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## WisdomTree Europe

# Energy Transition – The Role of Metals and Carbon Emission Allowances

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# Energy Transition – The role of Metals and Carbon Emission Allowances

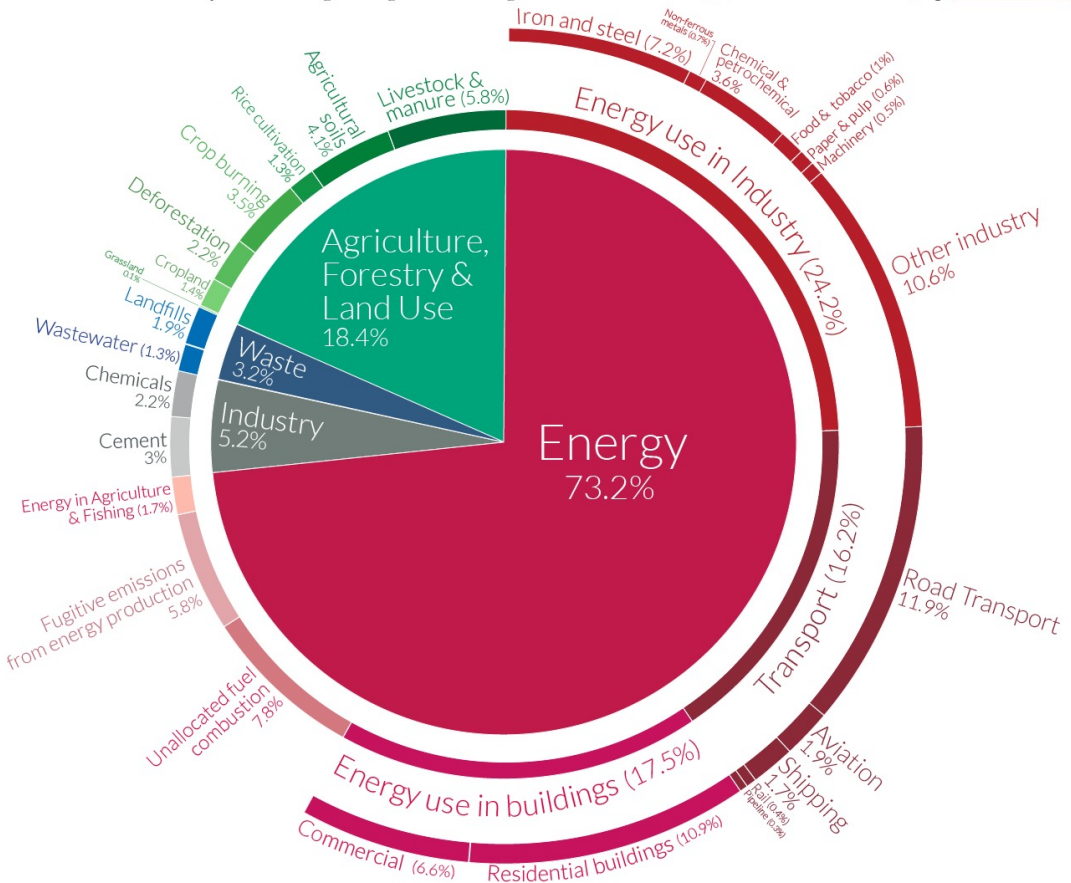
March 2022

# The energy sector is the largest emitter of greenhouse gases

Global greenhouse gas emissions by sector

This is shown for the year 2016 – global greenhouse gas emissions were 49.4 billion tonnes CO<sub>2</sub>eq.

Our World in Data



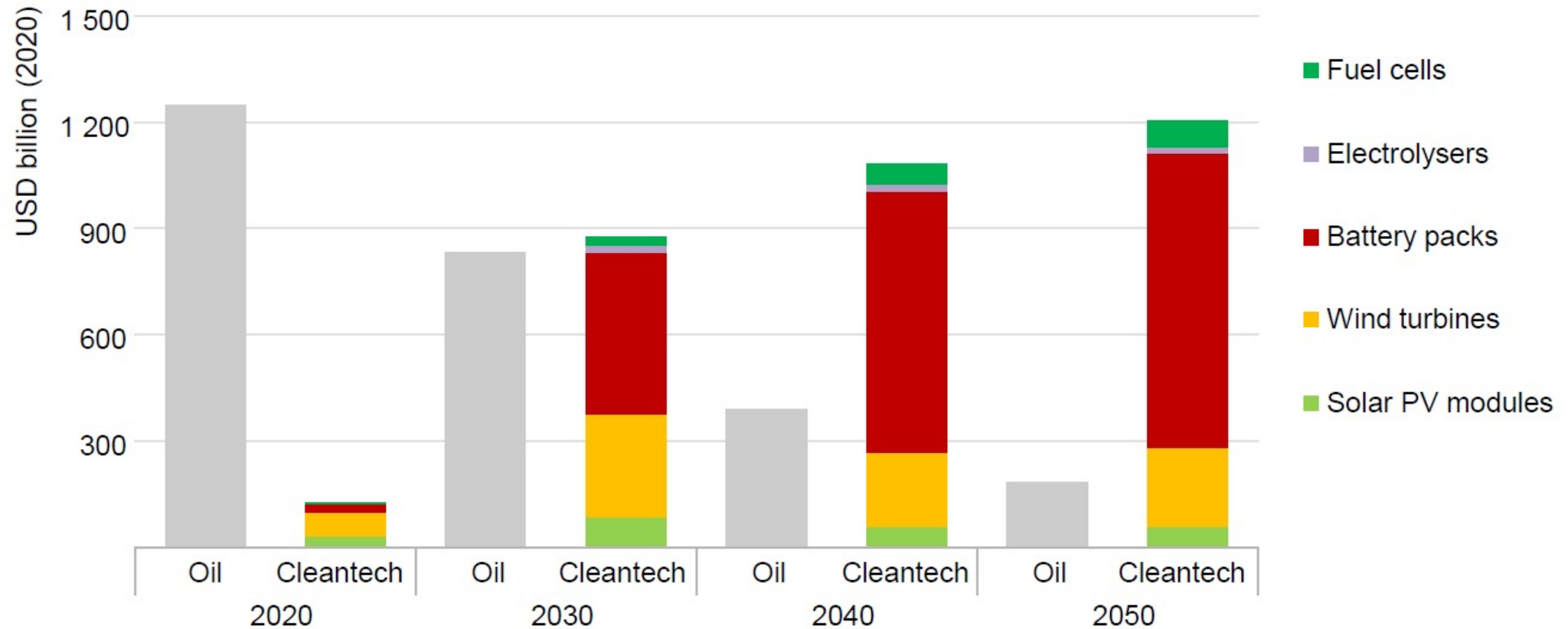
Source: Our World in Data.

