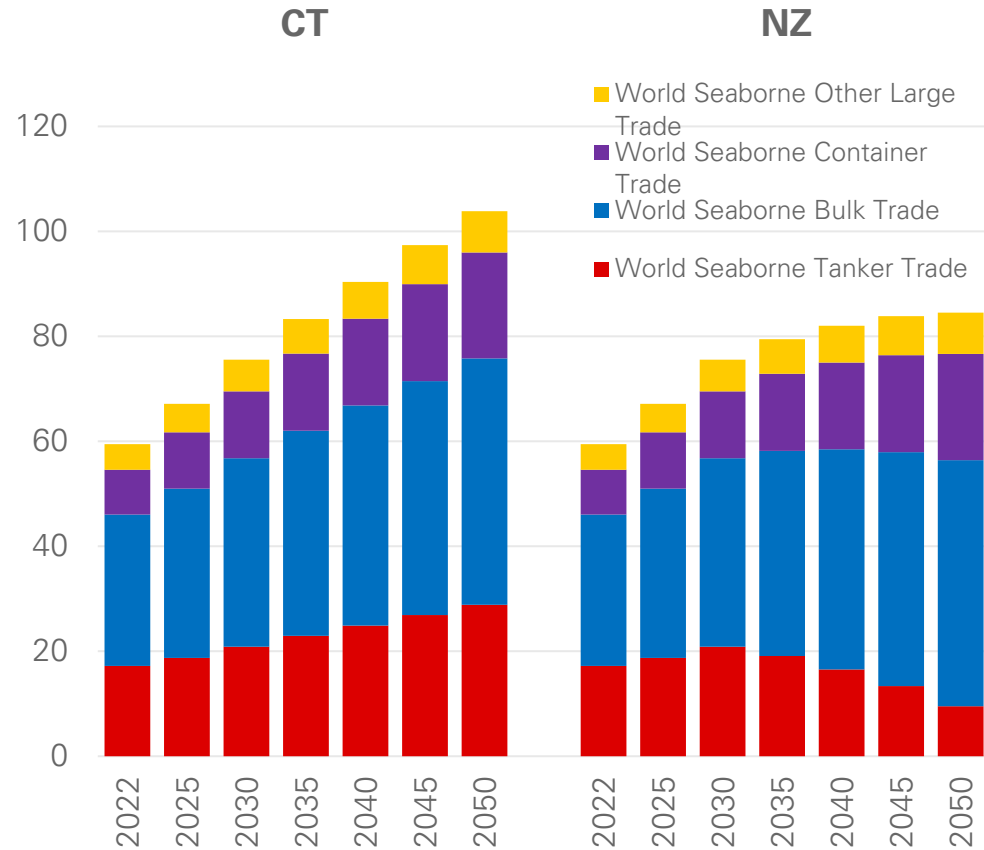
Three horizons for Road Transport



Sustainable Aviation Fuels (SAF) production & regional demand

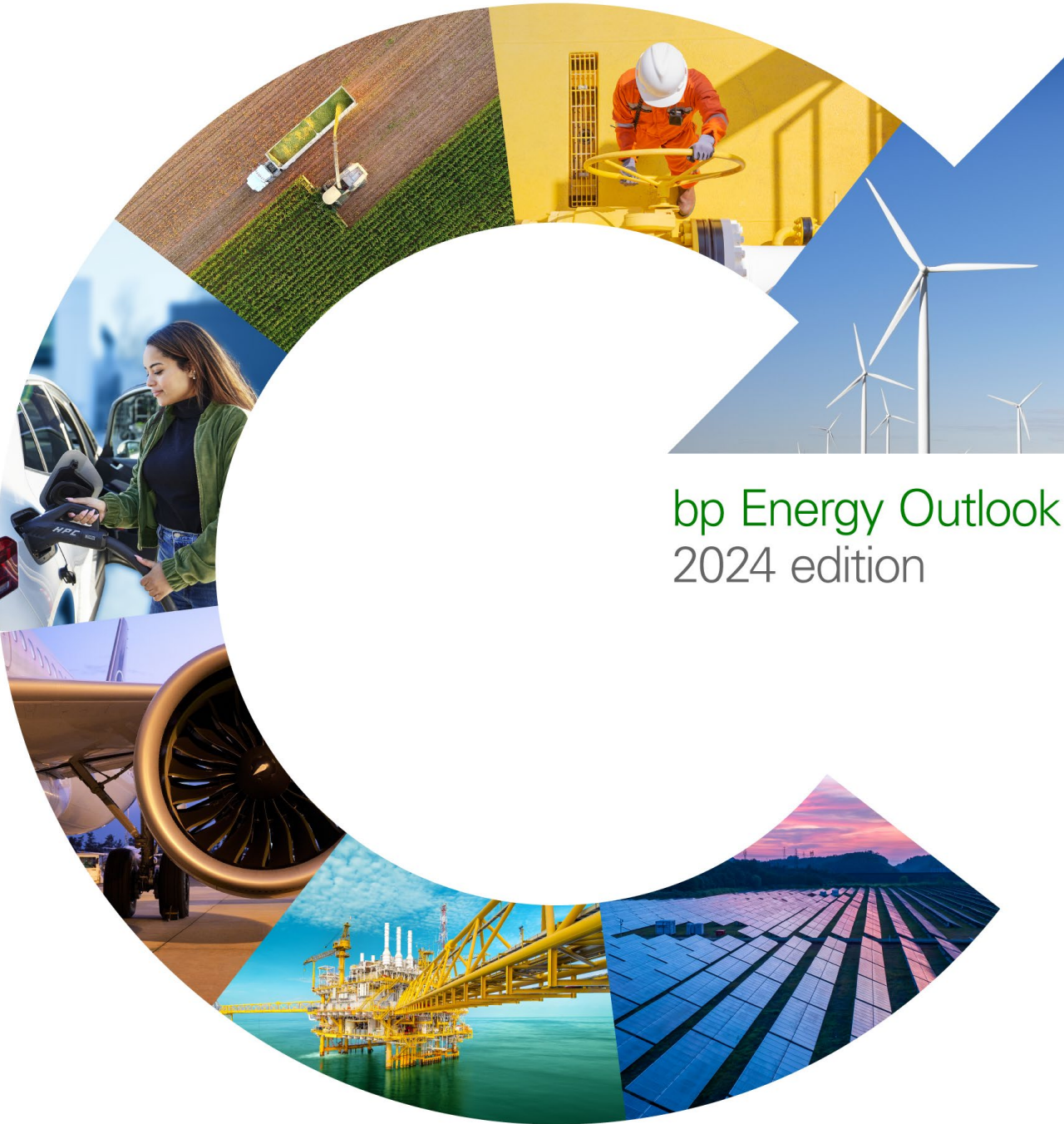


Our view on Marine reflects Trade Growth & Shifting Fuel Choices



Key takeaways on decarbonisation of transportation

- Energy consumption efficiency will contribute significantly
- Electricity will be the main vector in Road Transport
- Direct use supports, but Hydrogen's main role is to create derived fuels
- Affordability matters, particularly to meet ambitious targets
- Application not invention



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Thank you