



Trafigura

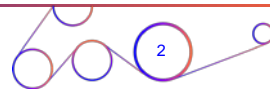
# The Future of The Energy Transition

IWCC Joint Meeting, May 2024

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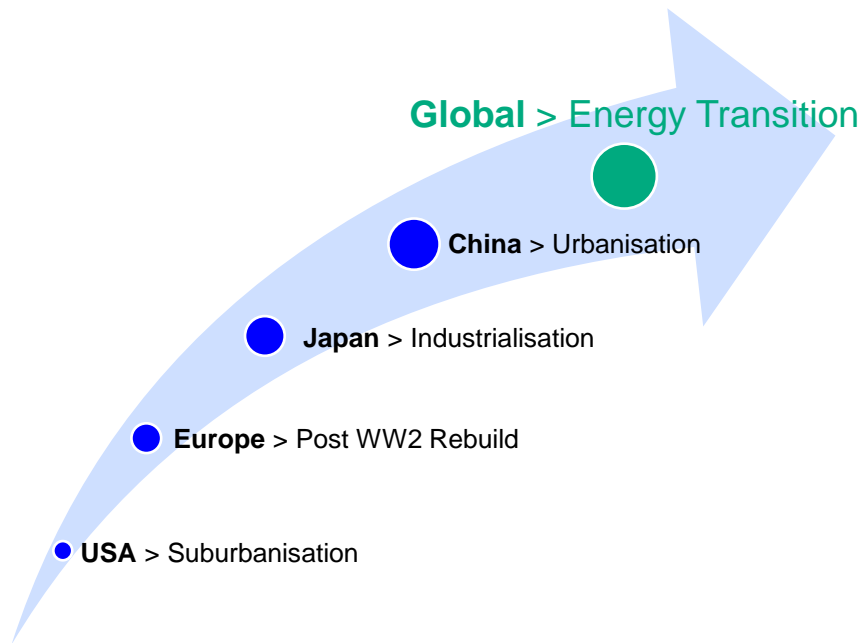
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**The purpose of this presentation is to guide programs benefiting the copper industry and to provide attendees with information to make independent business decisions.**



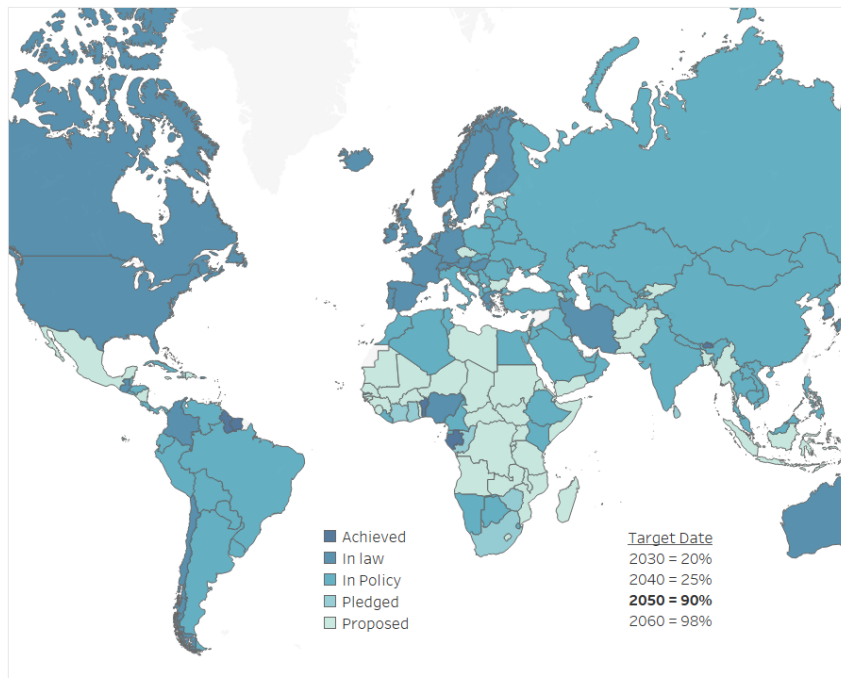
# The energy transition has established the next long term demand cycle