OurWorldinData.org – Research and data to make progress against the world's largest problems.  
Source: Climate Watch, the World Resources Institute (2020).  
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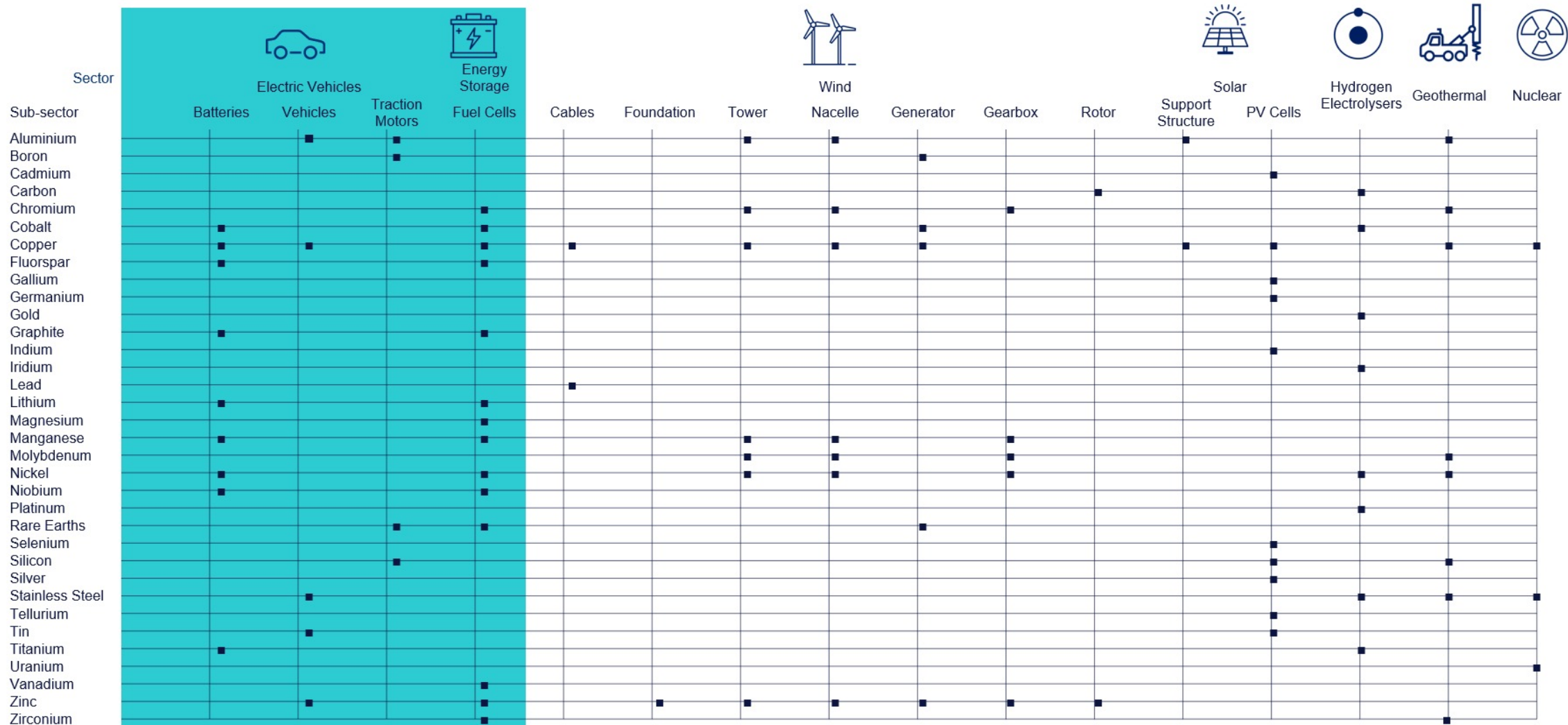
## In a net-zero world, oil's relevance will decline

Estimated market sizes of oil and selected clean energy technology equipment in the Net Zero Scenario



