Daslav Brkic, Consultant, DB Business Development

Giacomo Franchini, Director, SUPPLHI

ANIMP
ASSOCIAZIONE NAZIONALE DI IMPIANTISTICA INDUSTRIALE

Sezione Componentistica D'impianto

Convegno Sezione
Componentistica d'Impianto ANIMP

October 22nd, 2024

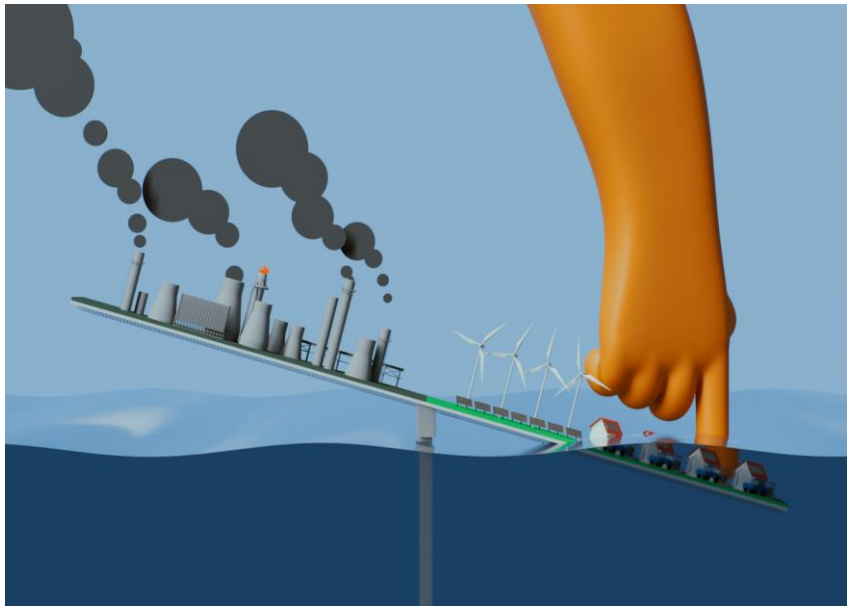
Energy Industry Global Markets Forecast and Supply Chain Trends 2024

AGENDA

Market Trends
(D. Brkic)

Top 5 Trends in Supply Chain

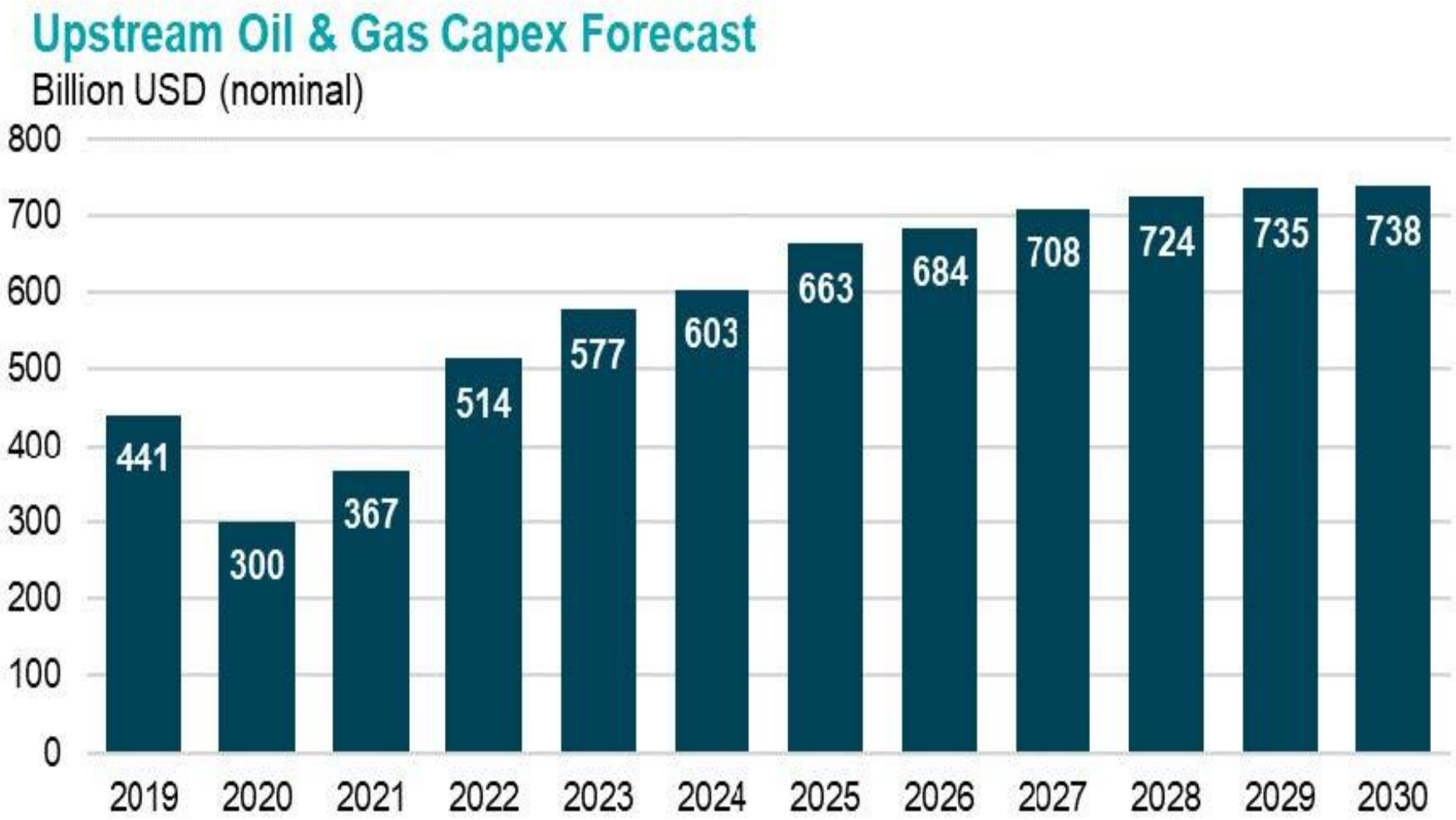
Executive summary



Rampini hydrogen bus for Vienna

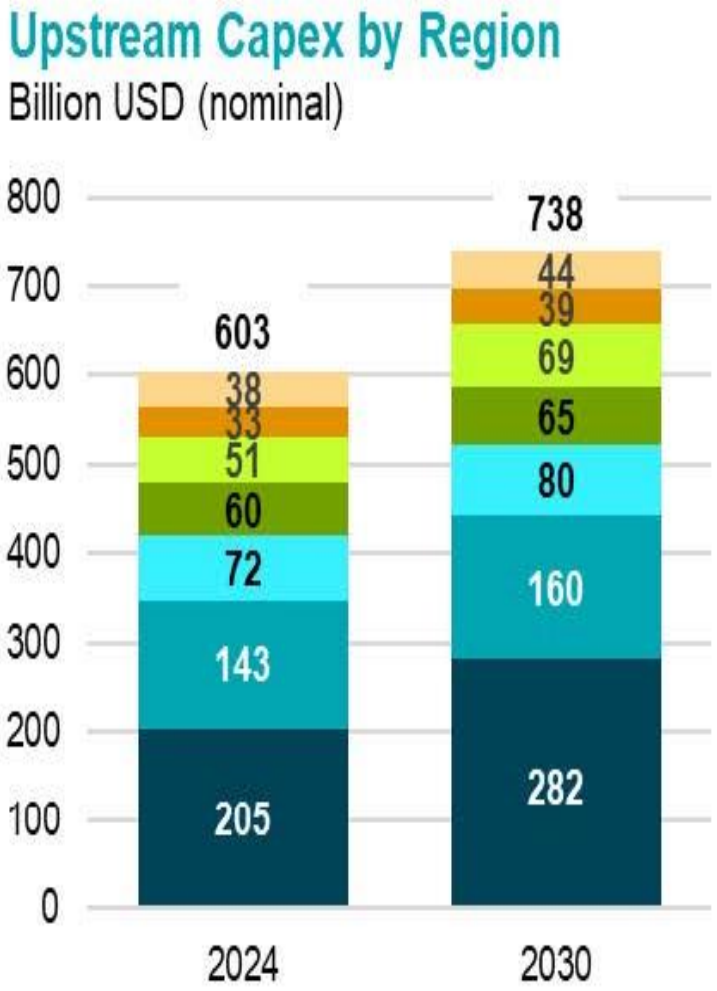
- Most likely, **oil & gas demand to continue growing,** to reach a plateau in a decade
- The **energy transition** is a reality, albeit proceeding at a somewhat **slower pace** than expected, with major uncertainties about:
  - Timing
  - Exact direction
  - Quantification
- **Renewables** taking over rapid growth of **electrification**– are **batteries** next?
- **More efficient transportation engines** and **EVs** to reduce the oil demand
- Major new breakthroughs, e.g. the **'Hydrogen Economy', nuclear, new fuels,** at the doorstep, but will require
  - More industrial development
  - Stronger incentives and policies

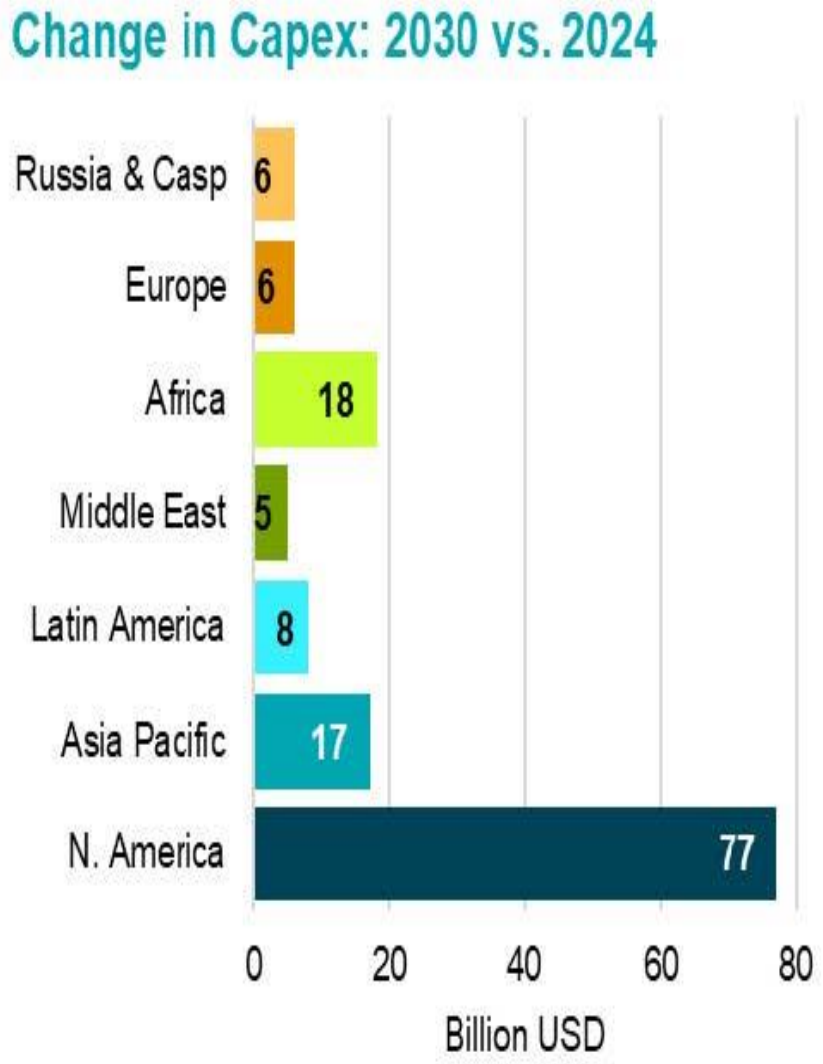
Traditional **investments** in **upstream oil&gas** will recover, then plateau