## Historical Commodity Demand Drivers



Source: Trafigura Research

## Net Zero Target Status

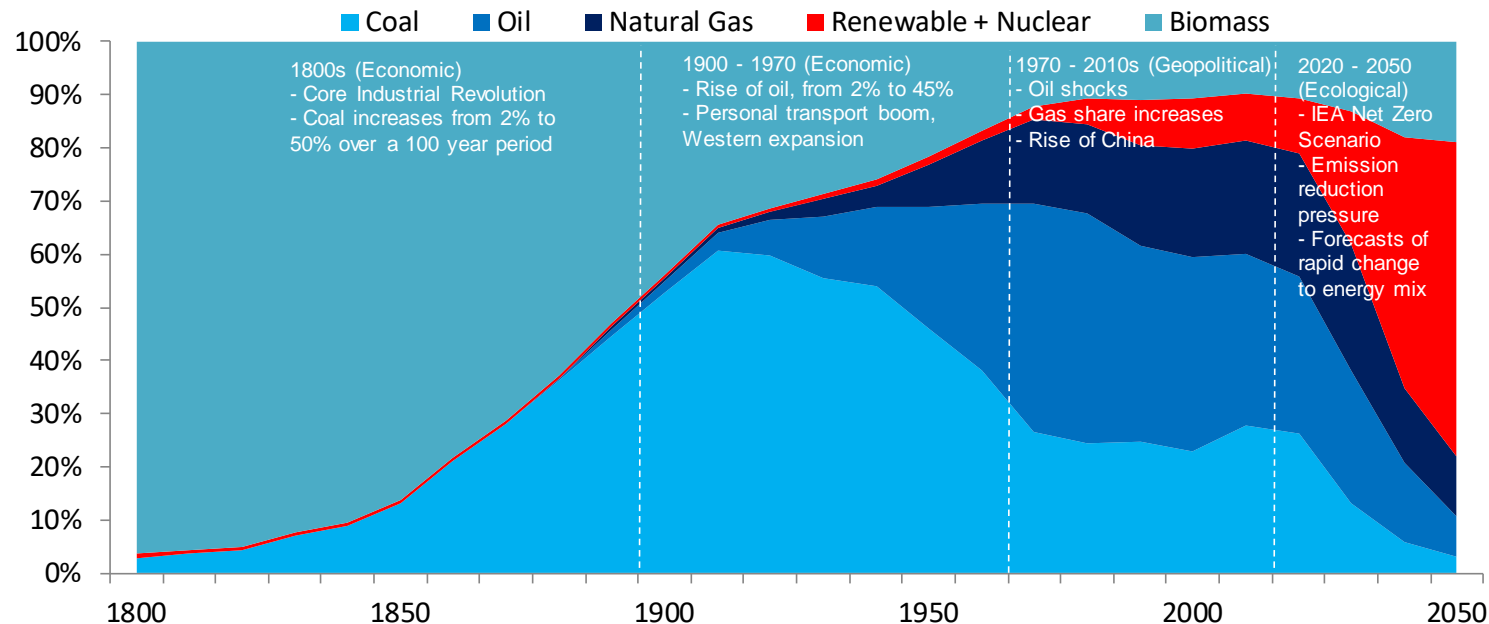


Source: Net Zero Tracker, Trafigura Research

# Energy sources have transitioned several times in the past 200 years

## Energy mix, Global

Stated as share of primary energy, %

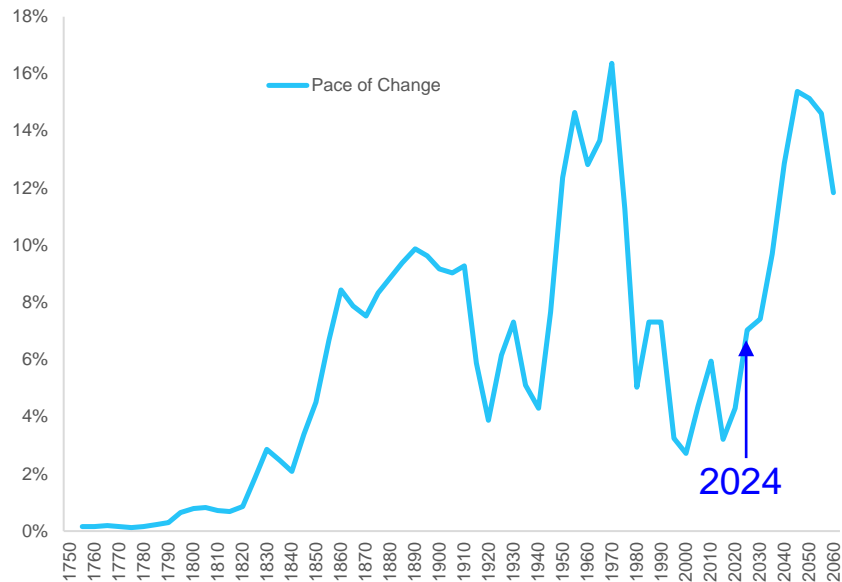


Source: IEA, Trafigura Research

# A fast change in the global energy mix is needed in order to decarbonise

## How quickly is the energy mix changing?

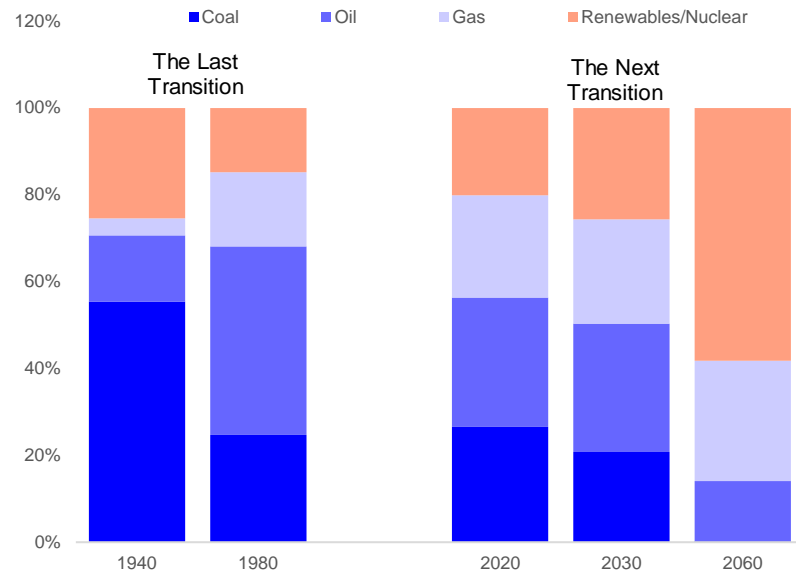
Stated as rate of change index, %



Source: Trafigura Research