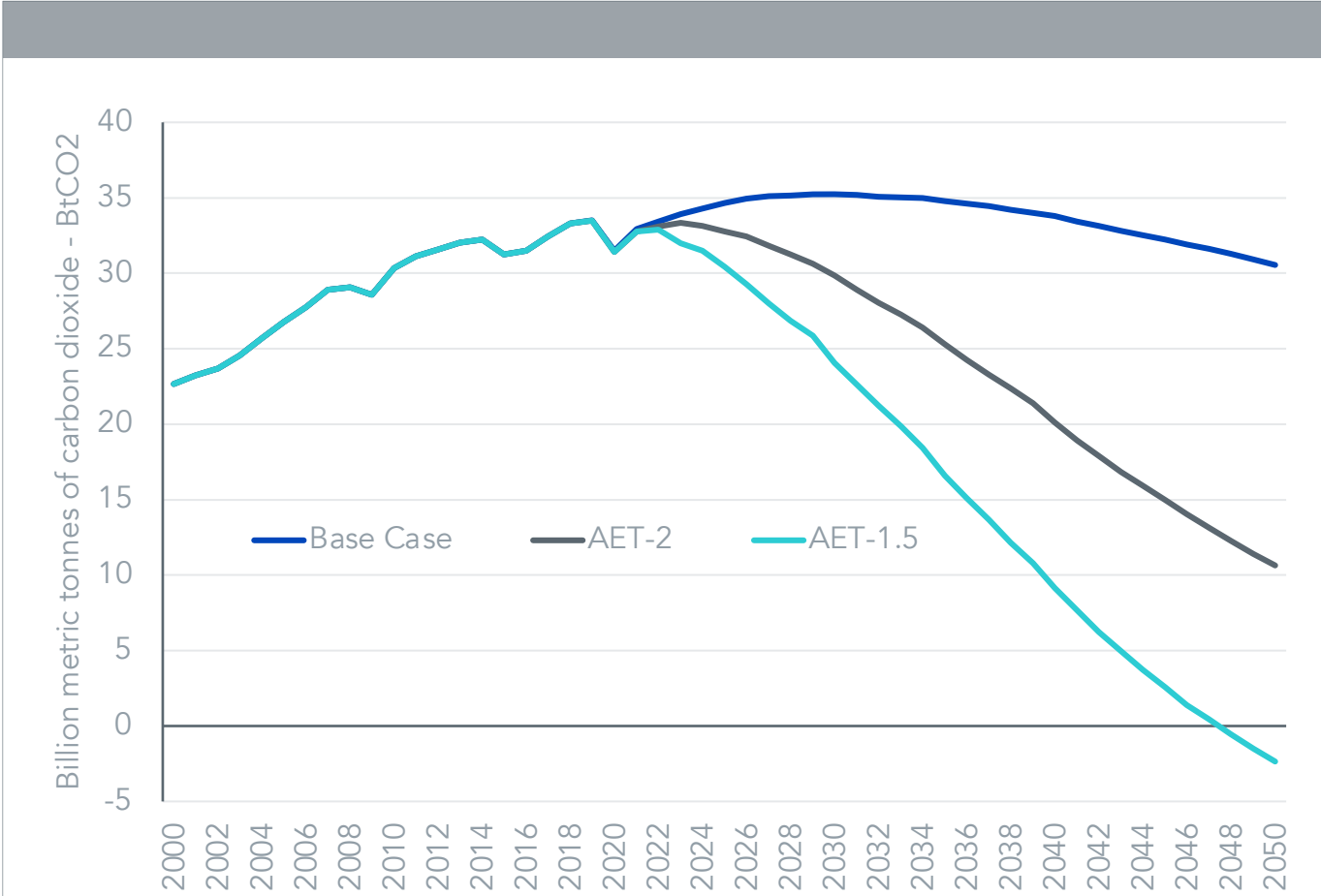
Source: IEA 2021. Forecasts are not an indicator of future performance and any investments are subject to risks and uncertainties.

# Mined commodities are present in a number of energy transition sectors



Source: Wood Mackenzie. Shaded area represents the battery-related uses

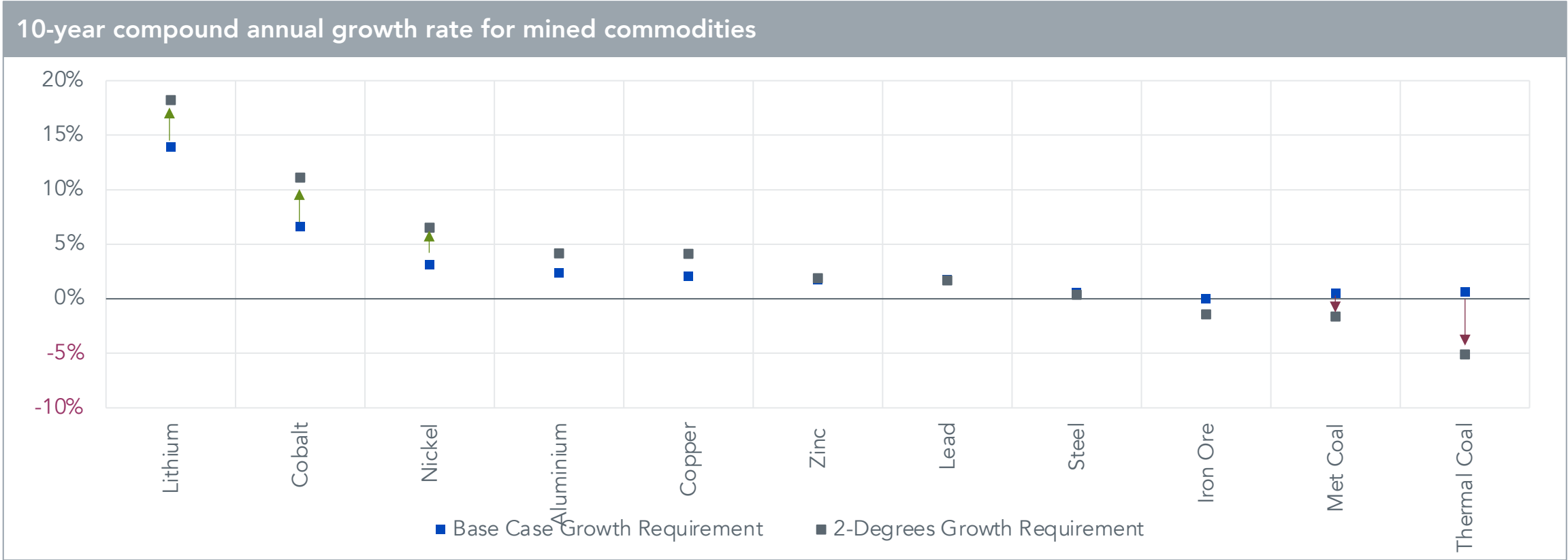
# The Paris Agreement demands a significant reduction in CO2 emissions