Source: IEF, S&P Global Commodity Insights

The biggest capex investments and growth will be in **North America**



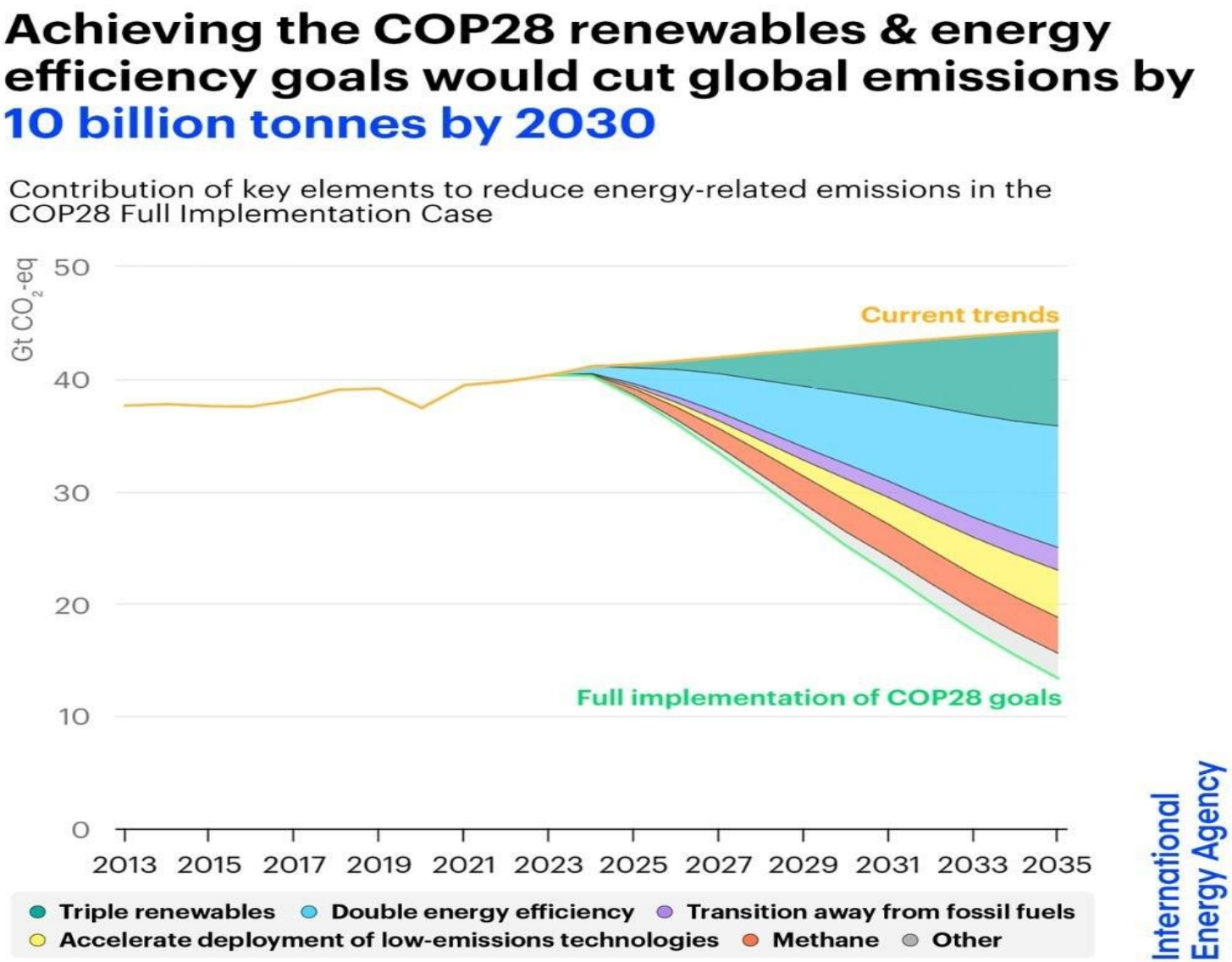


Source: IEF, S&P Global Commodity Insights

Key Energy Transition driver: Fight against **climate change**

Source: The Economist, March 2024

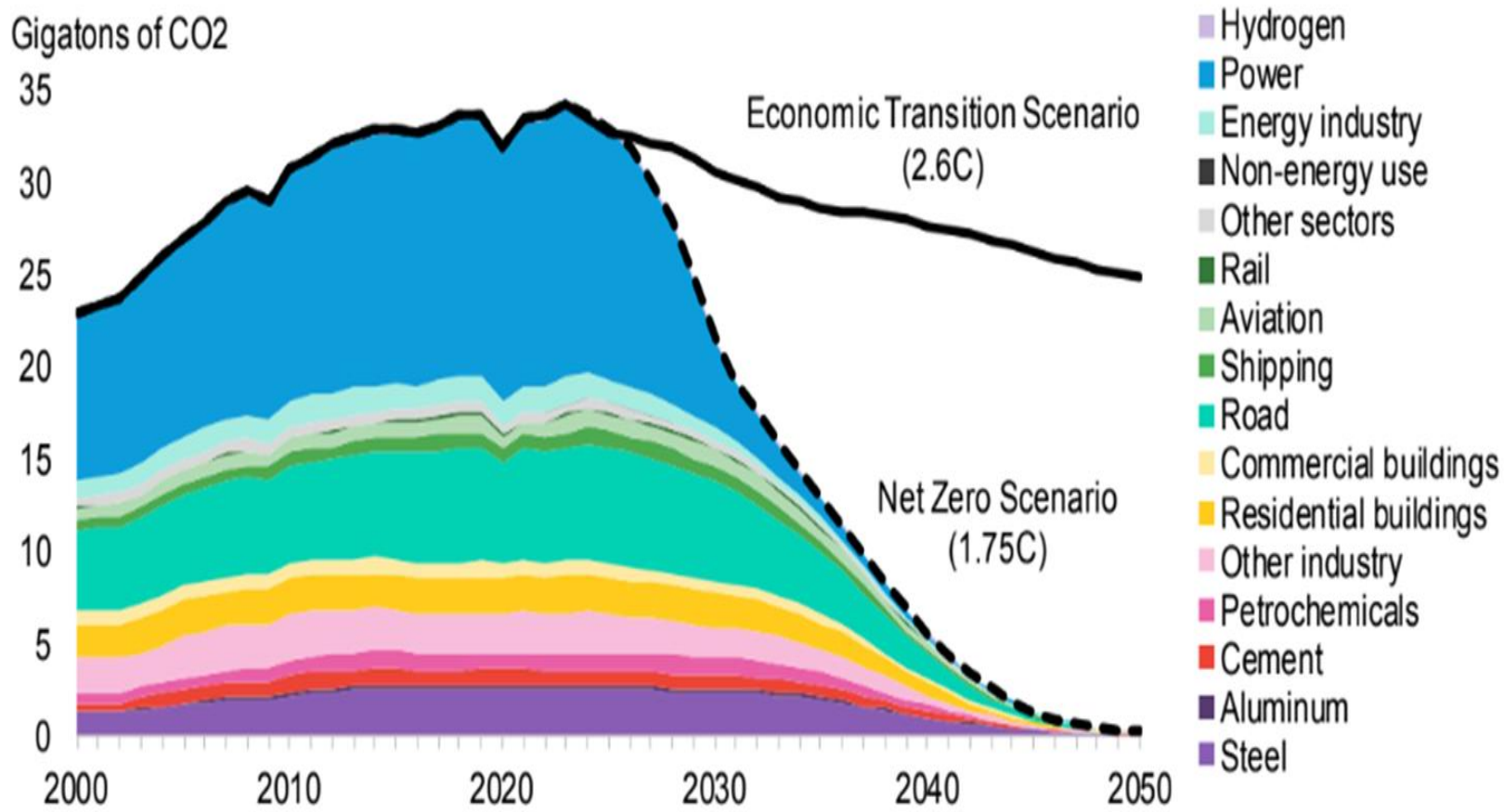
Achieving **COP28 commitments…**



Source: IEA September 2024

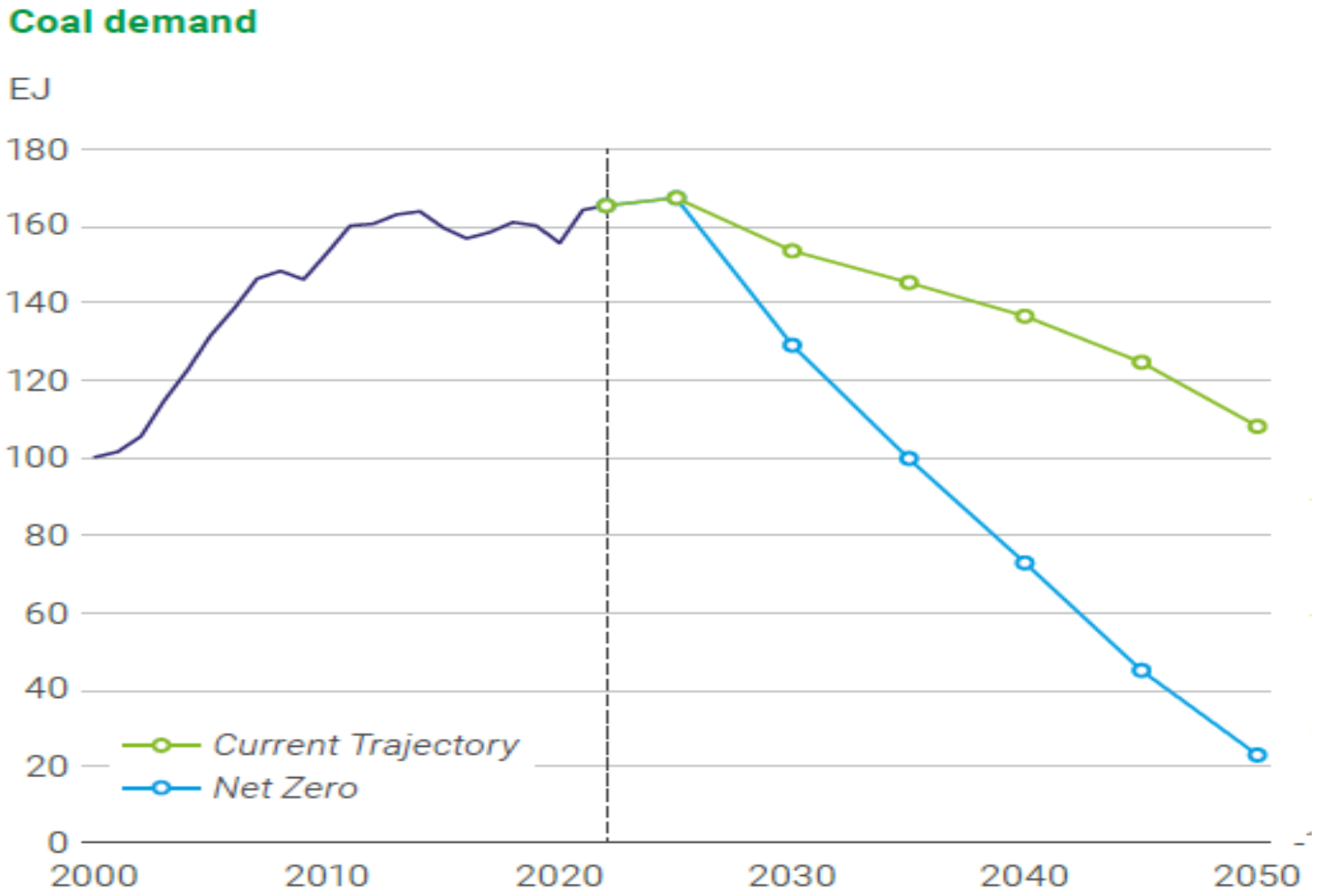
Most analysts expect an (insufficient) reduction in CO2 emissions

Energy-related emissions and net-zero carbon budget,
Economic Transition Scenario and **Net Zero Scenario**



Source: BloombergNEF June 2024

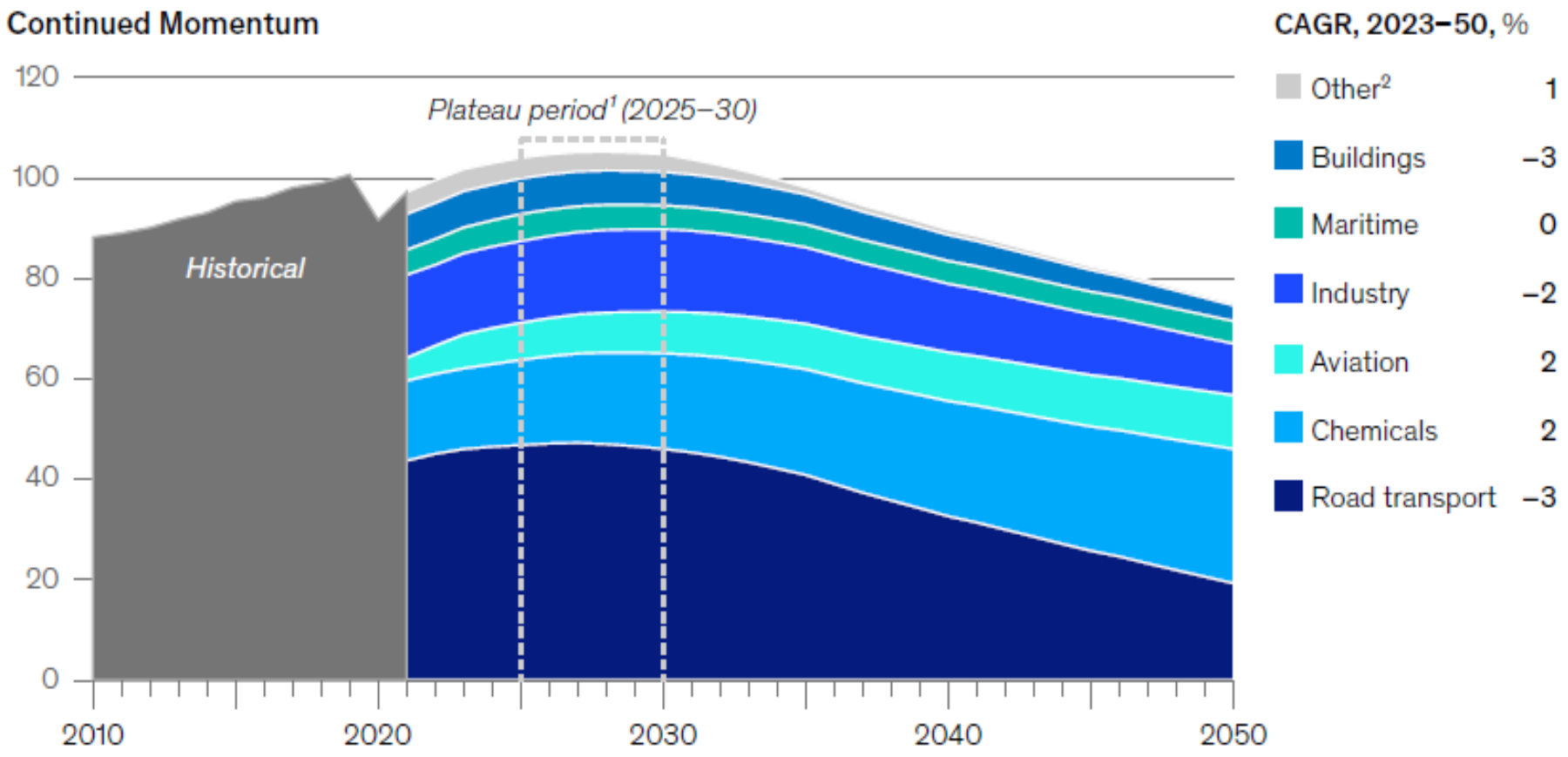
Key expectation: the decline in the role of **coal** in the global energy system, driven by China, after 2025



Source: bp Energy Outlook - 2024 edition

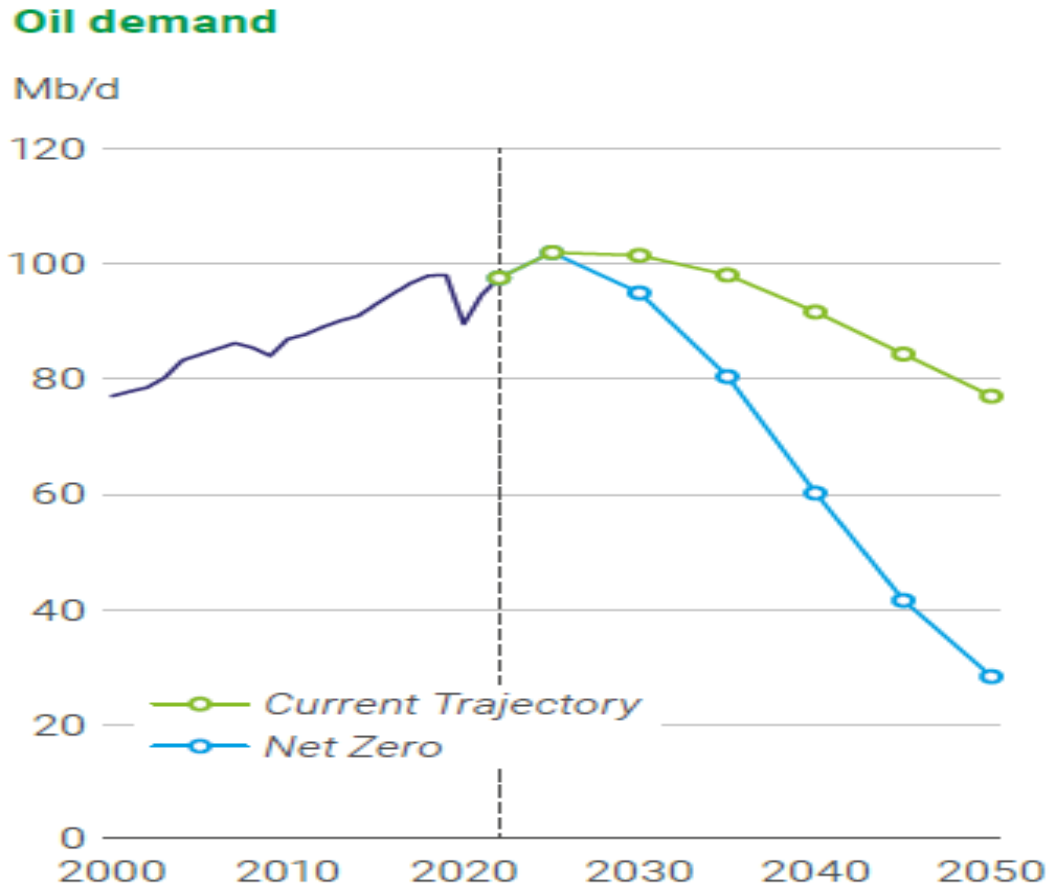
Global **oil** demand to reach a peak at the end of this decade, then gradually fall

Global oil demand (including biofuels and synfuel), MMb/d



Source: McKinsey Global Energy Perspective 2024 (September 2024)