## What do the different transitions look like?

Stated as share of primary energy, %

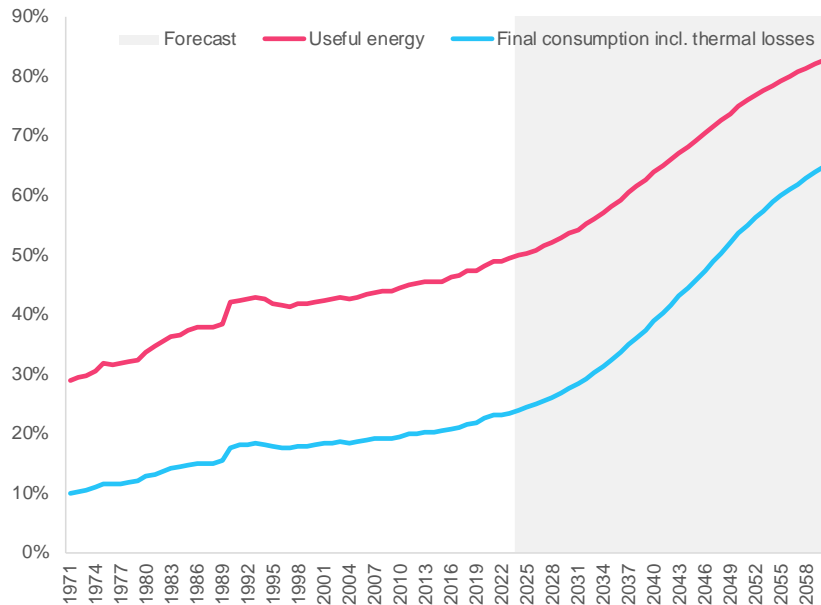


Source: Trafigura Research

# The pace of electrification will increase - transportation being the step-change

## Electricity share of energy consumption

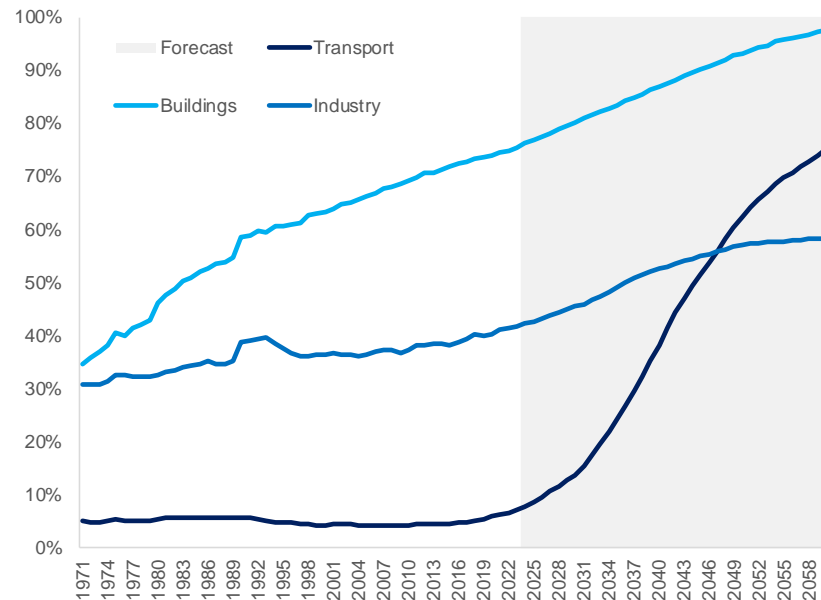
Stated as % total



Source: Trafigura Research

## Electricity share of useful energy by sector

Stated as % total

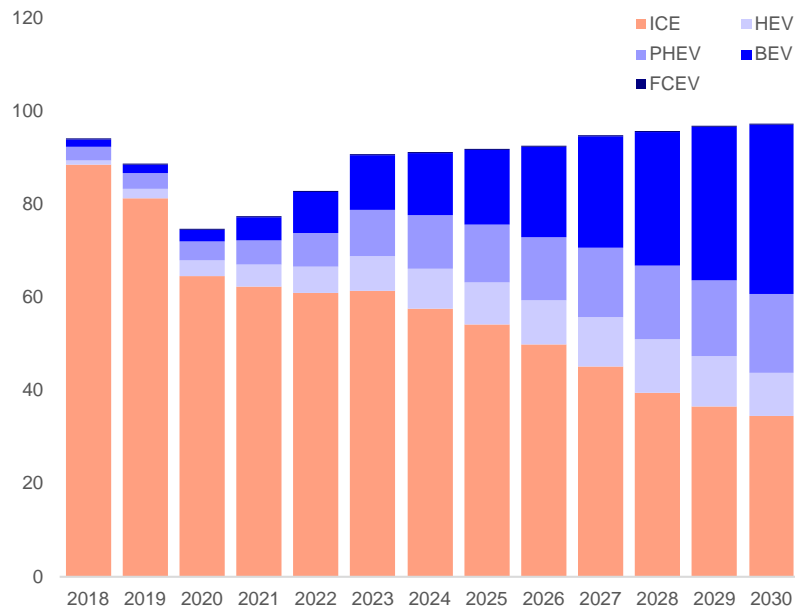


Source: Trafigura Research

# ICE production is falling but most new cars are still using oil

## Auto production forecast - typical powertrain split

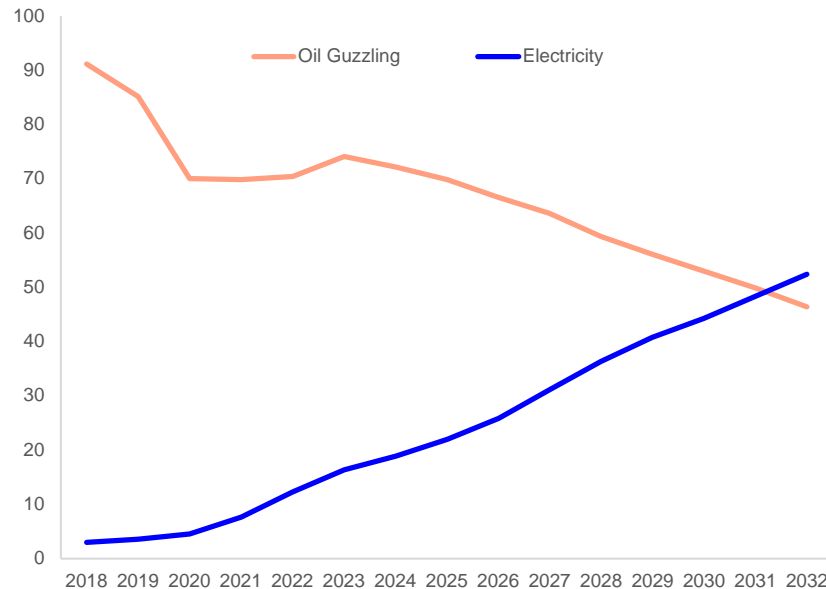