Scenario	Net zero	Policy	Enablers
Base case	Not reached, consistent with 2.5-2.7 Degrees global warming	Evolution of current policies	Steady advancement of current and nascent technologies
2-Degree Scenario (AET-2)	2070 (Global), 2050 (Developed)	Aligned with upper limit of Paris Agreement	Electrification across all sectors and rapid decarbonisation of power supply
1.5 Degree Scenario (AET-1.5)	2050 (Global)	Aligned with most ambitious goal of Paris Agreement	Early peak energy, rapid hydrogen and carbon removal deployment, consumer shift

Source: Wood Mackenzie, 2022. **Forecasts are not an indicator of future performance and any investments are subject to risks and uncertainties.**  
The Paris Agreement is a legally binding international treaty on climate change. Its goal is to limit global warming to well below 2, preferably to 1.5 degrees Celsius, compared to pre-industrial levels.

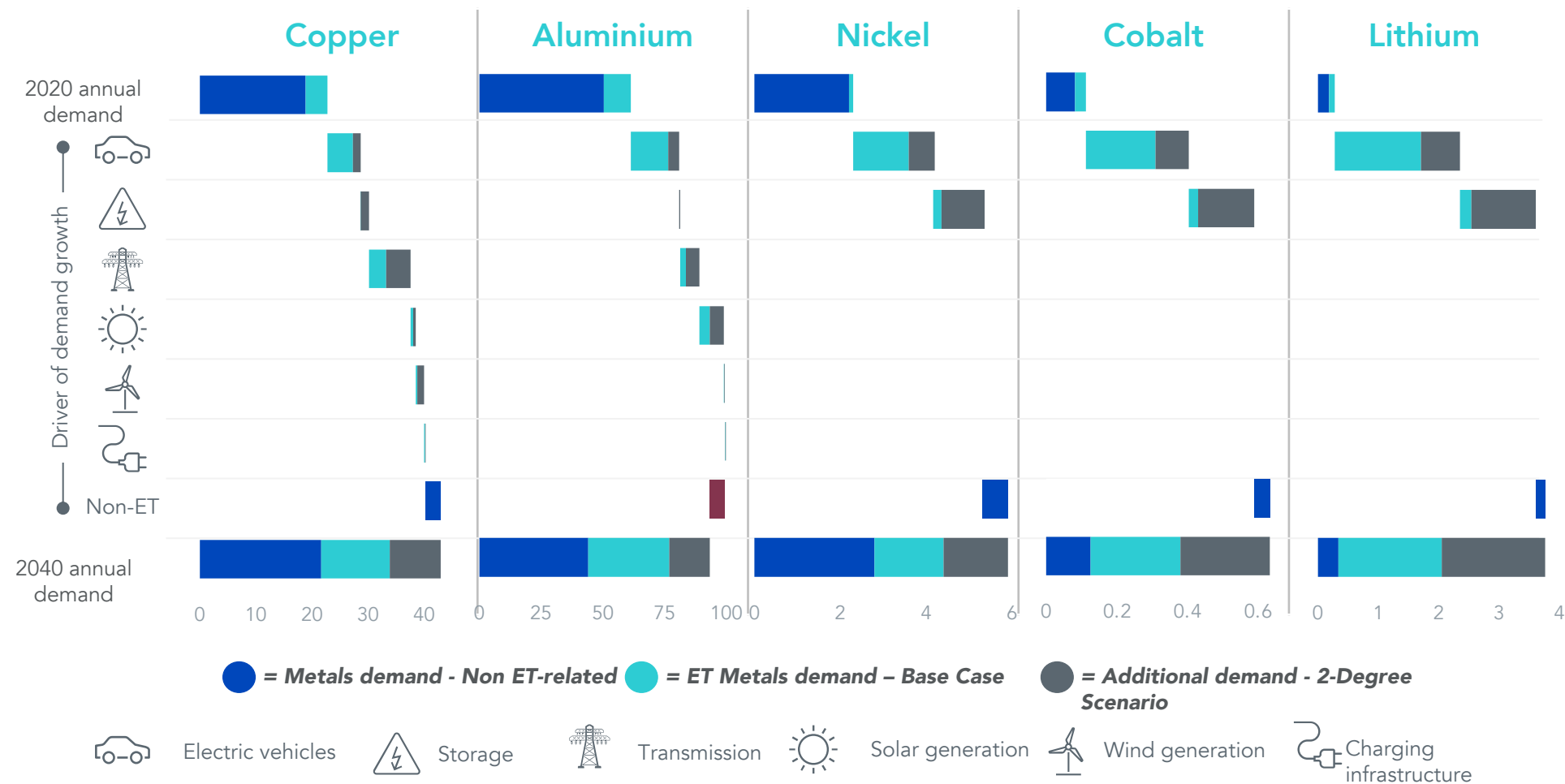
# An accelerated energy transition will boost demand for *some* mined commodities



Source: Wood Mackenzie, 2022. **Forecasts are not an indicator of future performance and any investments are subject to risks and uncertainties.**