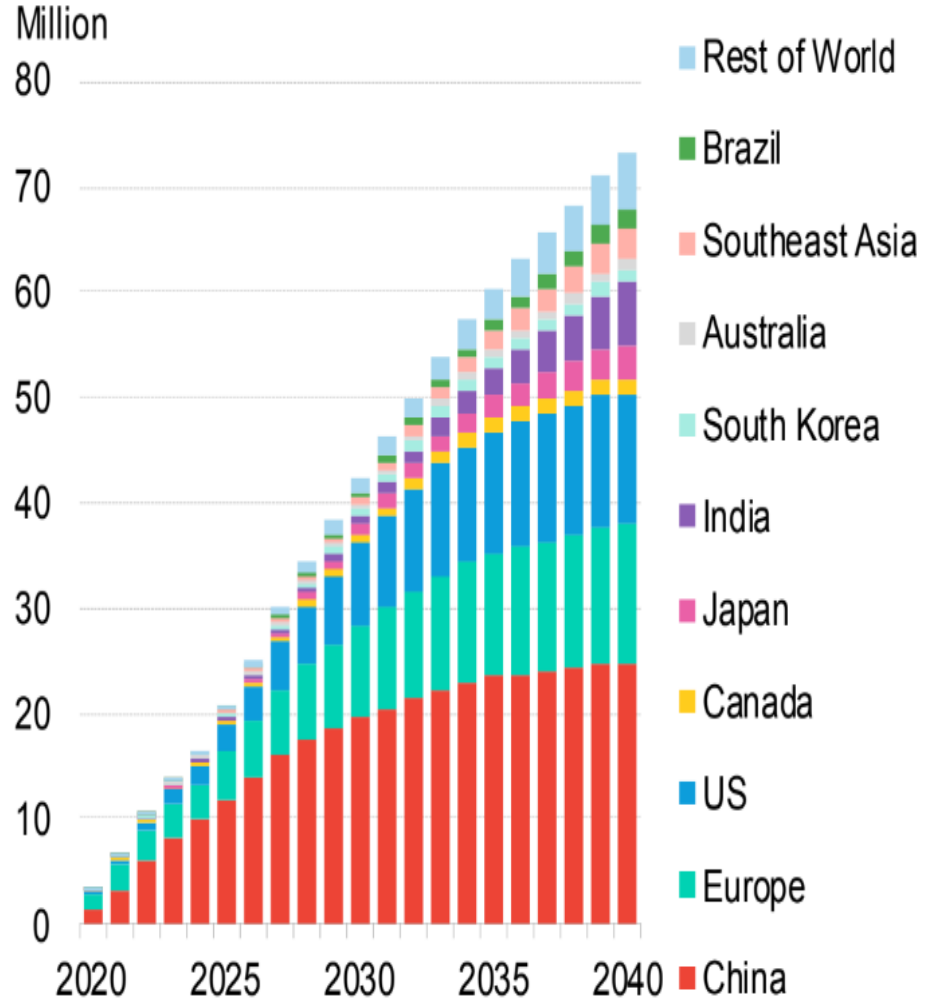
bp: **Oil** demand to fall in a few years, driven by decreased use in transportation (Increased engine efficiency, EVs, new fuels, substitution….)

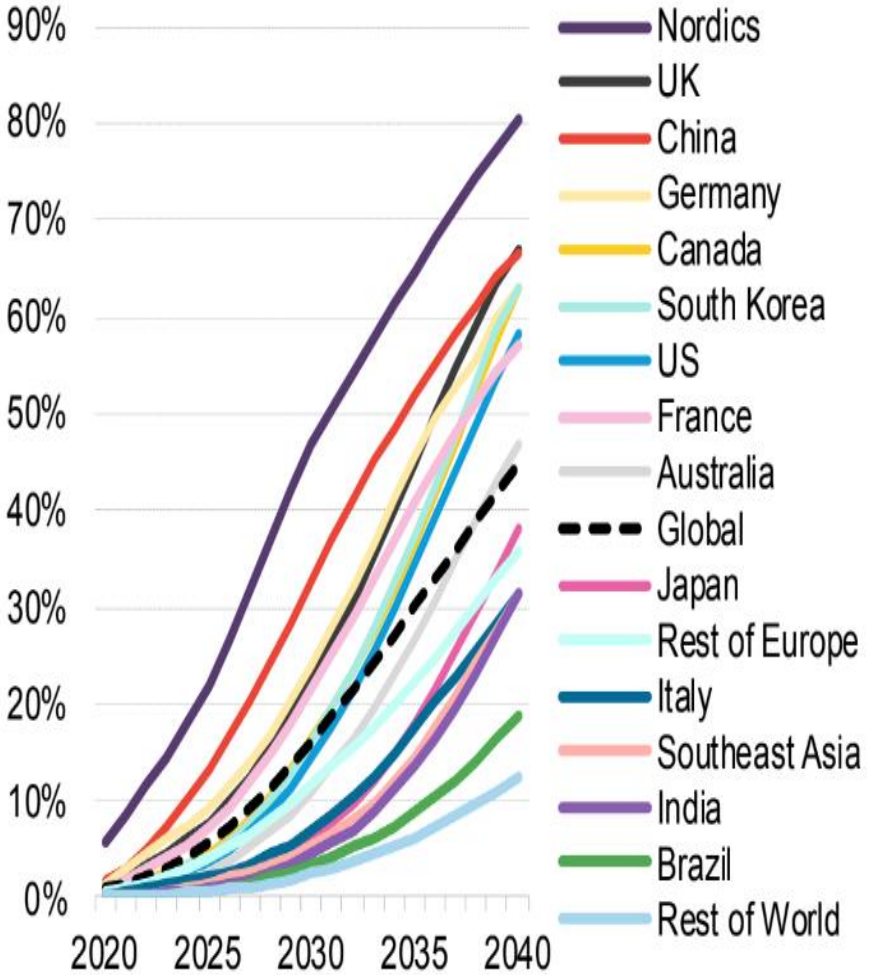


Source: bp Energy Outlook - 2024 edition

EVs to grow significantly – although less strongly than originally forecast -with inevitable impact on the oil demand

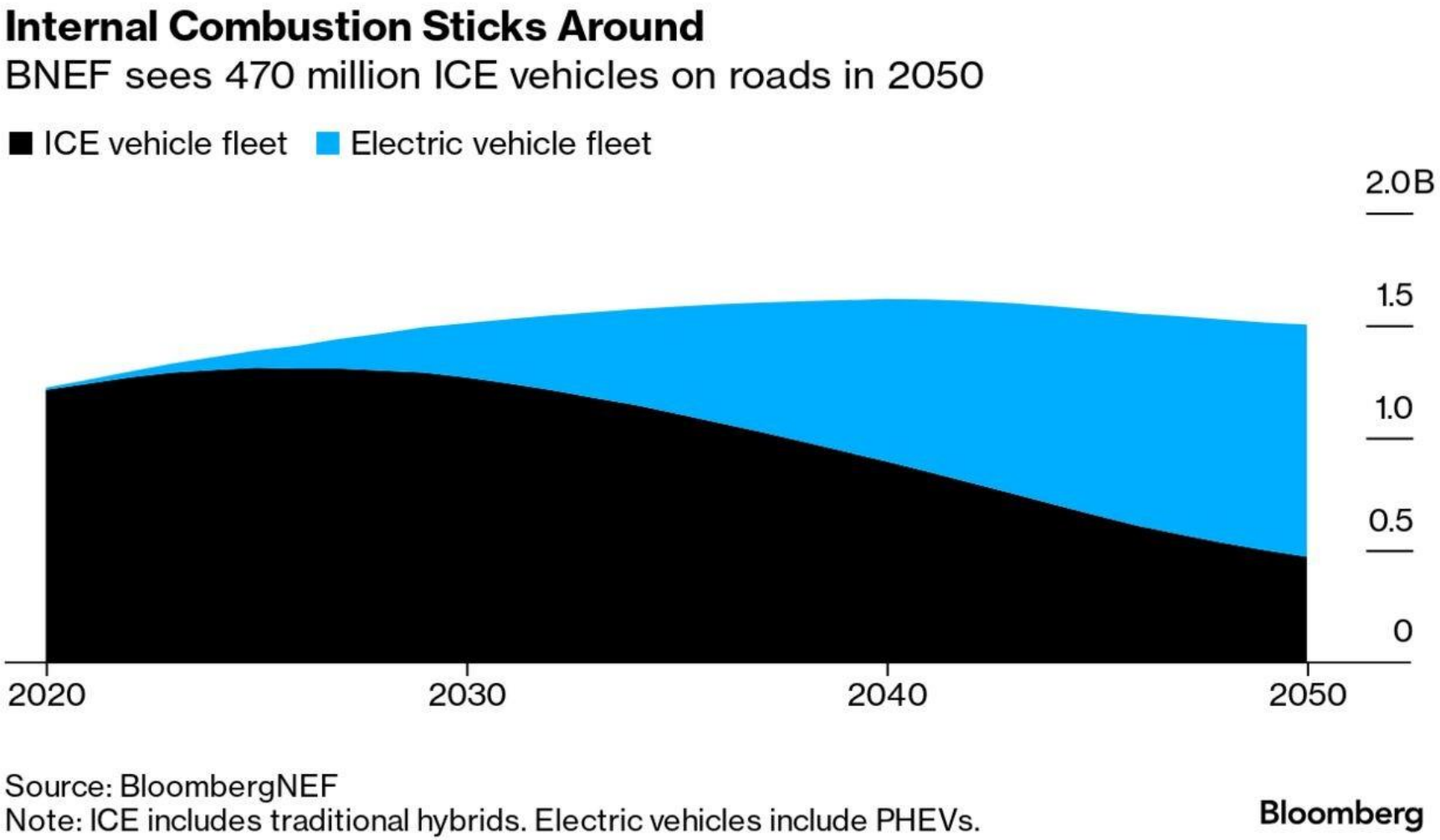
Economic Transition Scenario





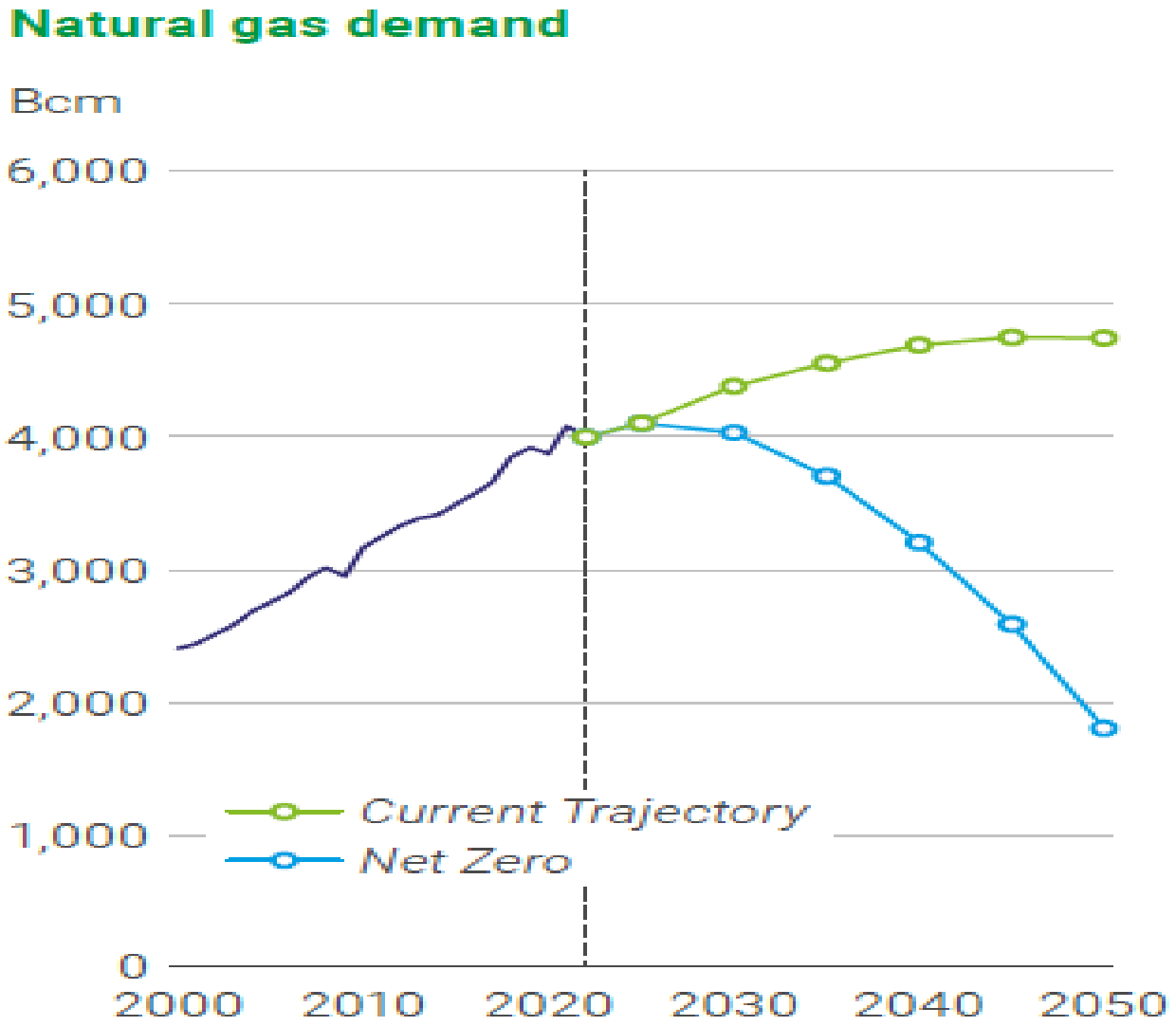
Source: BloombergNEF June 2024

The end of the “ICE age” will take some time



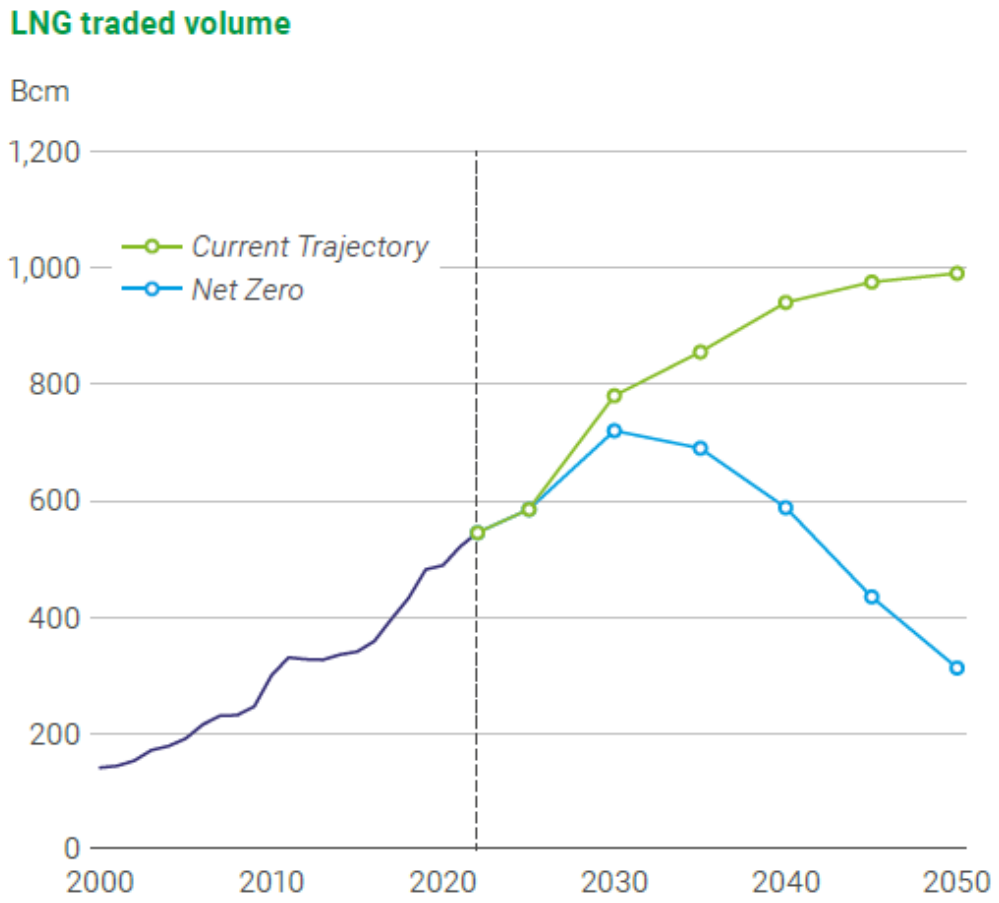
Source: BloombergNEF June 2024

Natural Gas: The demand outlook will depend on the speed of the energy transition