Stated as million cars



Source: Trafigura Research

## Oil is still the main fuel for new cars through to early 2030s

Stated as million cars

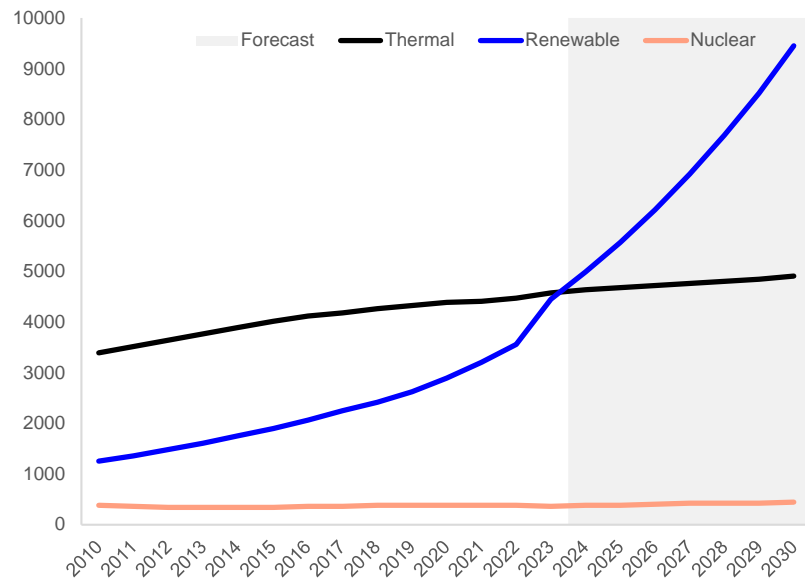


Source: Trafigura Research

# Renewable capacity now exceeds thermal – but low utilisation rates a problem

## The renewable inflection point is here - total capacity installed

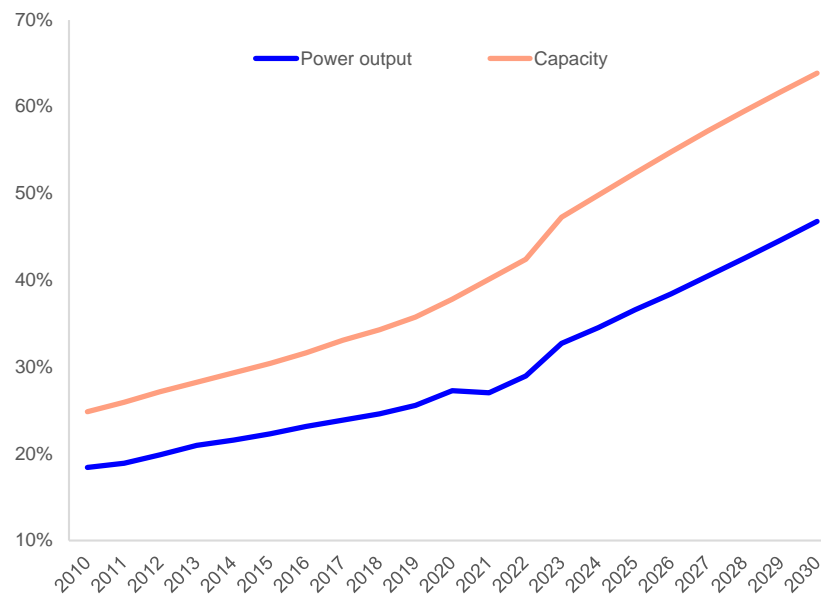
Stated in GW



Source: Trafigura Research, IEA Net Zero, TSE, BP, BNEF

## Renewable share of power generation and capacity

Stated in % total



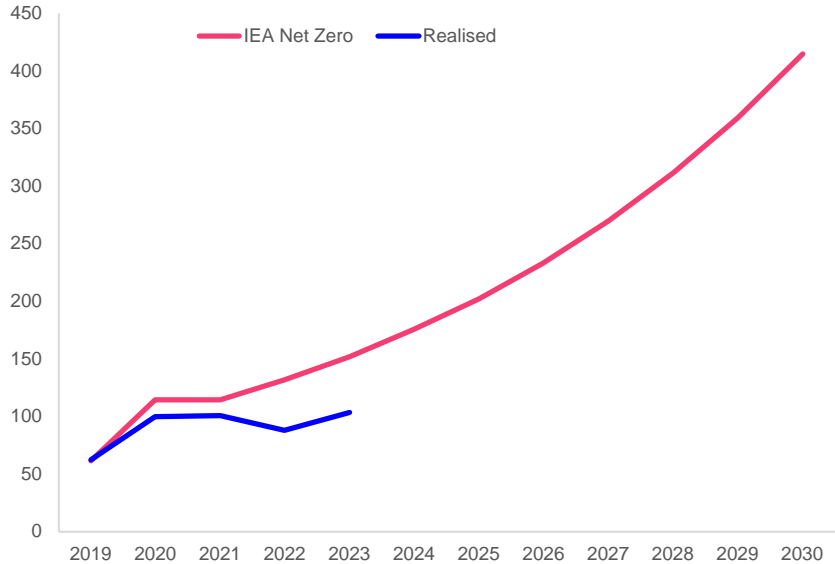
Source: Trafigura Research, IEA Net Zero, TSE, BP, BNEF