# The Energy Transition could be the largest driver of metal demand

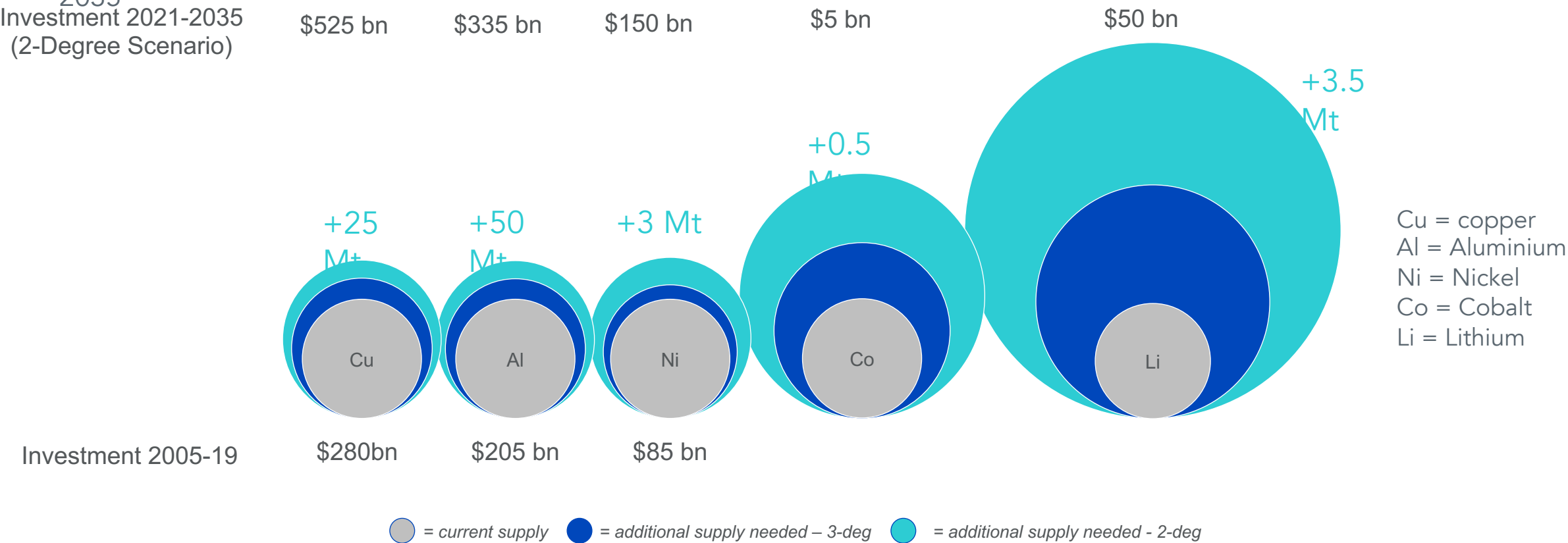


Source: Wood Mackenzie, 2022. ET = energy transition. Data presented in Millions of Tonnes. Non -ET demand growth for aluminium in 2040 expected to be negative (represented in red). Forecasts are not an indicator of future performance and any investments are subject to risks and uncertainties.

# The financing challenge

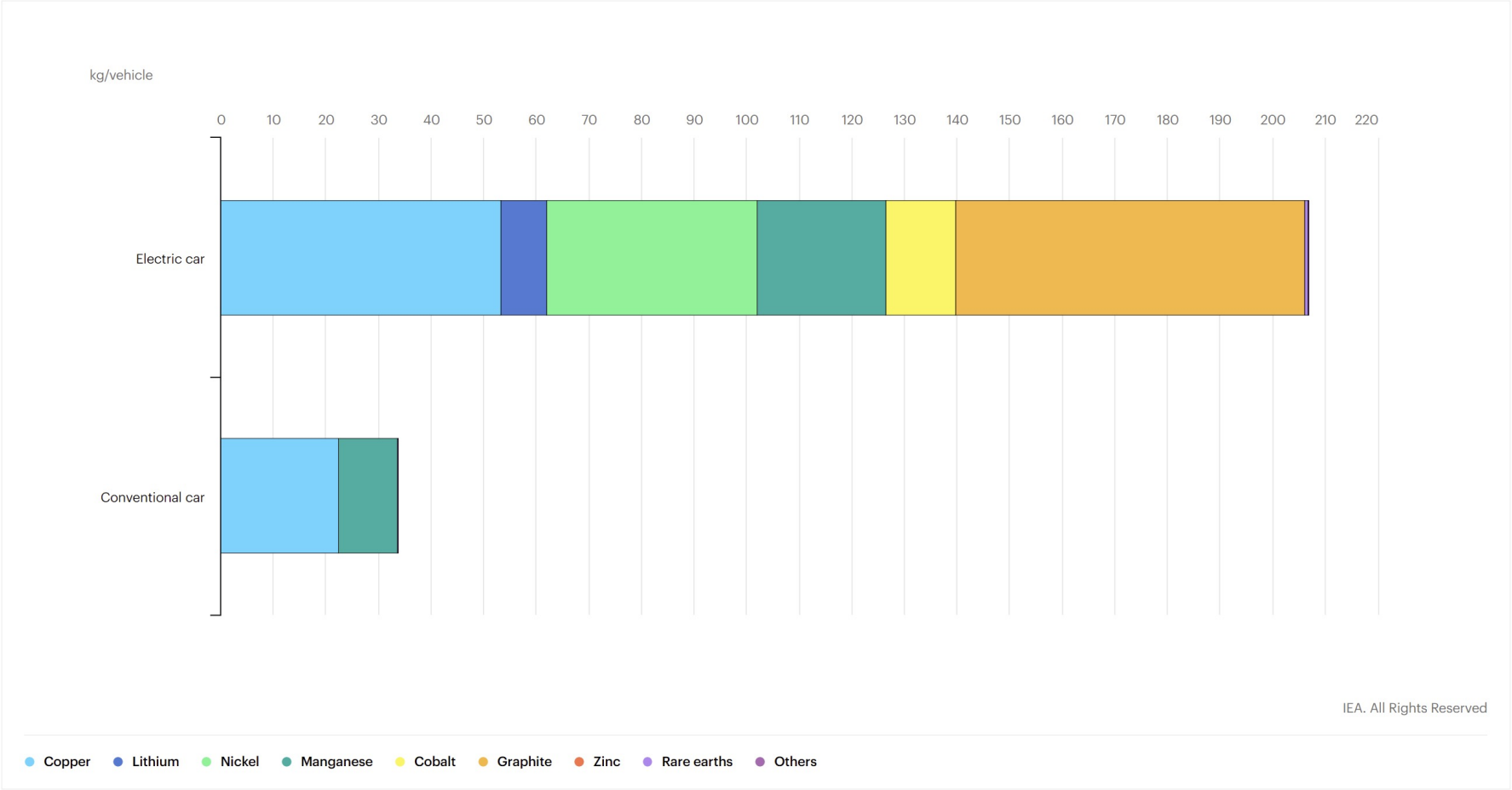
Supplying the metal to support the Base case scenario will require circa \$0.7trillion by 2035