Source: bp Energy Outlook - 2024 edition

LNG demand to depend on gas consumption in Europe and Asia, which are reliant on LNG imports for gas supplies



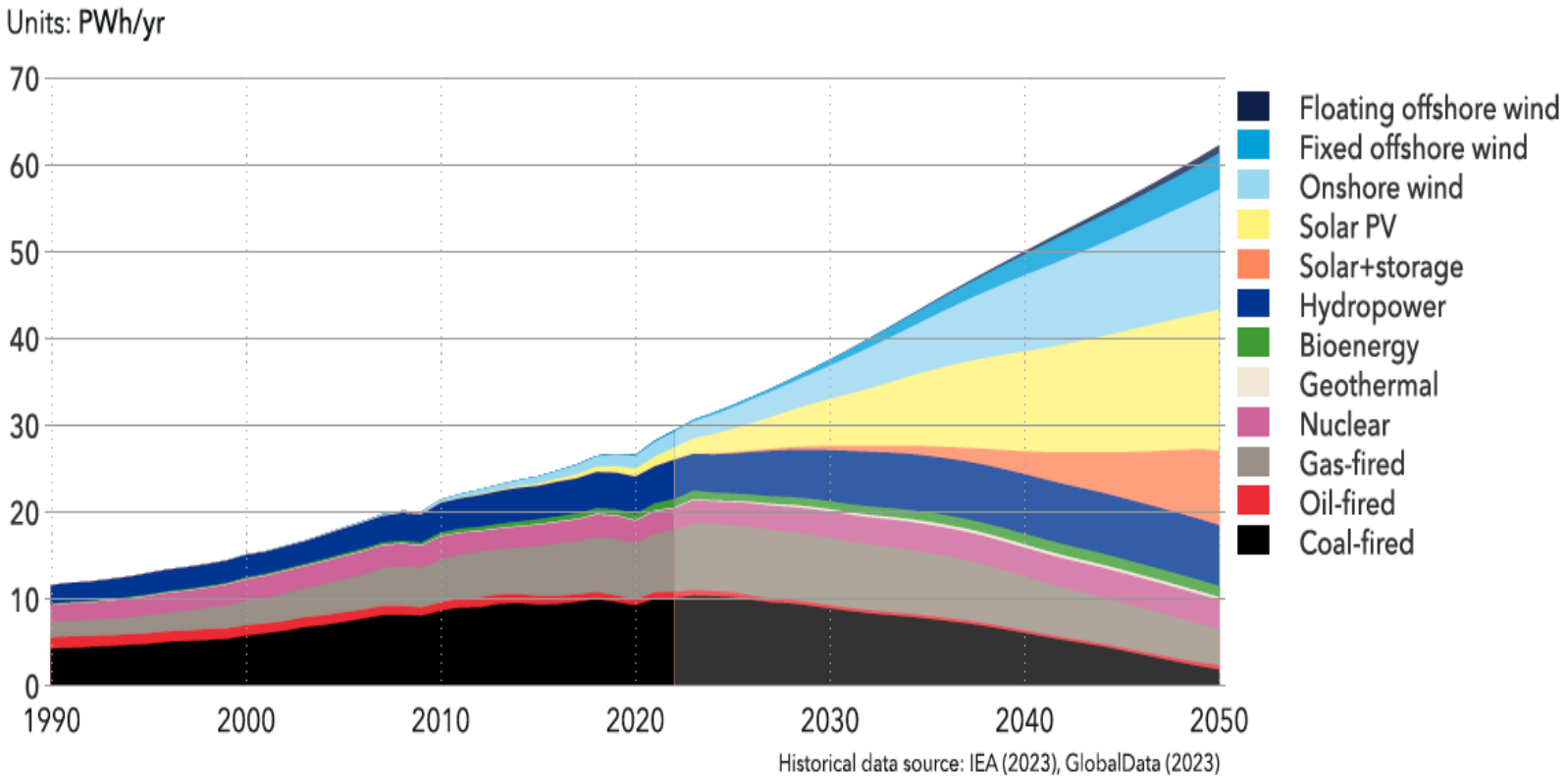
Source: bp Energy Outlook - 2024 edition

Electricity demand to grow significantly, as the world electrifies and the prosperity in developing countries increases

All growth to be satisfied by **renewables**

FIGURE 1.5

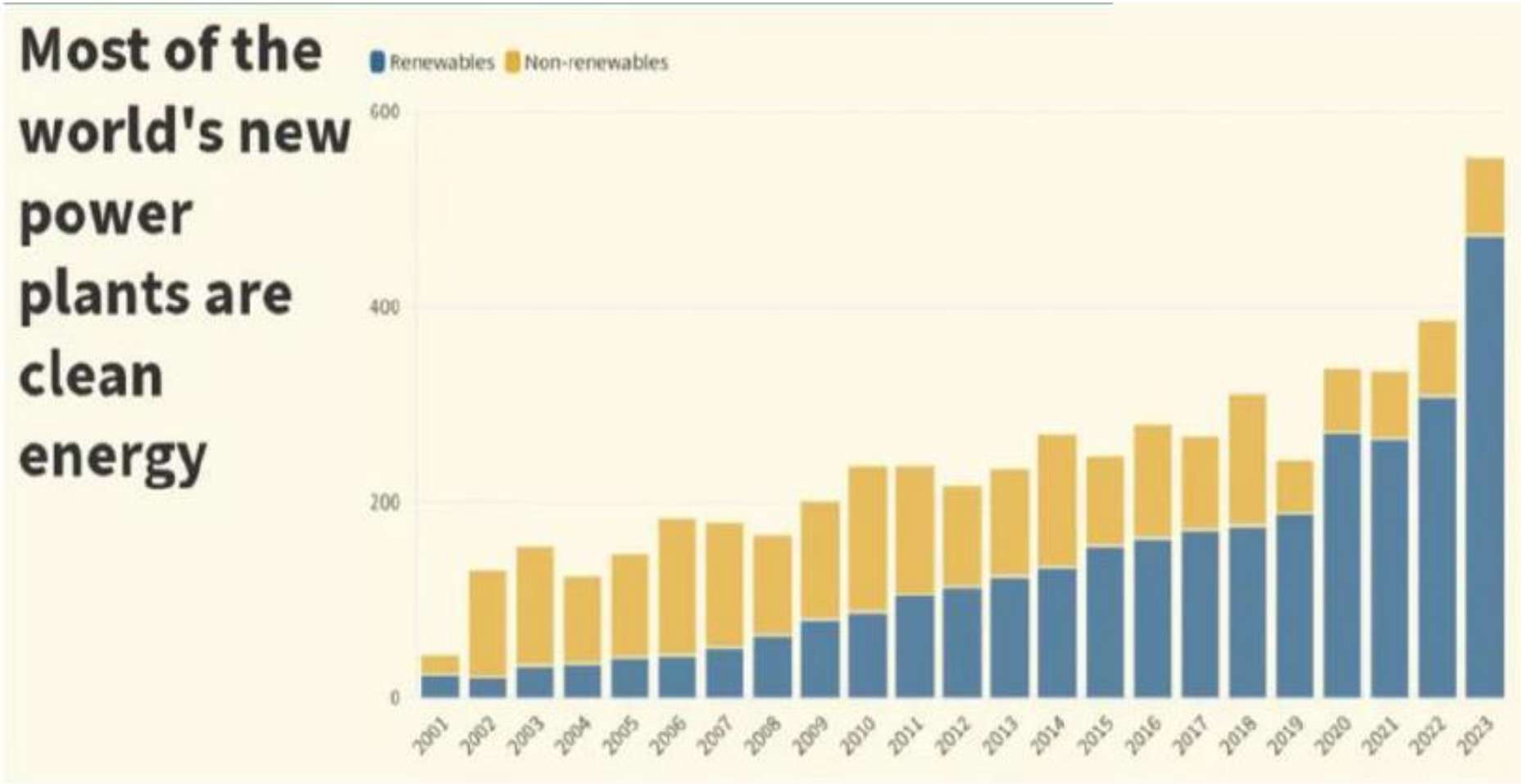
World grid-connected electricity generation by power station type



Source: DNV New Power Systems (June 2024)

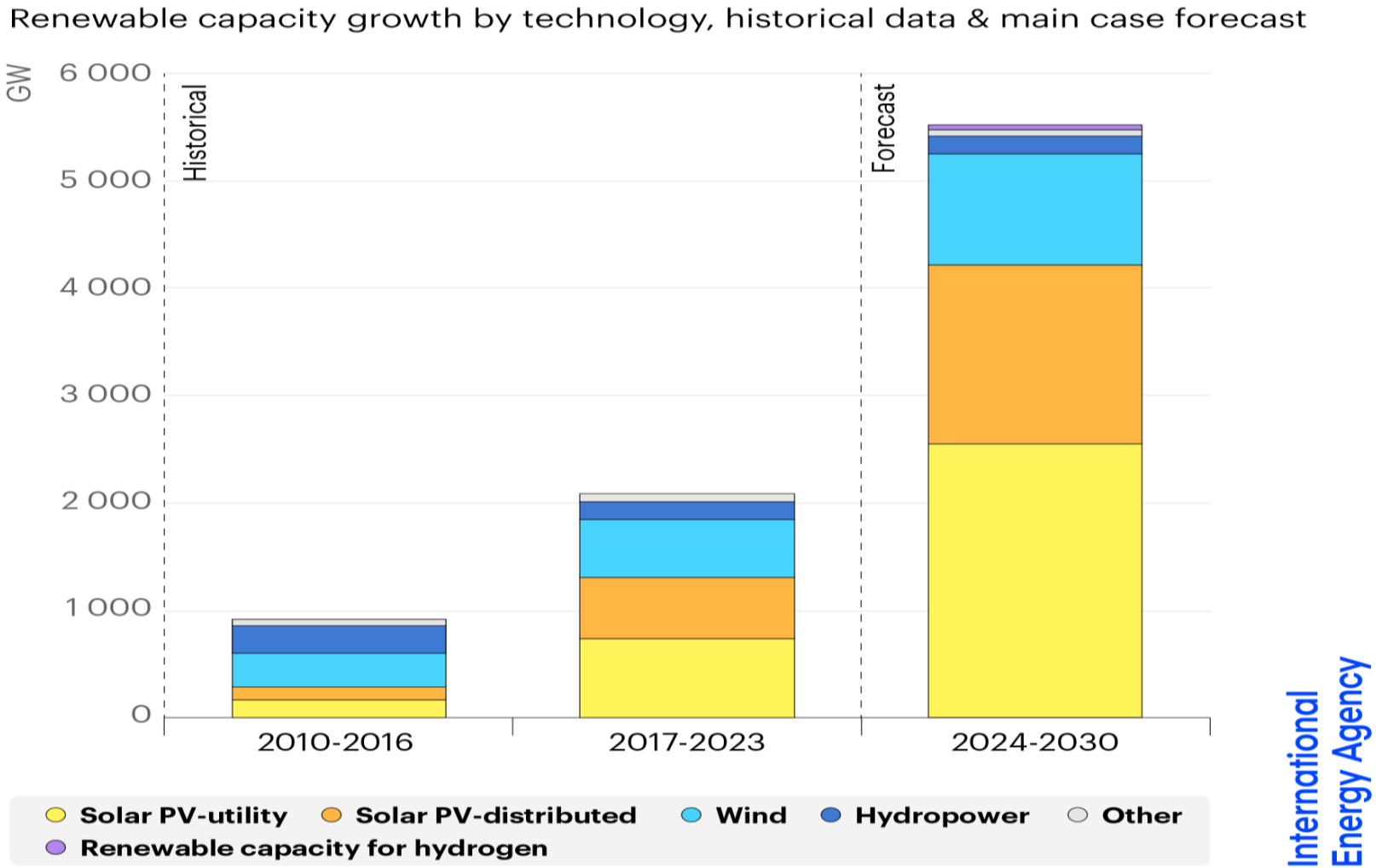
Already today most new power investment capacity is **renewables-based**