# The world is accelerating its renewable installations – especially solar

## Wind installations vs IEA net zero forecast

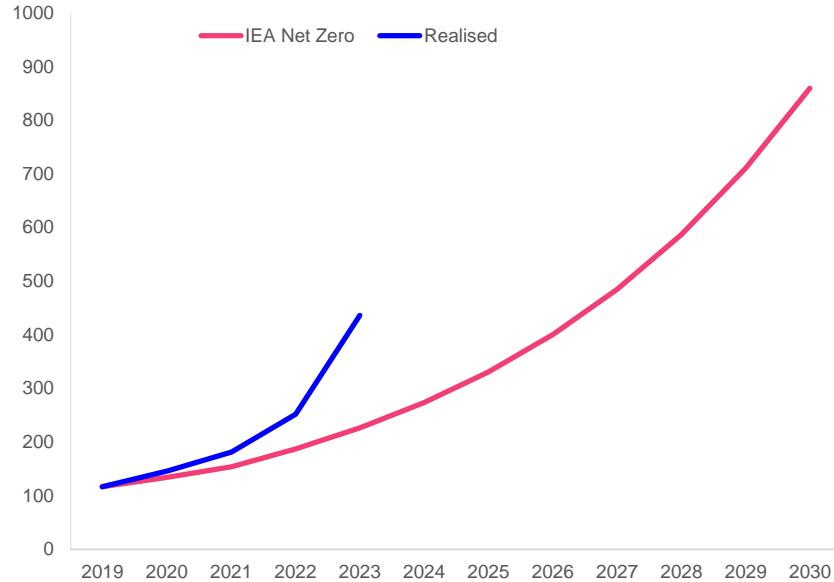
Stated in GW



Source: Trafigura Research, IEA Net Zero, TSE, BP, BNEF

## Solar installations vs IEA net zero forecast

Stated in GW

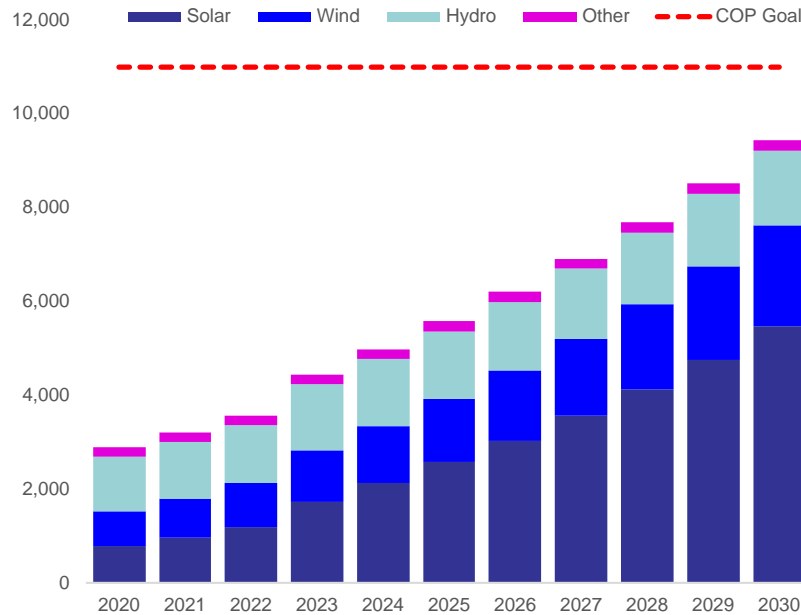


Source: Trafigura Research, IEA Net Zero, TSE, BP, BNEF

# Is the COP renewables goal achievable? Yes, but it won't be easy

## Renewable capacity forecast vs COP goal

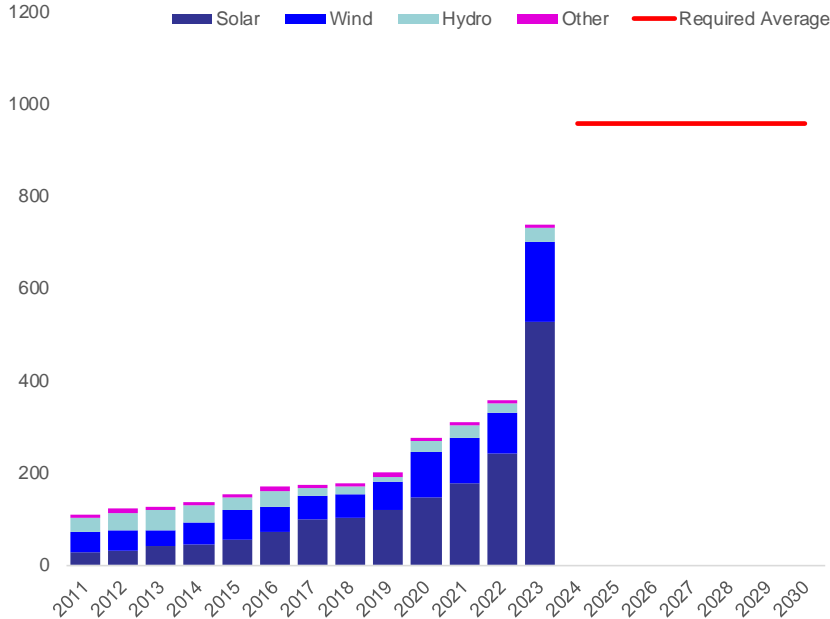