Meeting a 2-Degree Scenario requires an eye watering increase in capacity and another circa \$1 trillion of investment by 2035



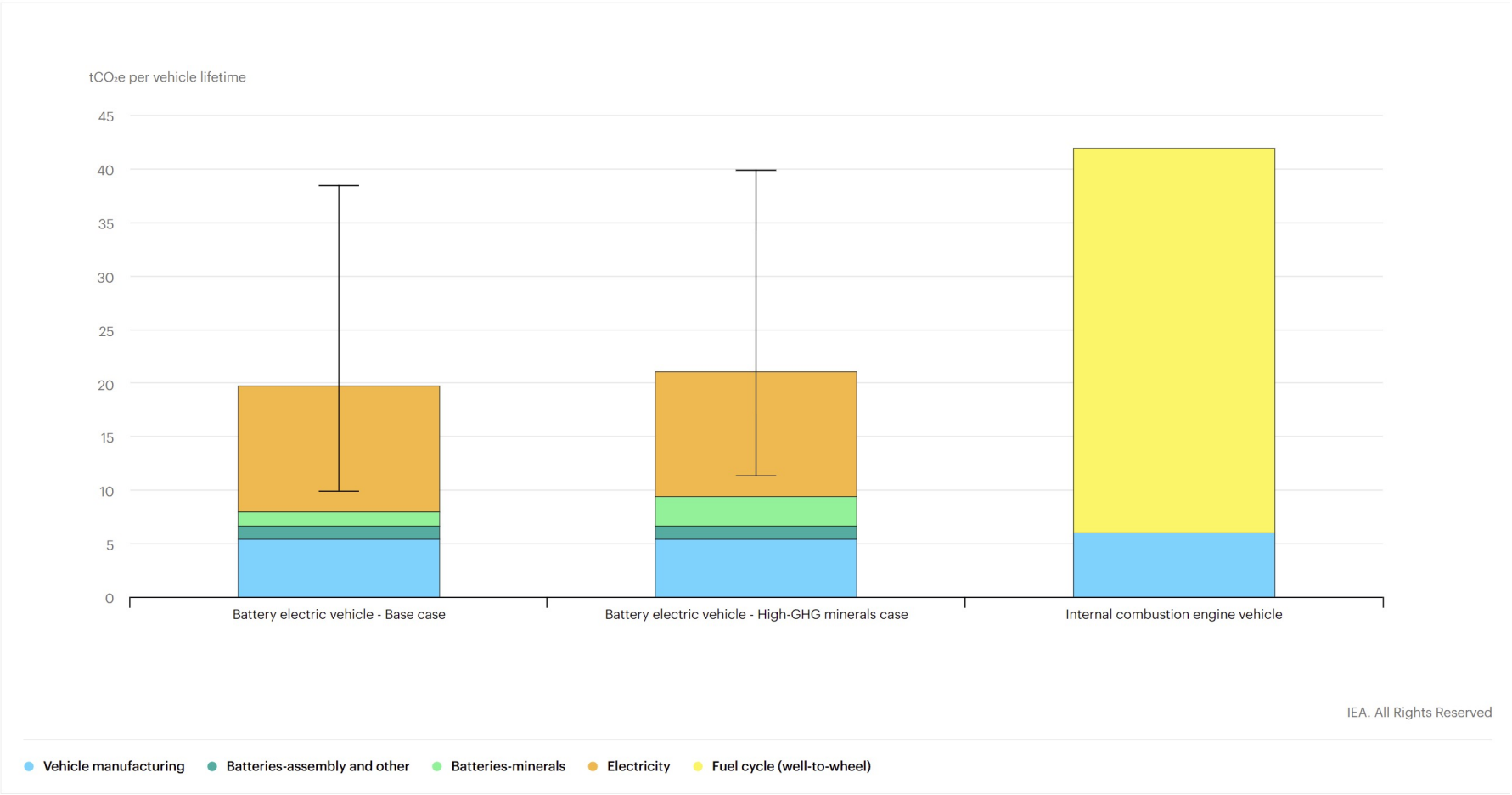
Source: Wood Mackenzie, 2022. Number above bubble in blue is the amount of additional millions of tonnes of the metal required in the 2 degree scenario  
Forecasts are not an indicator of future performance and any investments are subject to risks and uncertainties.