IRENA: 85% of new capacity additions are renewable globally



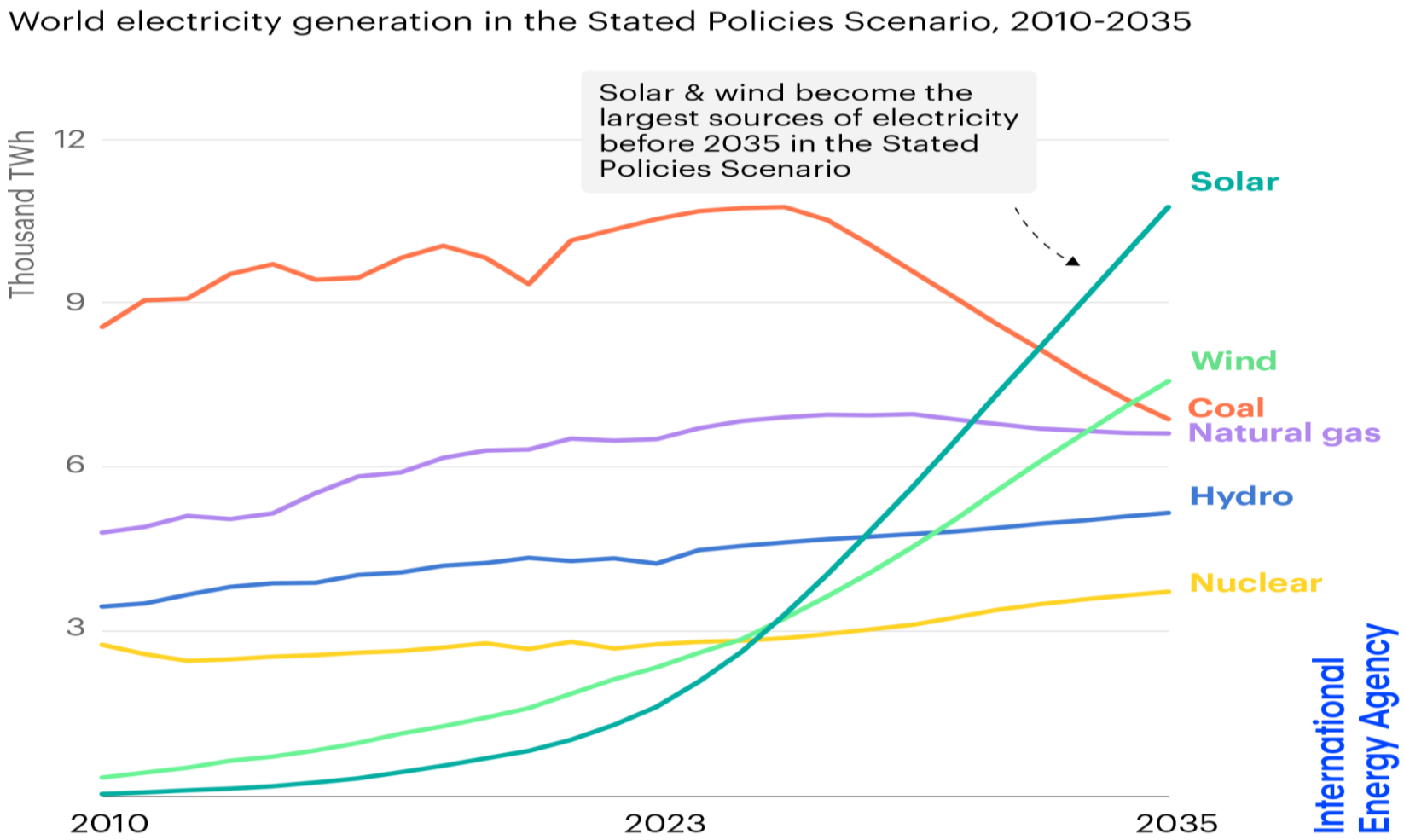
Source: IRENA August 2024

Solar PV is set to dominate renewables' expansion between now & 2030



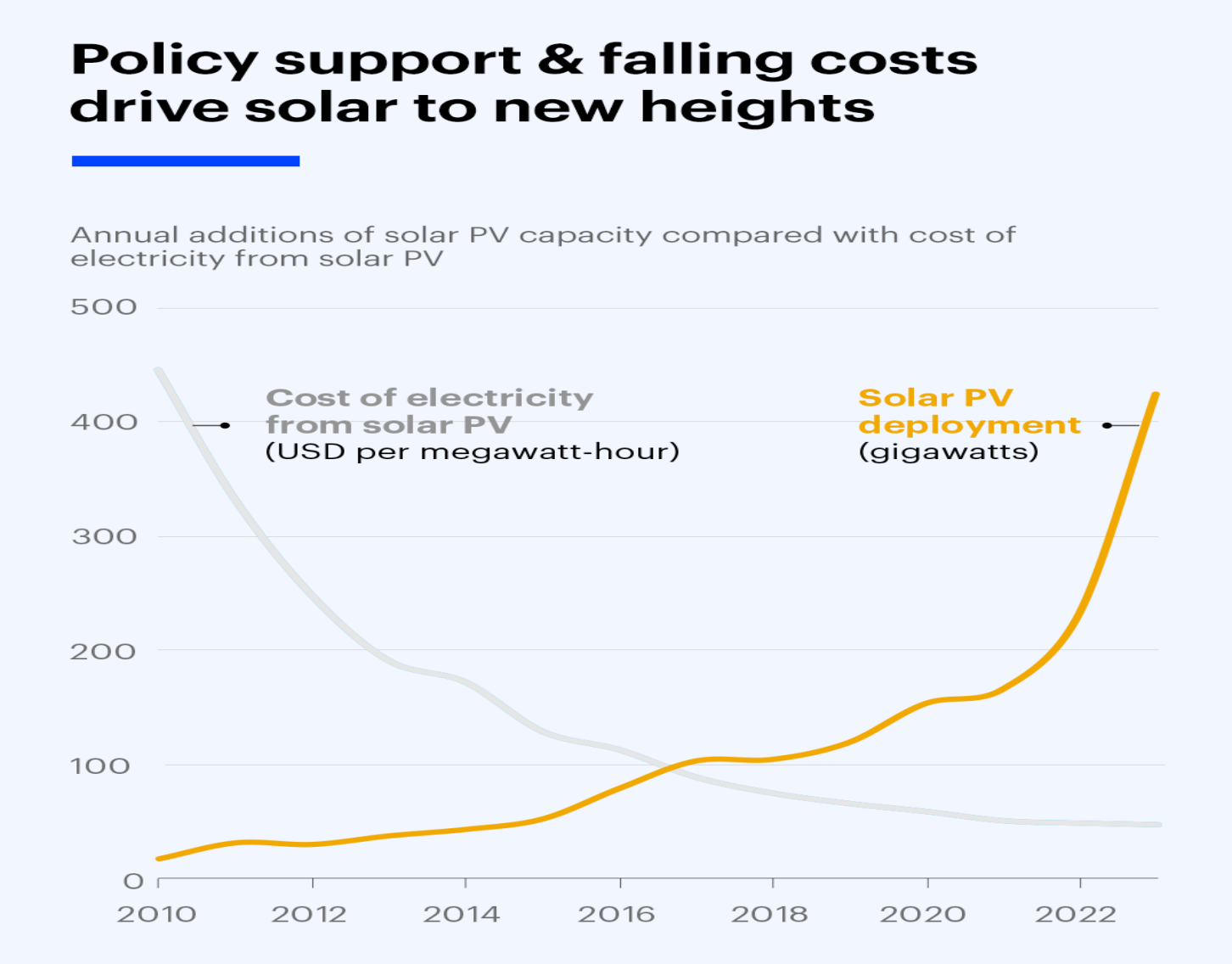
Source: IEA October 2024

Under today's policy settings, both **solar PV & wind surpass coal** as the largest sources of electricity before 2035



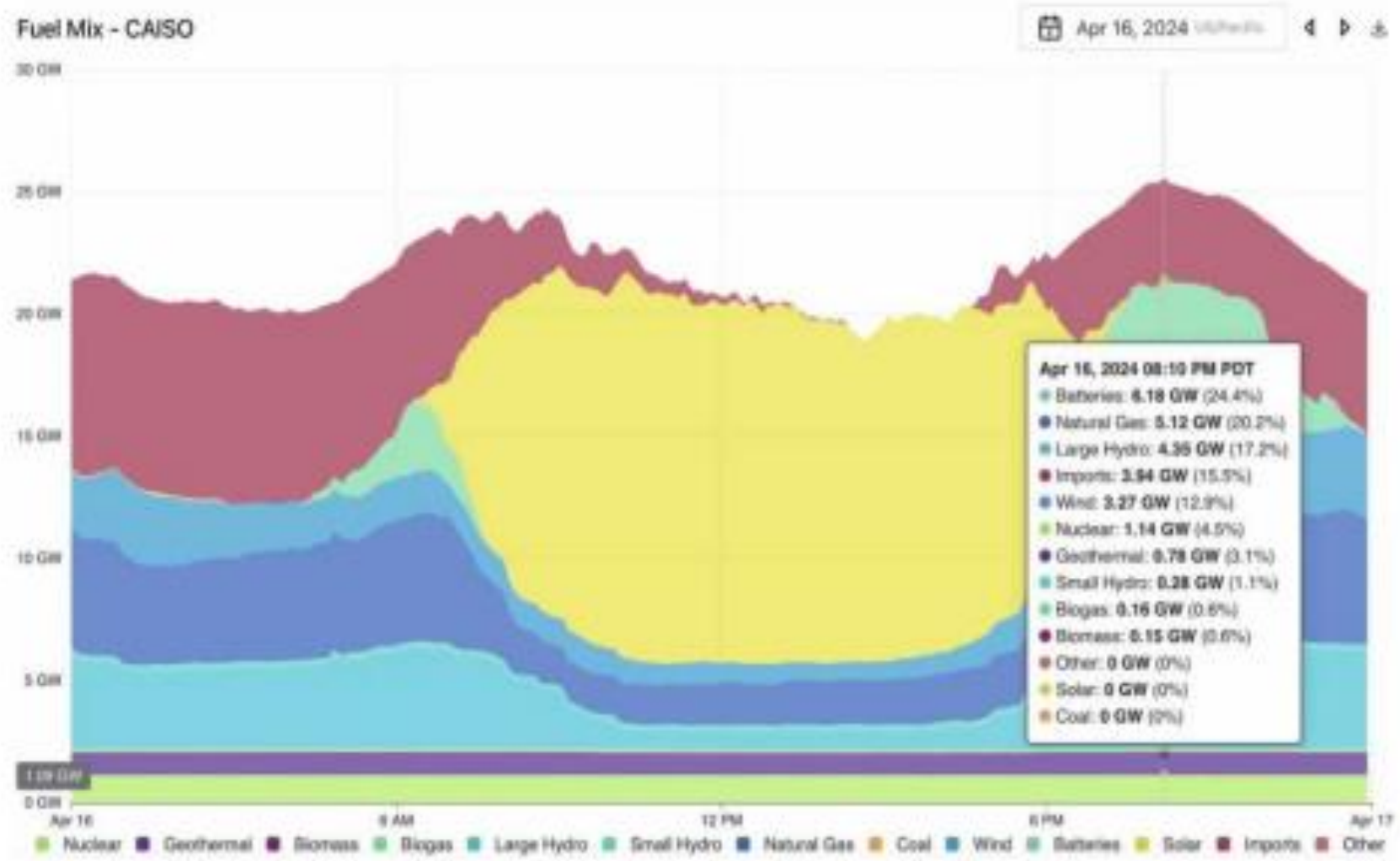
Source: IEA October 2024

Costs of **solar** and **wind power** production have fallen dramatically



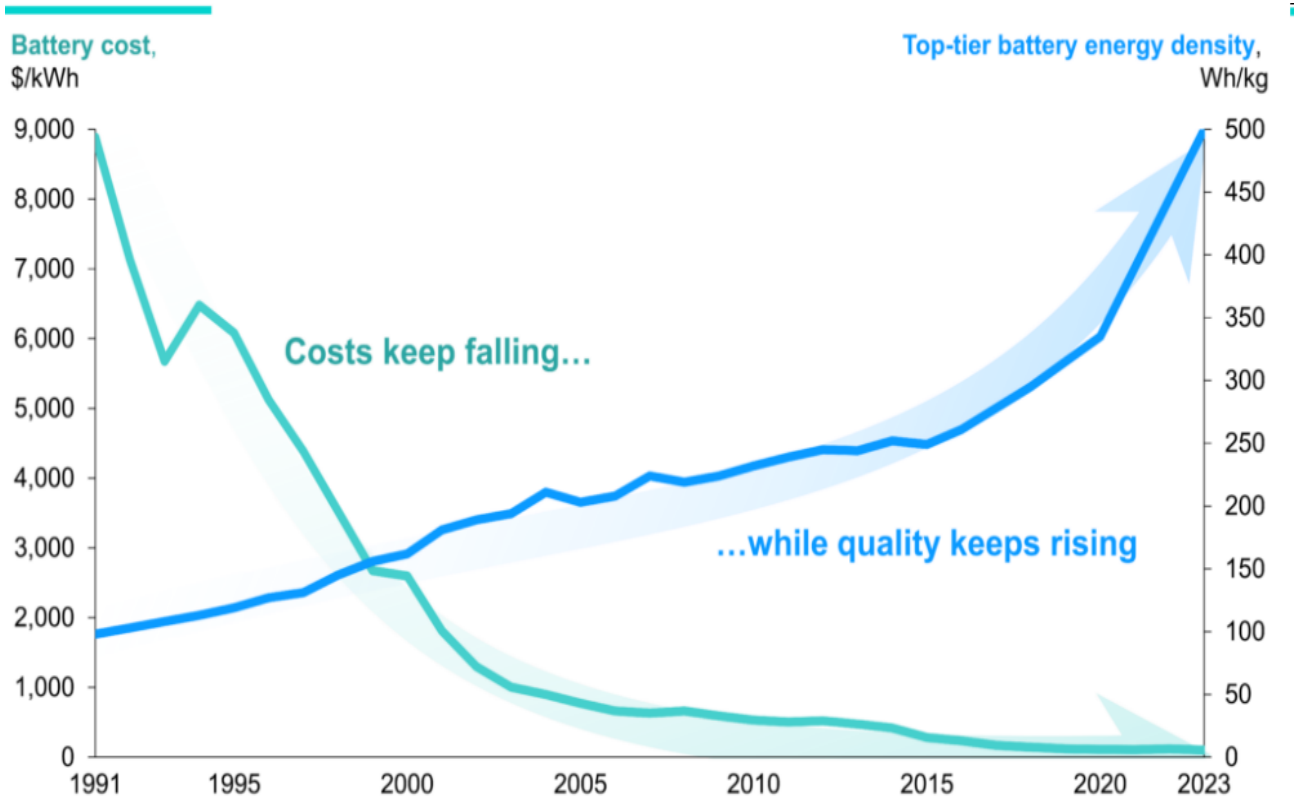
Source: IEA September 2024

Growing importance of **industrial batteries** to ‘smooth peaks and valleys’ in power demand



Source: CAISO 2024

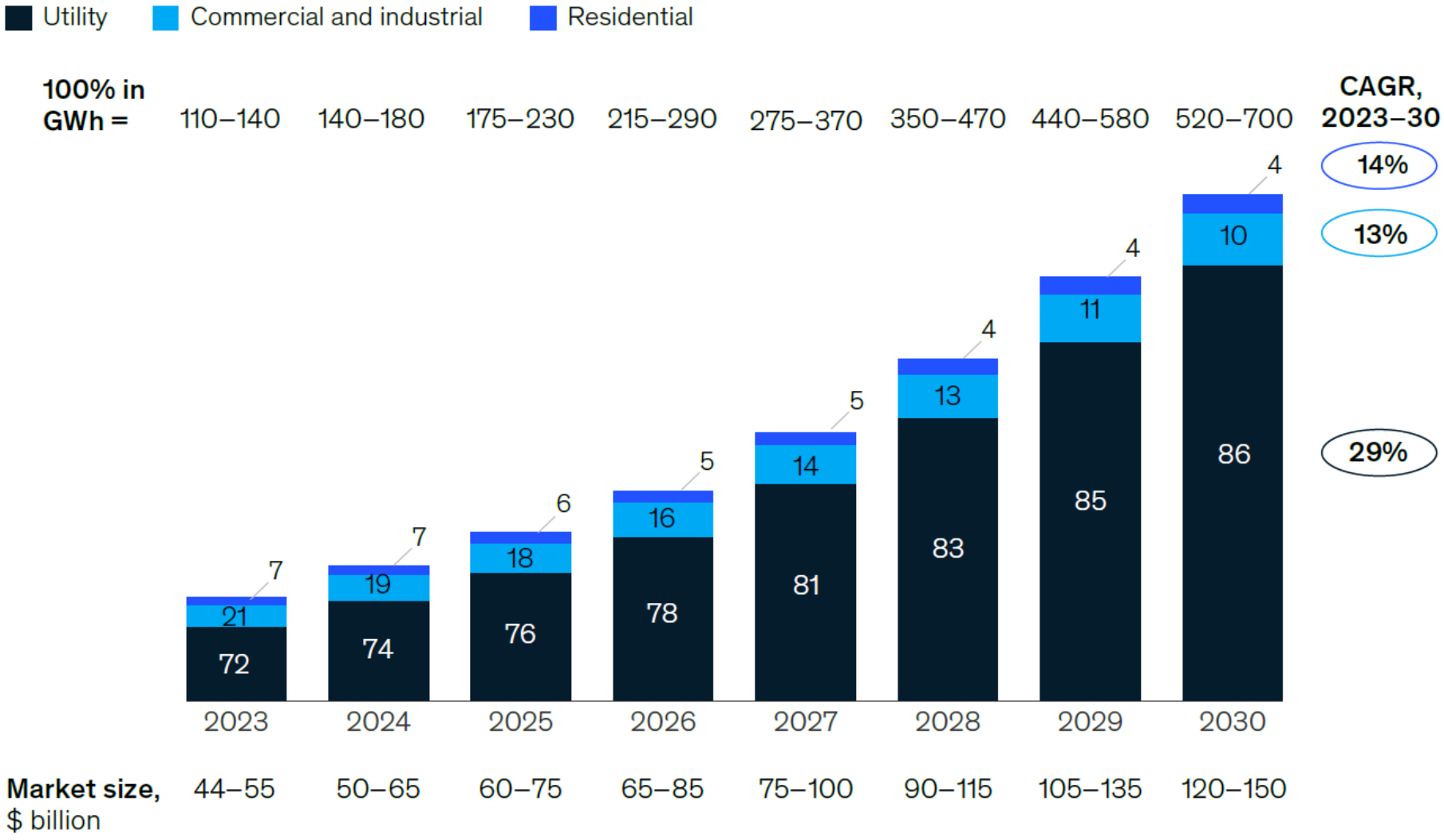
Battery costs are falling, quality rising