Stated as GW installed



Source: Trafigura Research, CAT, IEA, TSE, Academic Papers

## Required renewable build to meet COP target

Stated in GW per year

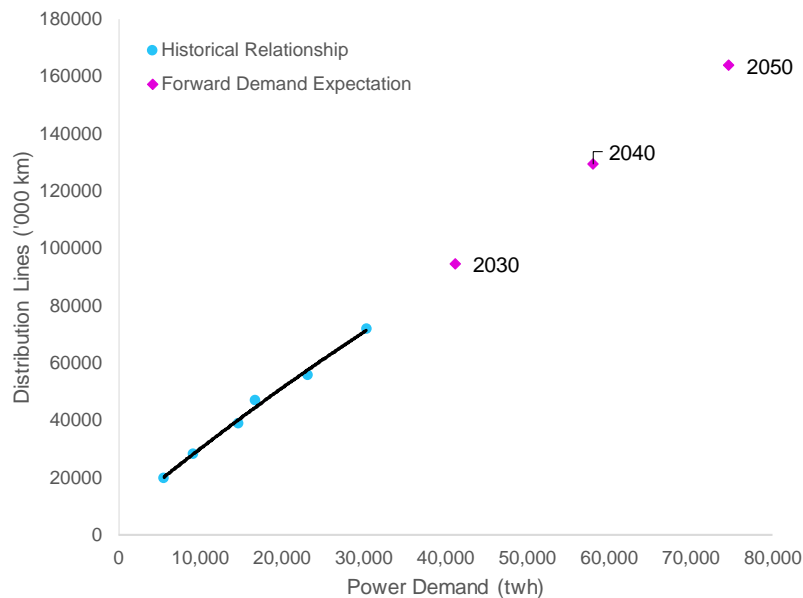


Source: Trafigura Research, IEA Net Zero, TSE, BP, BNEF

# Electrification set to double power demand – and double the number of wires and cables

## Impact of power demand on distribution cable requirements

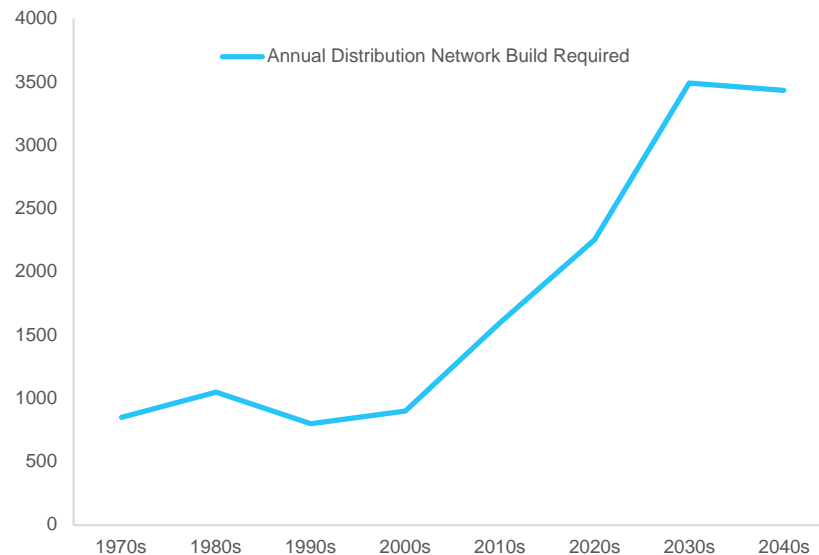
Stated as '000kms of installed power lines