# Electric vehicles are more ‘mineral intensive’ than internal combustion cars



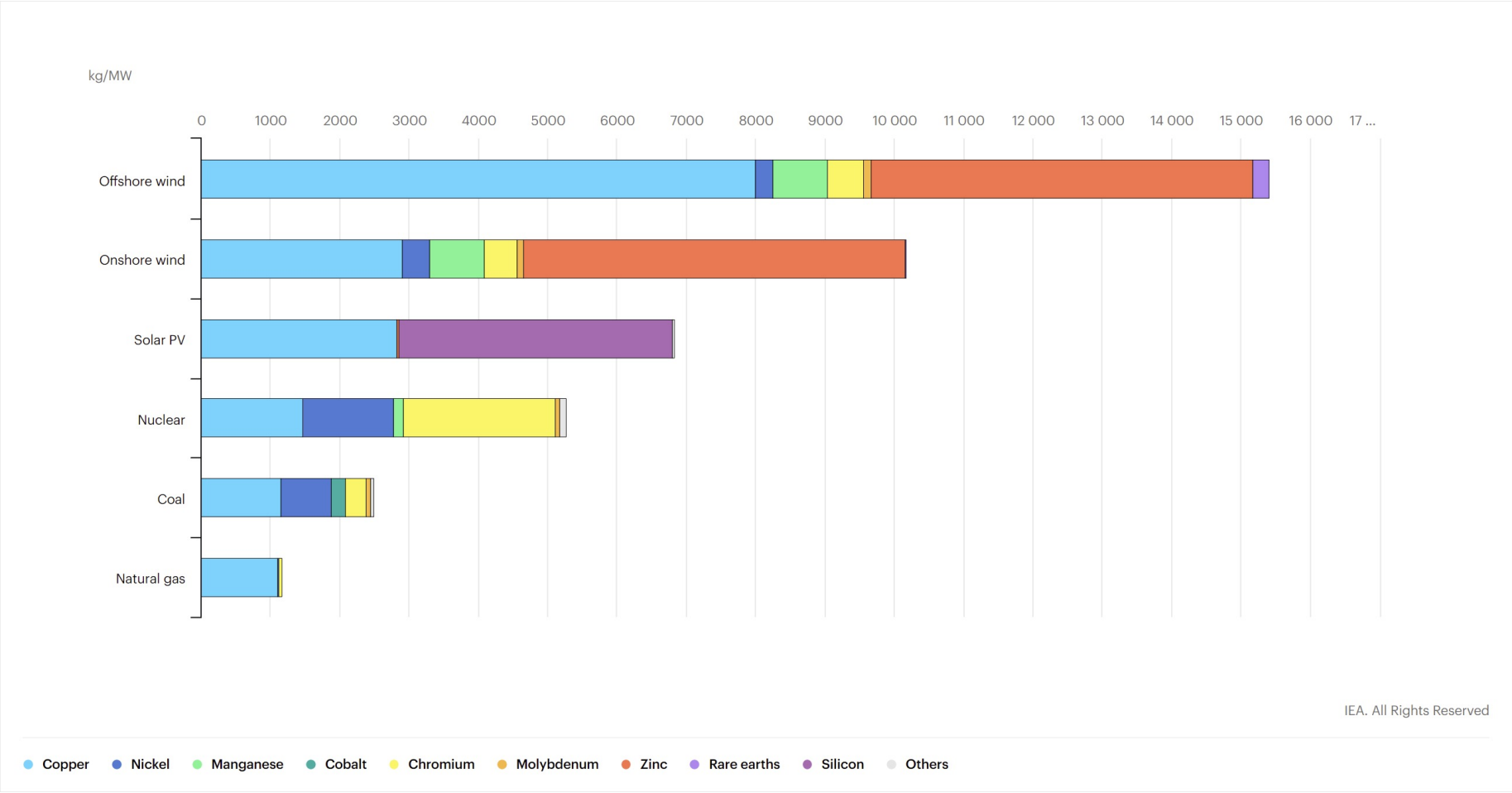
Source: IEA 2021

# Electric vehicles halve the lifetime emissions compared to internal combustion



Source: IEA 2021

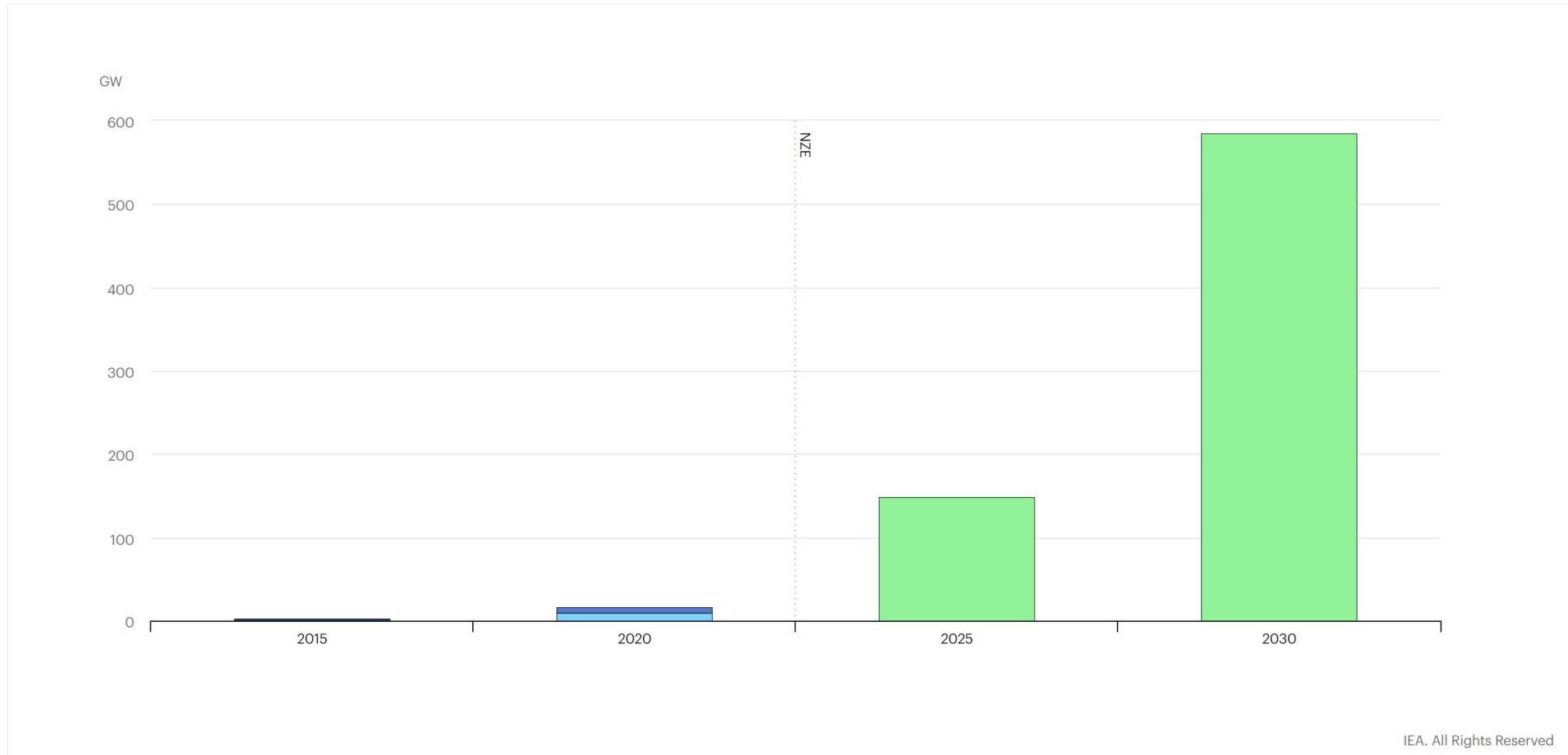
# Clean power generation is also more mineral intensive