Source: EnergyPost Feb 2024

Demand for industrial **batteries** to grow significantly

Annual added battery energy storage system (BESS) capacity, %

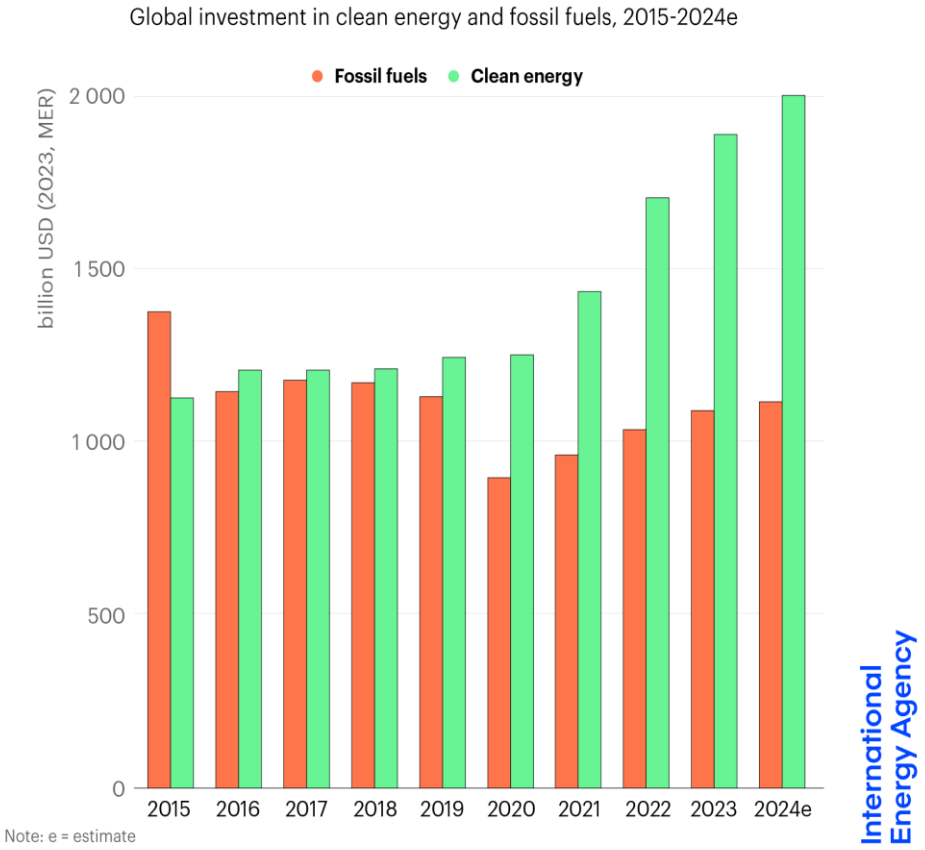


Source: McKinsey & Co, 8 August 2023

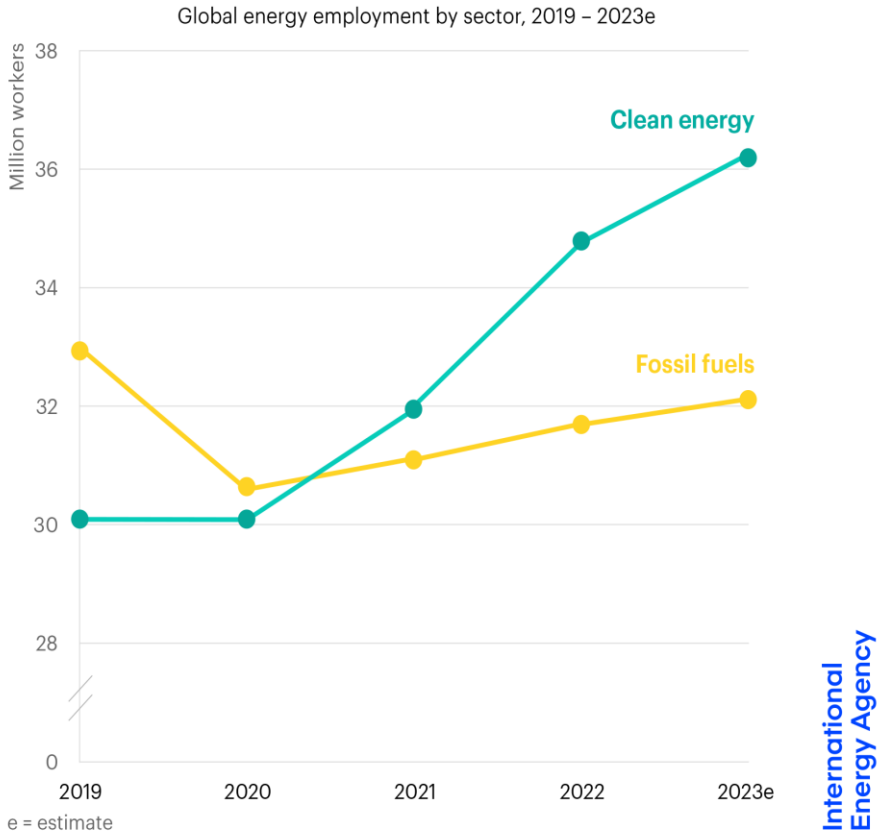
Investments in 'clean energy' have been overtaking those in traditional fuels - and are expected to grow even faster

Renewables Energy Efficiency Networks Batteries Nuclear Low-C fuels

Global investment in clean energy is set to reach almost double the amount going to fossil fuels in 2024



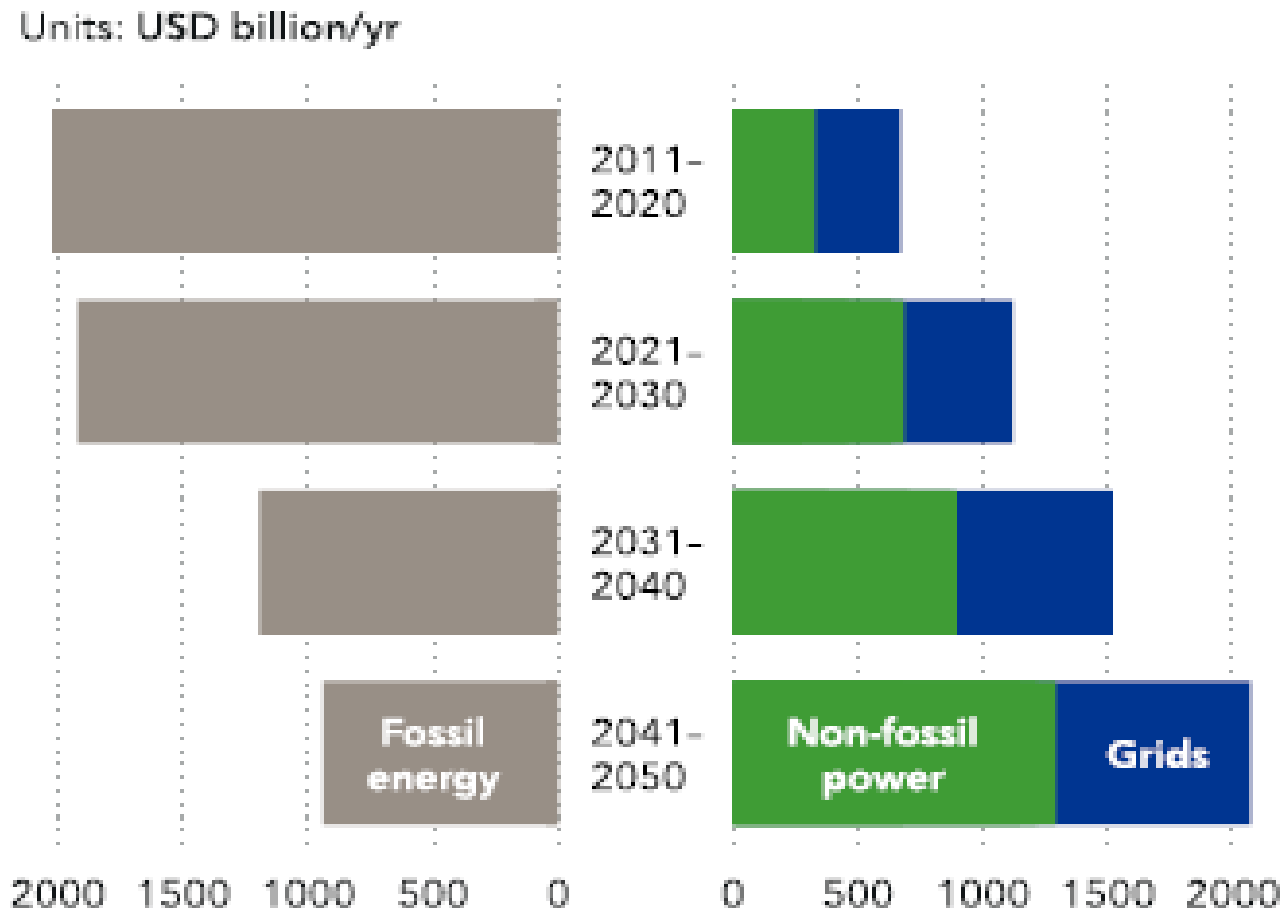
Since the pandemic, job growth in clean energy has outpaced fossil fuels



Source: IEA World Energy Investment May 2024

……and are expected to grow even faster

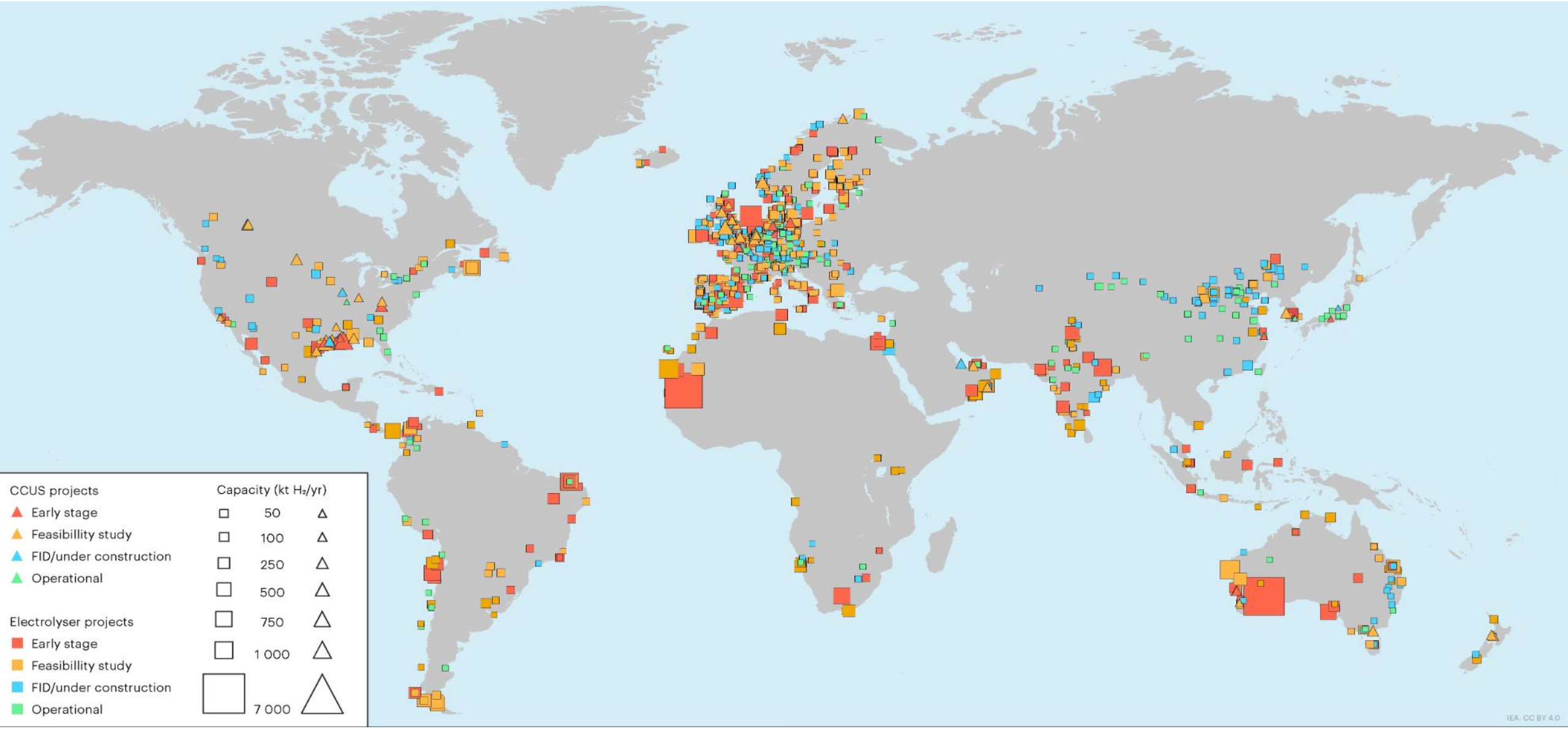
Average yearly investments in the energy system



Source: DNV Energy Transition Outlook 2024 (9.10.2024)

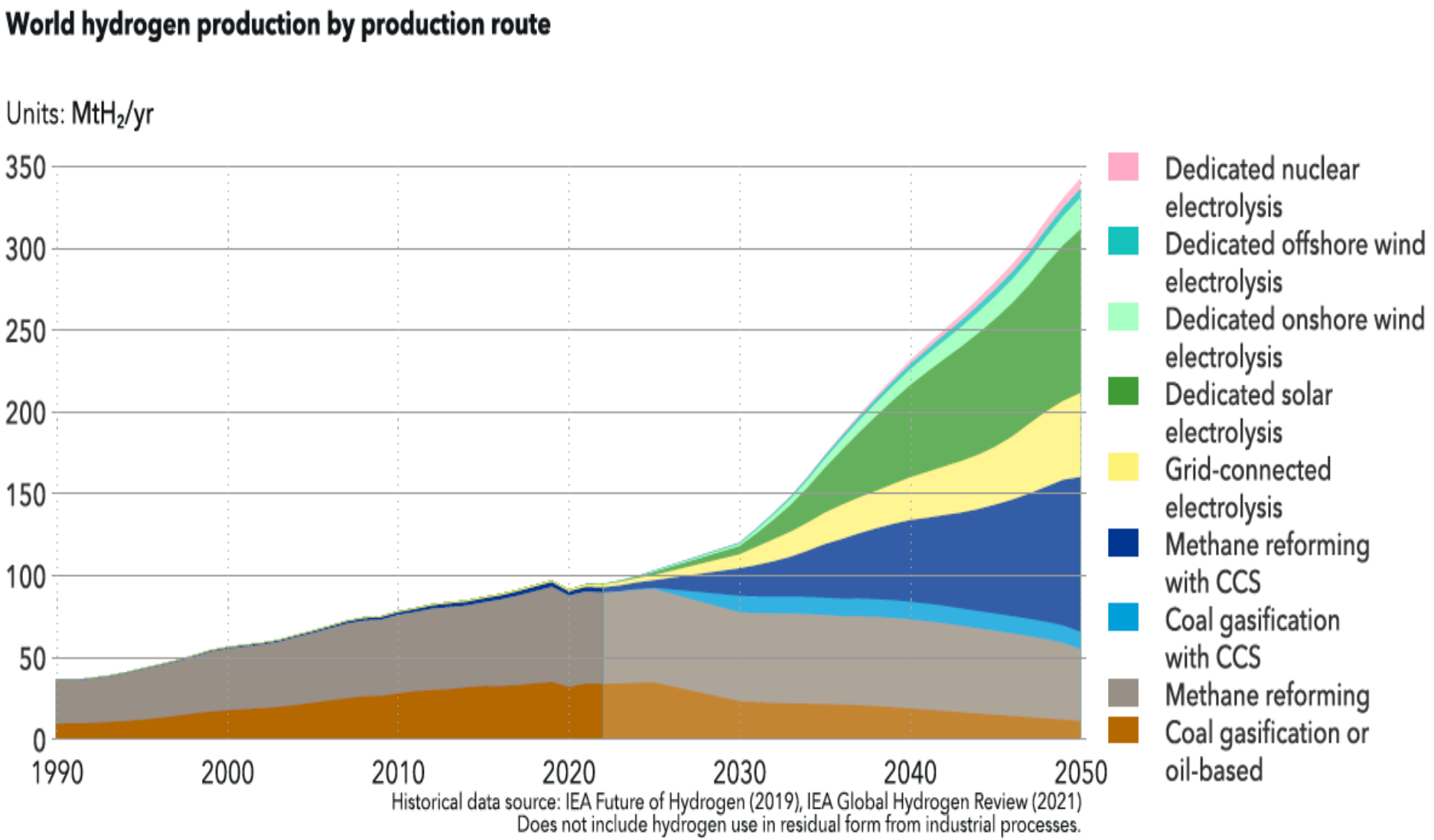
Clean H2 applications are growing, but it will take time for *profitable* industrial developments *at scale*