Source: Trafigura Research

## Annual distribution grid building requirement

Stated as '000 km per year

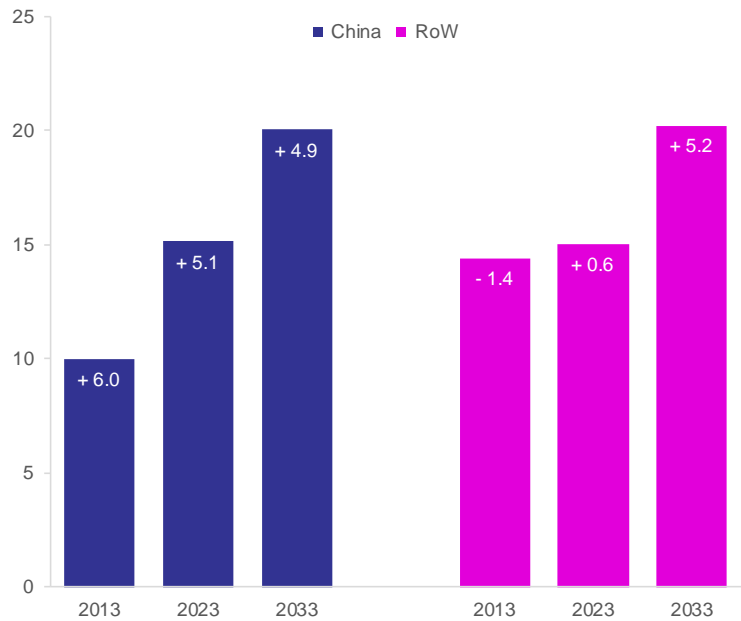


Source: Trafigura Research

# This demand cycle is global in nature – metals are no longer just a China story

Copper Semis Demand Growth by Region

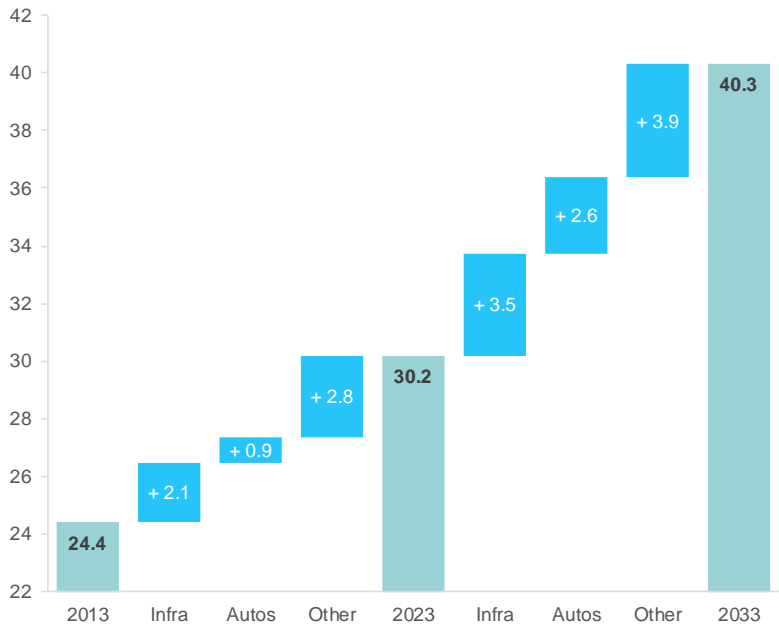
Stated in Mt



Source: Trafigura Research

Copper Semis Demand Growth by End Use

Stated in Mt



Source: Trafigura Research

# Energy transition sectors have already been an offset to weaker cyclical sectors

## Change in Copper Consumption, 2021-2023, Global

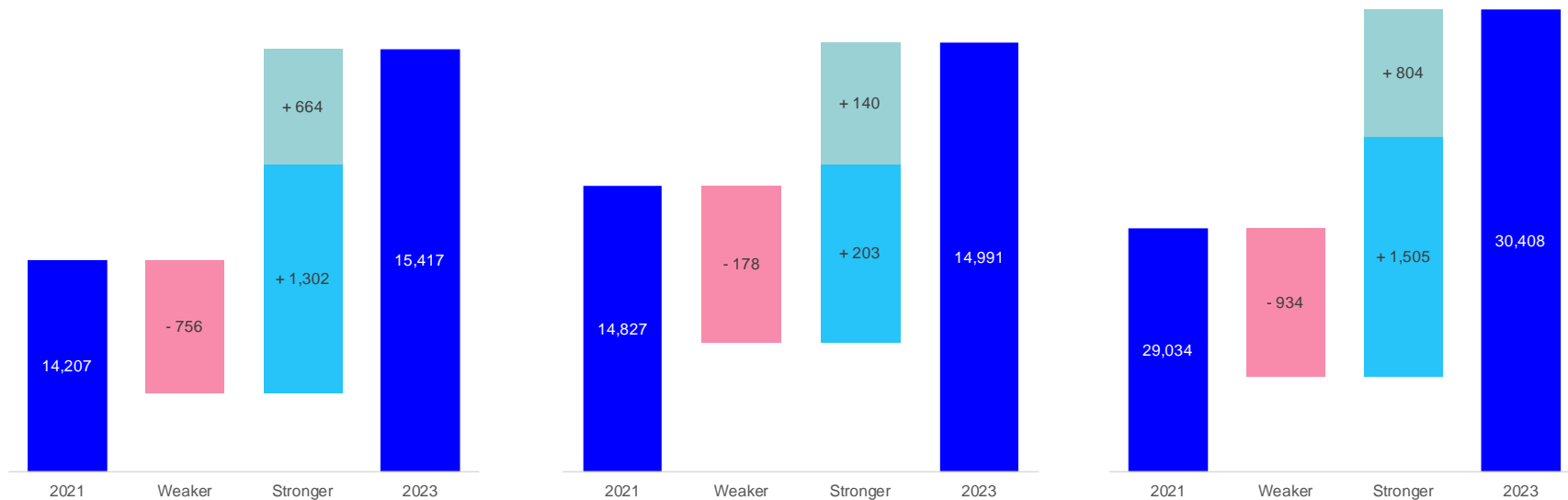
Stated in kt

■ Total Consumption ■ Construction ■ Infra & Machinery ■ Autos & Consumer

### China

### RoW

### Global

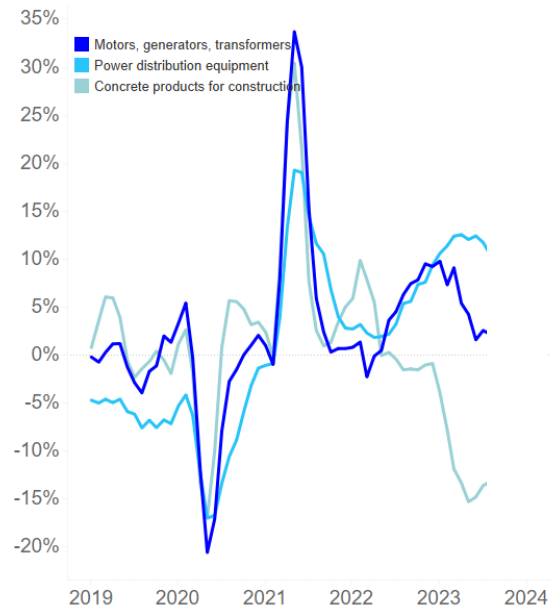


Source: Trafigura Research

# In 2023, dynamics in major consuming regions looked quite similar...

## Output of energy infra and construction products, Europe

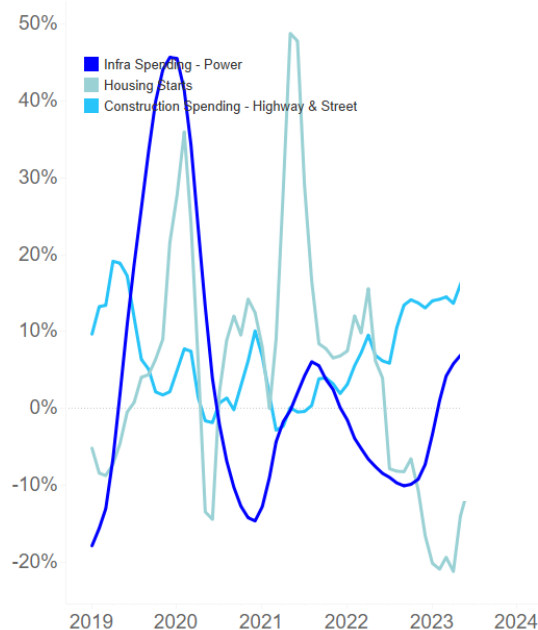