Source: IEA 2021



# Total installed battery storage capacity in the Net Zero Scenario, 2015-2030



Source: IEA 2021. Forecasts are not an indicator of future performance and any investments are subject to risks and uncertainties.

# EU Emissions Trading System (ETS)

## First and largest carbon emissions trading system in the world

- Started in 2005
- In 2020, 8 billion emission allowances changed hands, with a market value of €201bn

## Remains the centrepiece of European Union's climate strategy

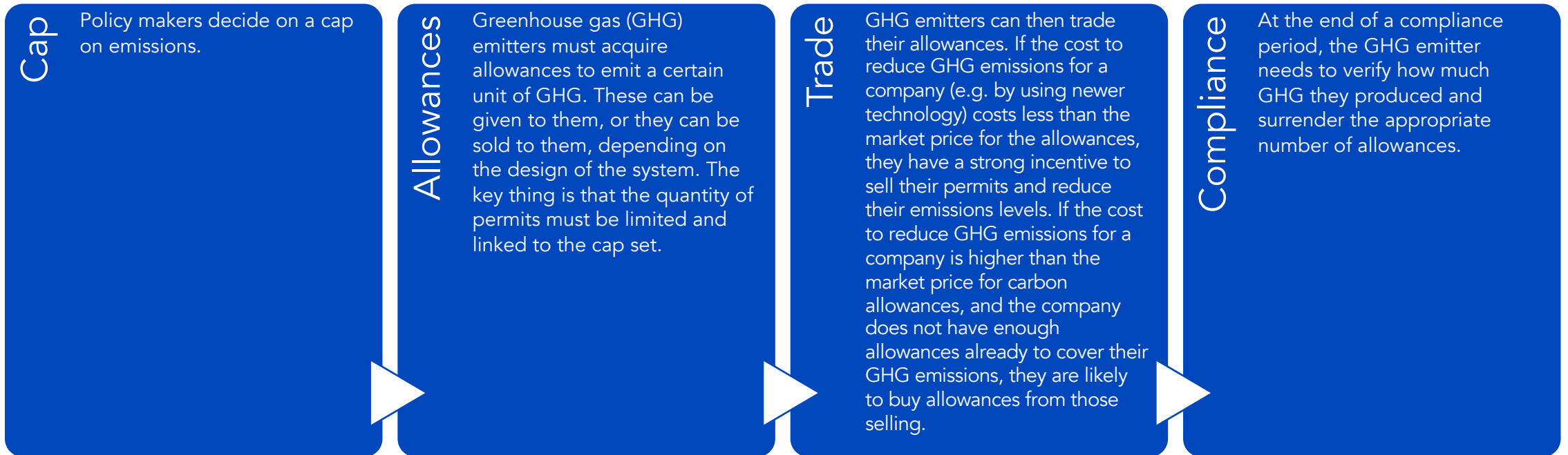
- As climate goals become more aggressive, the EU ETS will be more heavily relied on to deliver results
- The EU sees the ETS as an efficient market-based system to deliver emission abatement and therefore is preferred over carbon taxes for example

## We expect:

- The scope of the European carbon market to expand
- The supply of allowances to emit carbon to shrink
- The price of allowances to rise and thus help policy makers deliver on their promises to decarbonise and become emissions net neutral by 2050

Source: WisdomTree; European Commission July 2021; Refinitive , January 2021.

# What is 'cap and trade'



Source: WisdomTree; European Commission July 2021; Refinitive , January 2021.

## Fit for 55: a legislative package that will tighten the market with a variety of measures

More aggressively reduce emissions cap

Place more allowances into a reserve

Restrict free allowances

Add more sectors to the system

Cancel allowances in the reserve (based on historic use)

Promote clean technology through various funds

Implement a carbon border tax to stem 'carbon leakage'

Integrate aviation sector to main system

Shipping

Buildings

Transport

Source: WisdomTree, European Commission.

# Questions

For more information and insights please visit: [wisdomtree.eu](https://wisdomtree.eu)

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