Numerous **Clean H2** applications under development, globally



Source: IEA

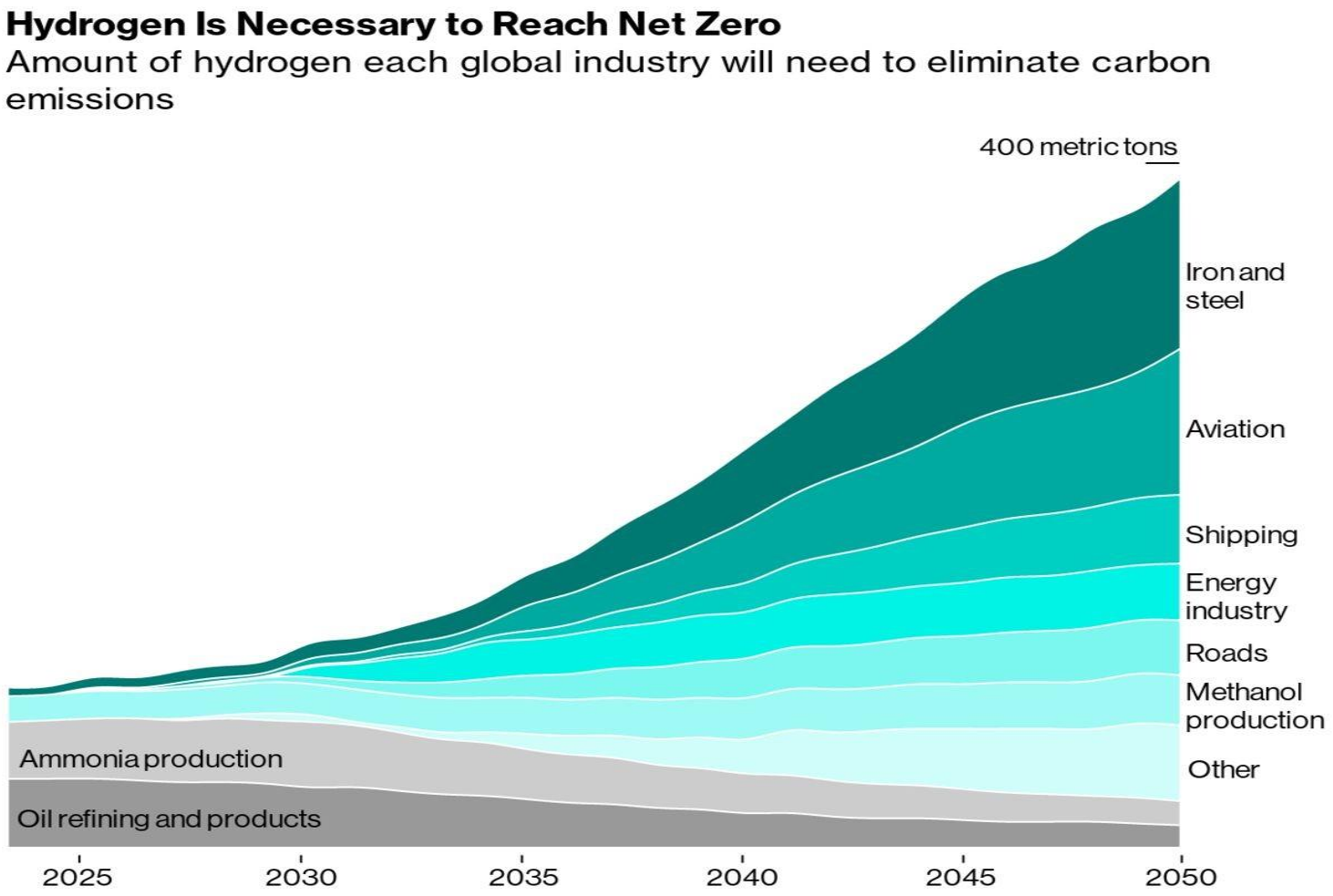
Clean H2 could be **produced** from a range of sources, ‘green’ and ‘blue’



Source: DNV New Power Systems (June 2024)

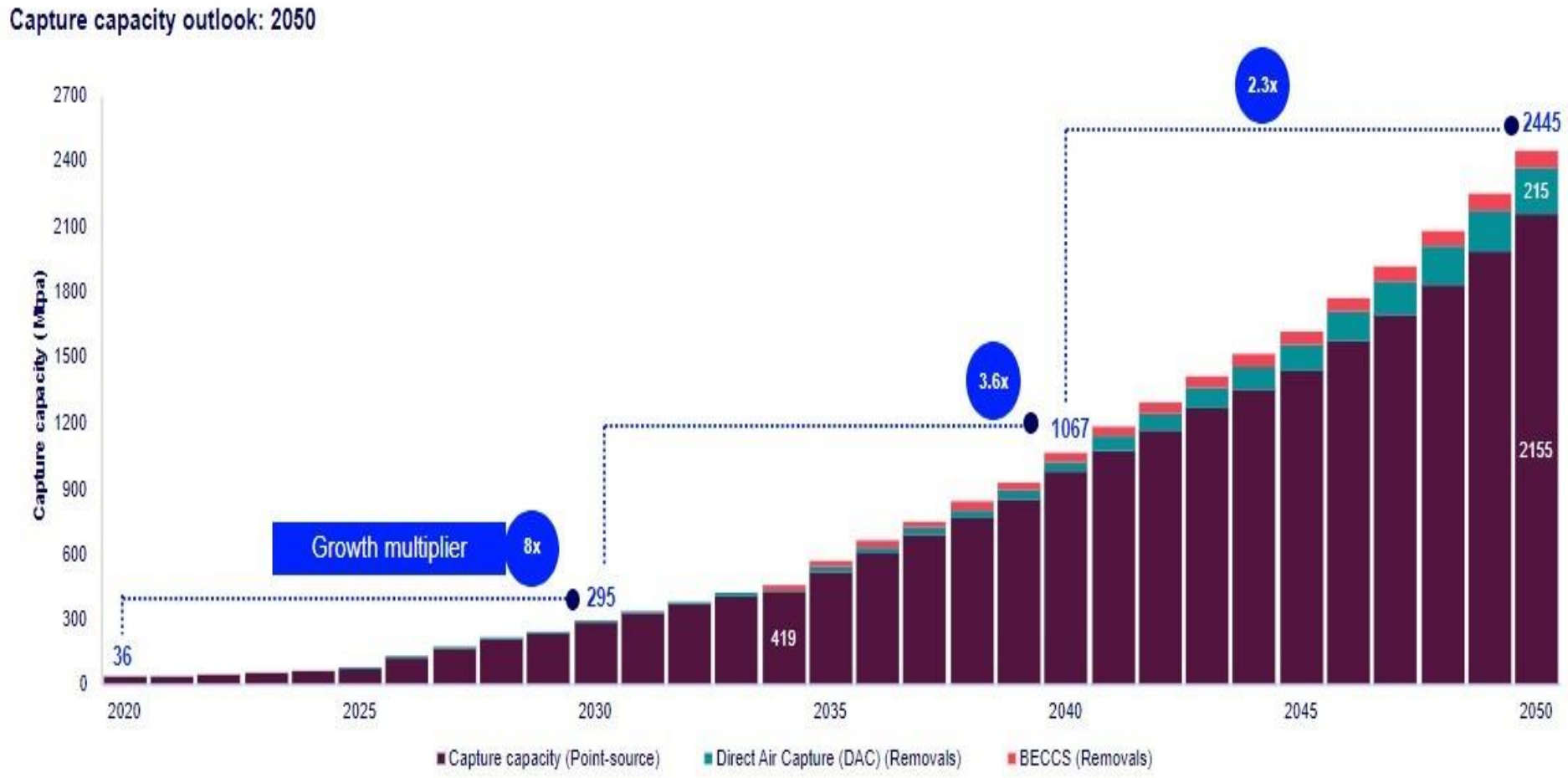
But breakthroughs in **H2 demand** depend on stronger policies

Global hydrogen demand by sector and application,
Net Zero Scenario



Source: Bloomberg September 2024

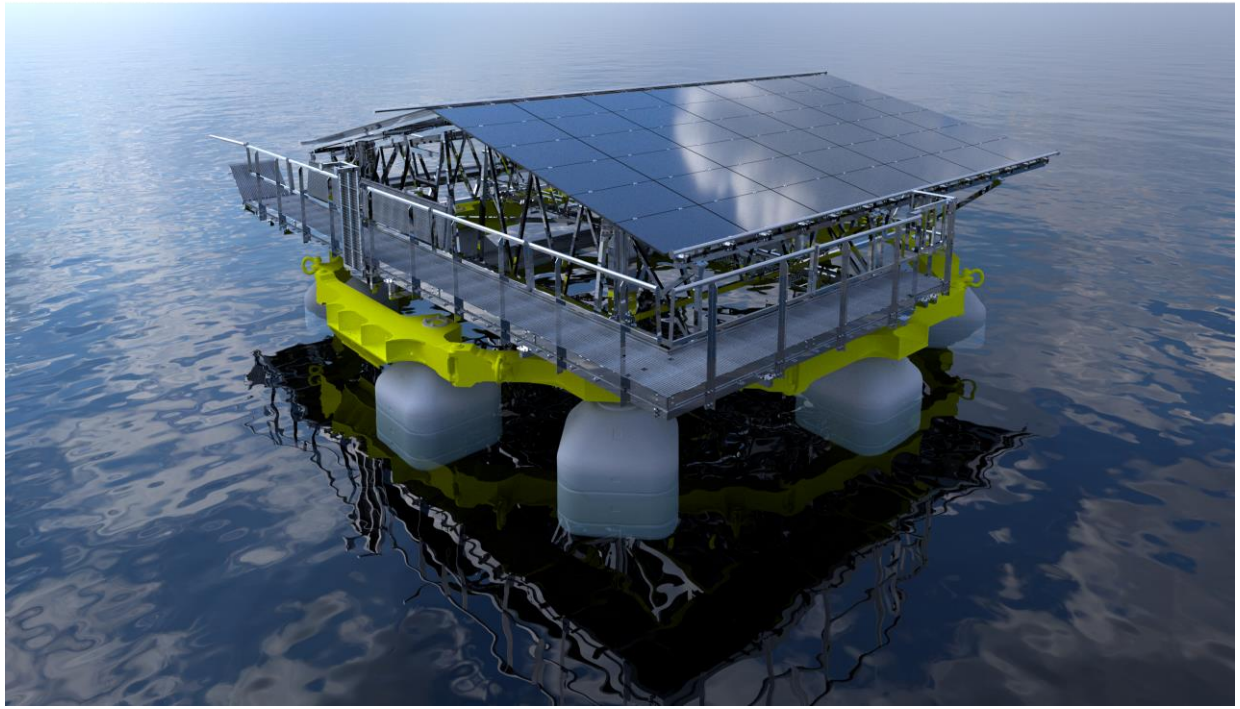
CCUS expected to play a major role and grow significantly, but need *support policies* and technology development *at scale*



Source: WoodMac 10 October 2024

Technology development and new breakthroughs: keys for the future

Example: Saipem's Xolar Floating power generation



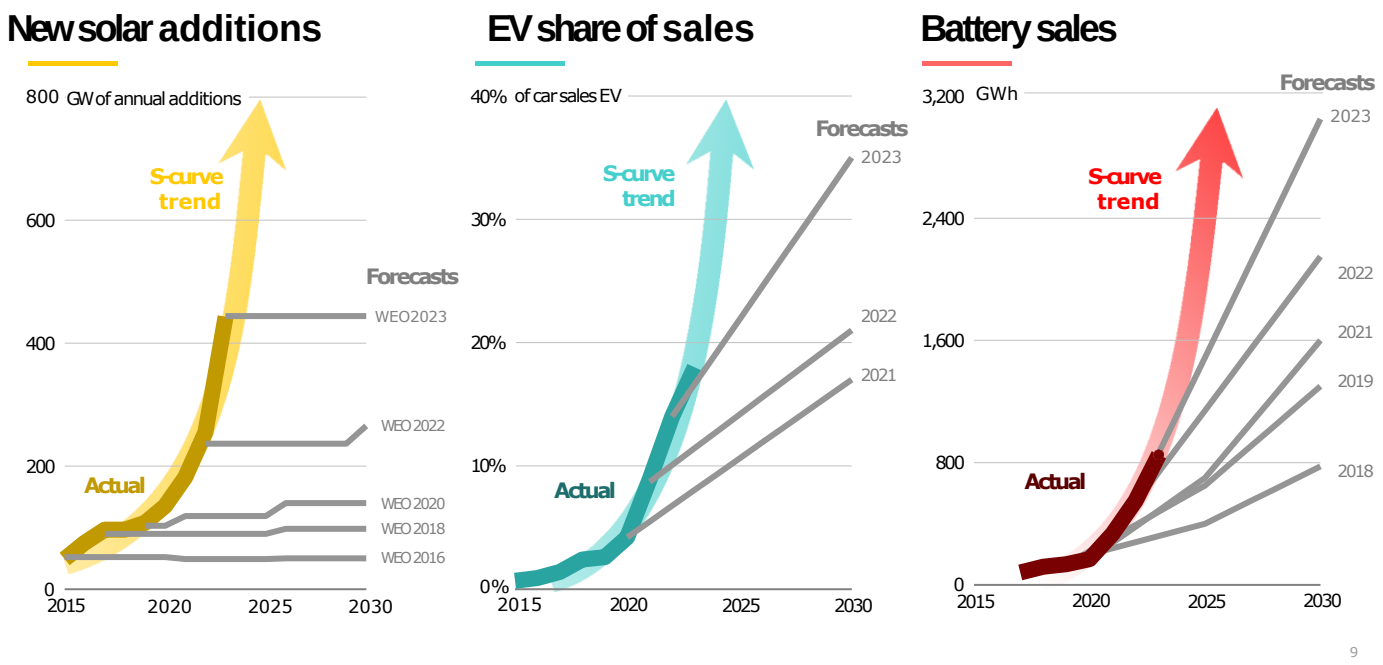
Of course, also nuclear power, e-fuels, biomethane and many other technology developments

Source: Saipem September 2024

Beware surprises: Incumbents tend to underestimate the speed of change

Even neutral actors modelled in linear terms.