Stated in % YoY



Source: Bloomberg, Trafigura Research

## Power infrastructure spending and housing starts, US

Stated in % YoY



Source: Bloomberg, Trafigura Research

## Power infrastructure spending and housing starts, China

Stated in % YoY

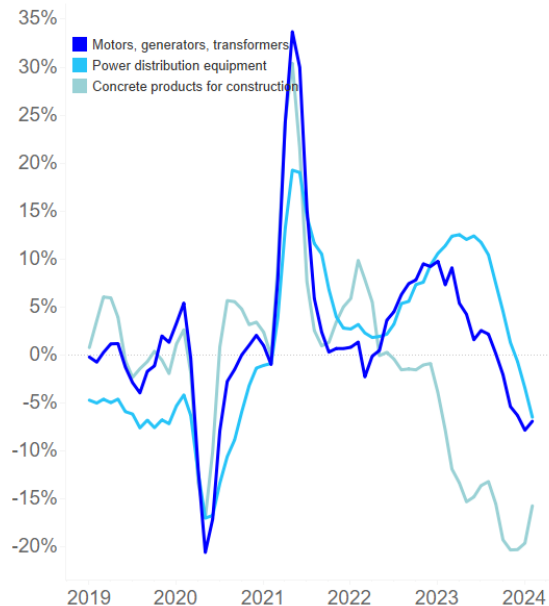


Source: Bloomberg, Trafigura Research

## ...but they look less similar in 2024 – policy approach is becoming a key differentiator

### Output of energy infra and construction products, Europe

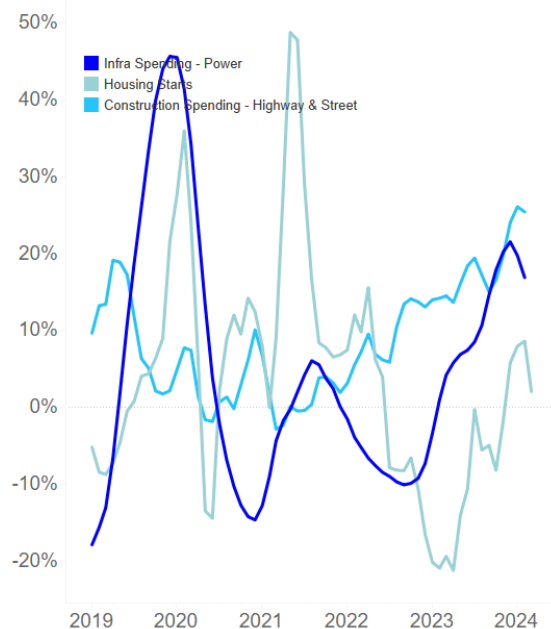
Stated in % YoY



Source: Bloomberg, Trafigura Research

### Power infrastructure spending and housing starts, US

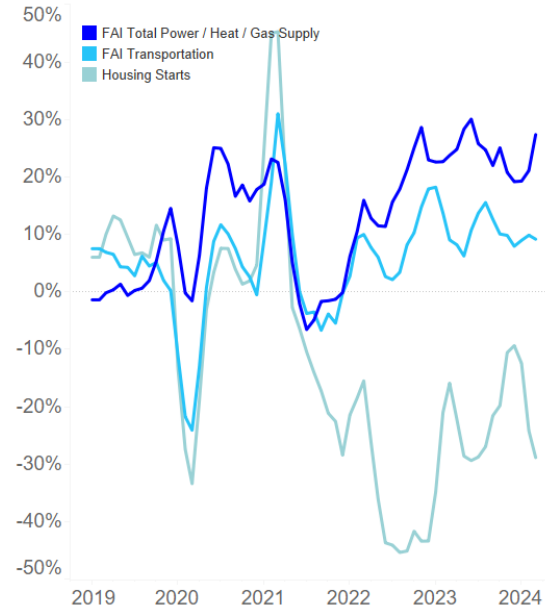
Stated in % YoY



Source: Bloomberg, Trafigura Research

### Power infrastructure spending and housing starts, China

Stated in % YoY



Source: Bloomberg, Trafigura Research

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