But change has been exponential



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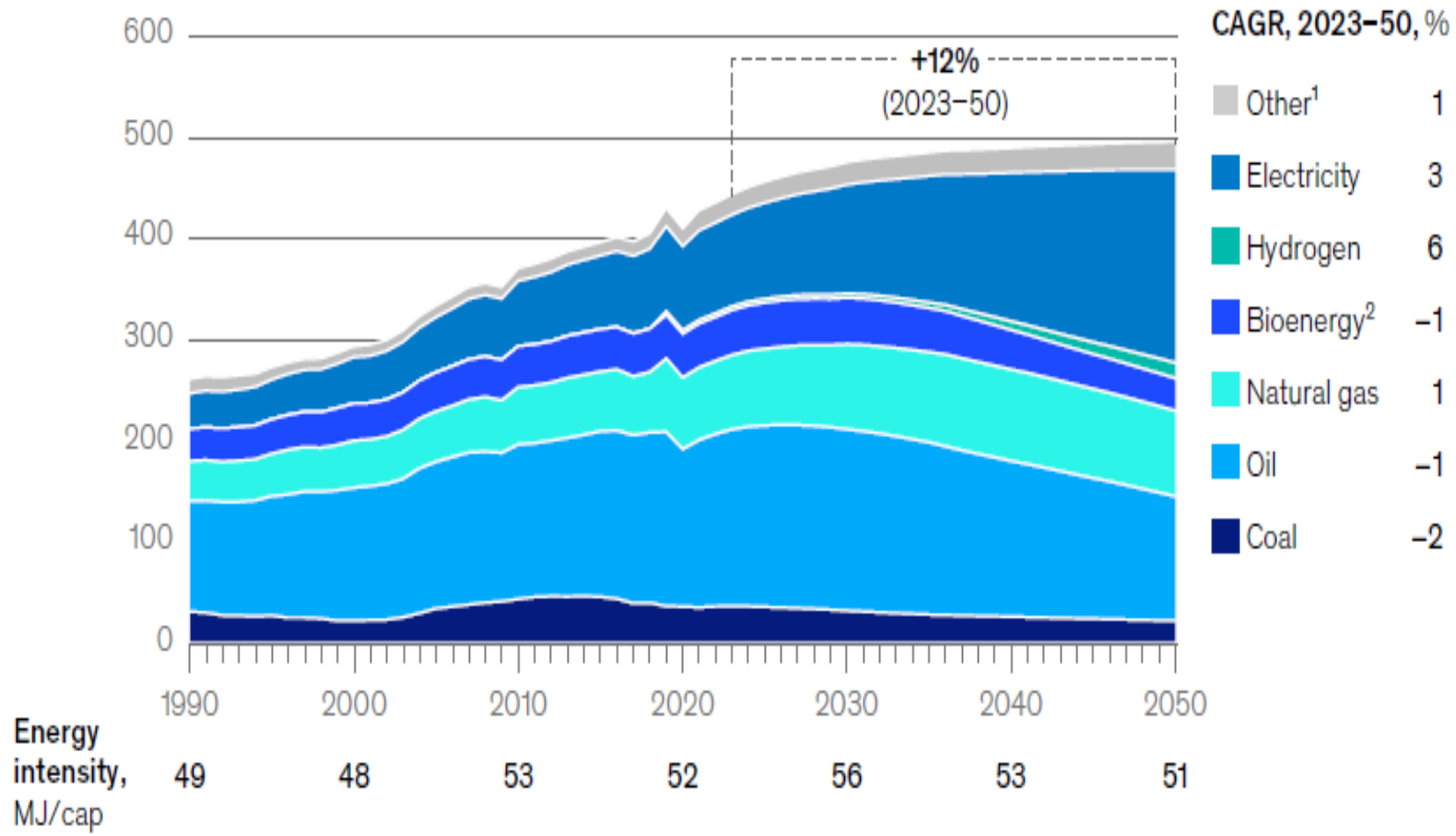
Source: BNEF (solar and battery actuals), IEA STEPS for WEO forecasts , RMI annotation.

In conclusion: Expected global energy demand

Scenario: Continued Momentum



Source: McKinsey Global Energy Perspective 2024 (September 2024)

Conclusions

1.2 GW PV + H2 in Inner Mongolia - FID

EV charging station in California

- Most likely, **oil&gas demand** to plateau around the end of the decade; future **gas demand** to depend on the energy transition**; coal** to drop
- **CAPEX** in **oil &gas** to grow – mostly in N. America - to the end of the decade, then plateau
- The **energy transition** to continue, albeit at a somewhat slower pace than originally expected **–** but with **growing investments** significantly overtaking the traditional ones
- **Renewables** taking over the rapidly growing **power** sector – are **batteries** next?
- **EVs** are a reality and growing fast
- The **'Hydrogen Economy'** is at the doorstep, but will require
  - More industrial development 'at scale'
  - Strong incentives and policies
- **New technology breakthroughs** key to the future – **and very likely**
- Incumbents: beware **surprises**!

AGENDA

Market Trends

Top 5 Trends in Supply Chain

(G. Franchini)

TOP5 TRENDS in Plant Engineering Supply Chain | 2024

1  ADAPTING IN A NEW NORMAL OF DISRUPTIONS

2  RISING PROTECTIONISM

3  “SAME, SAME, BUT DIFFERENT”: ESG, CYBER & OTHERS

4  A PLANET TO SAVE

5  “SUPPLY CHAIN” INDUSTRIAL POLITICS

TOP5 TRENDS in Plant Engineering Supply Chain | 2024

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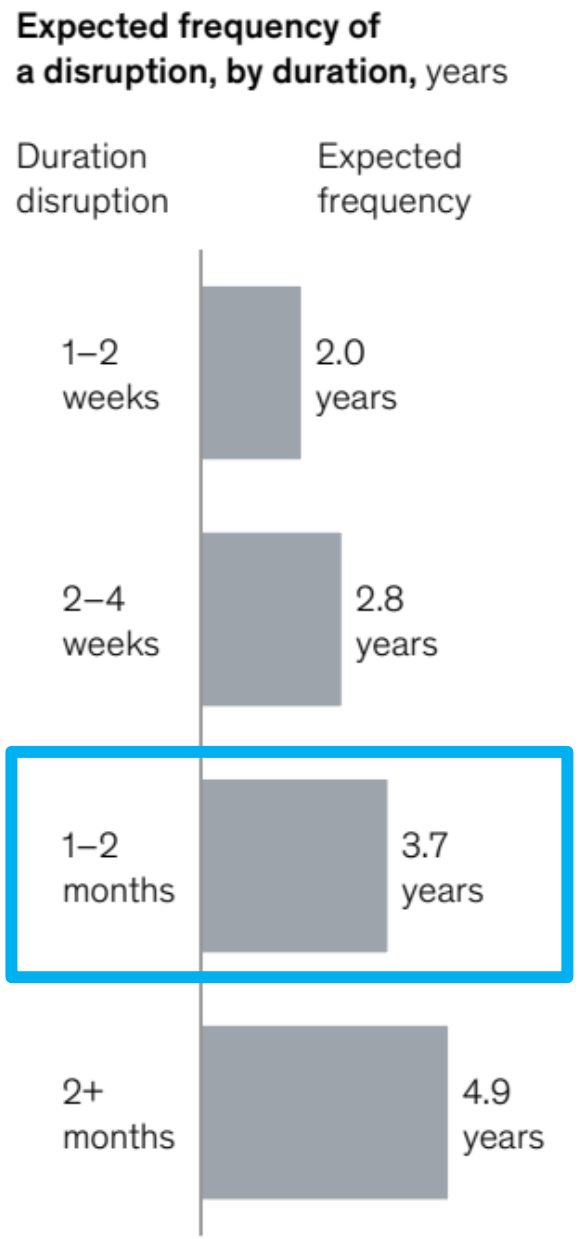
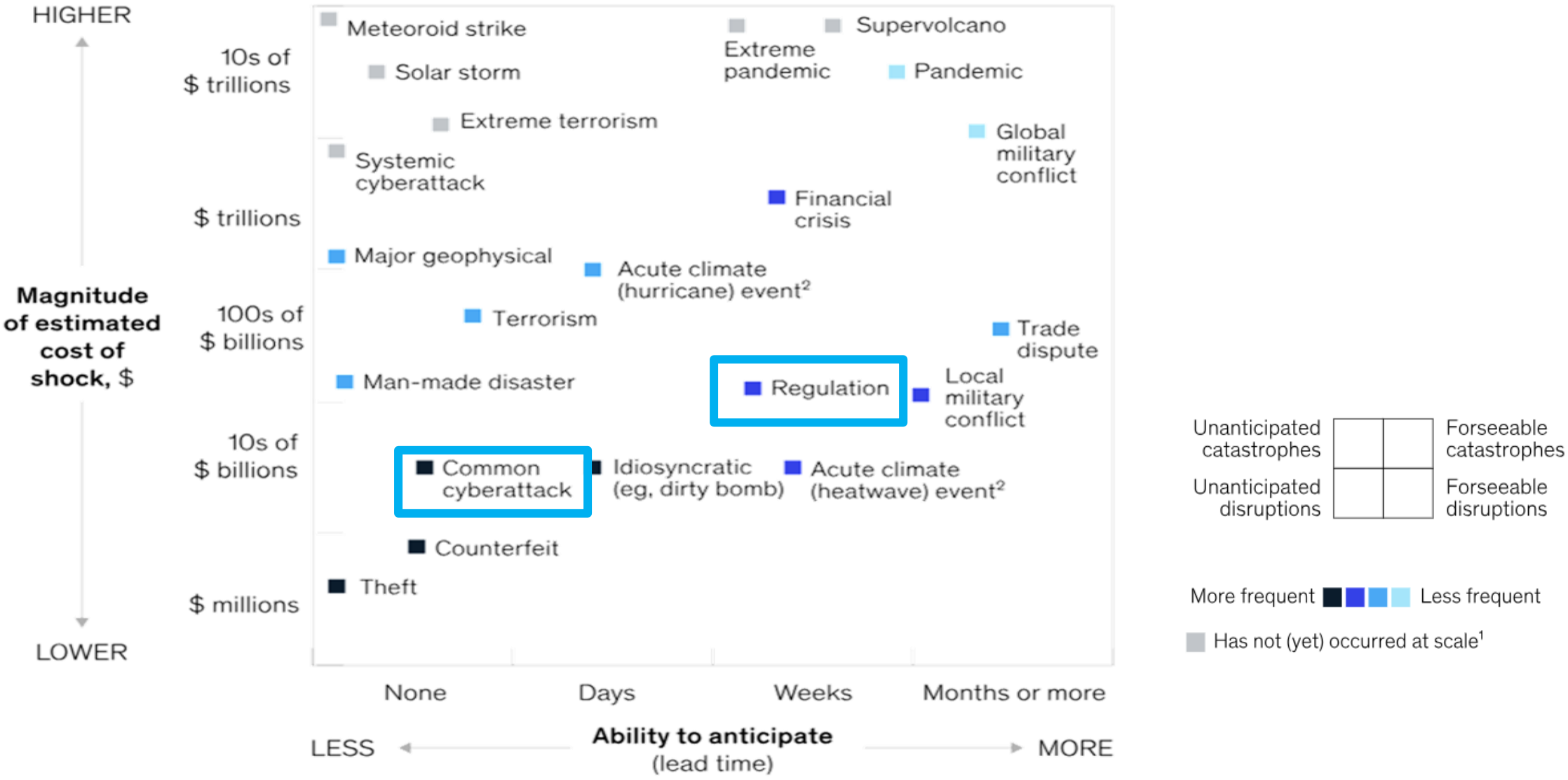
5		“SUPPLY CHAIN” INDUSTRIAL POLITICS

1 More Frequent Disruptions



Source: McKinsey – Risk, resilience and rebalancing in global value chains

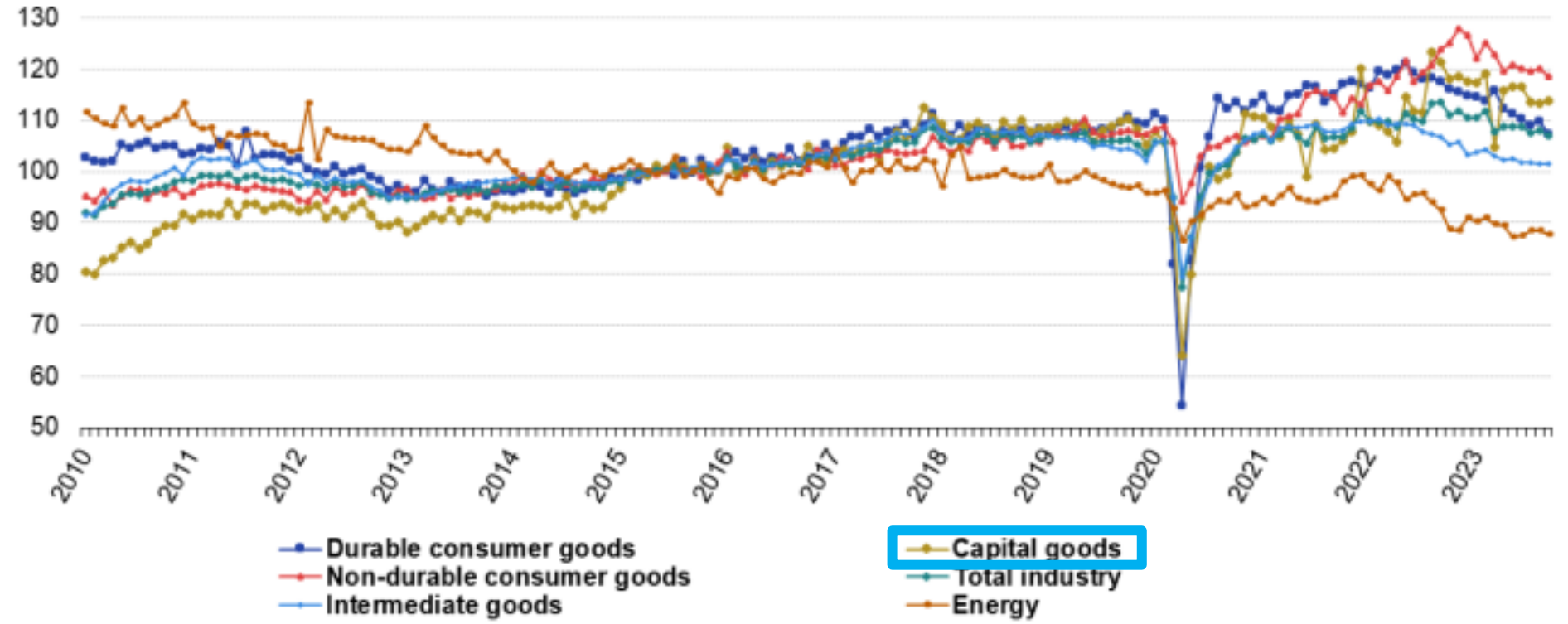
1 Risk Monitoring & Resilience in Supply Chain on the rise



Source: McKinsey – Risk, resilience and rebalancing in global value chains

1 The Workload of the Supply Chain is currently high in our industries, with positive results in 2023

EU, Industrial production for total industry and main industrial groupings, 2010-2023



Note: y-axis does not start at 0

Source: Eurostat (online data code: sts inpr_m)

eurostat

TOP5 TRENDS in Plant Engineering Supply Chain | 2024

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2 RISING PROTECTIONISM

3 “SAME, SAME, BUT DIFFERENT”: ESG, CYBER & OTHERS

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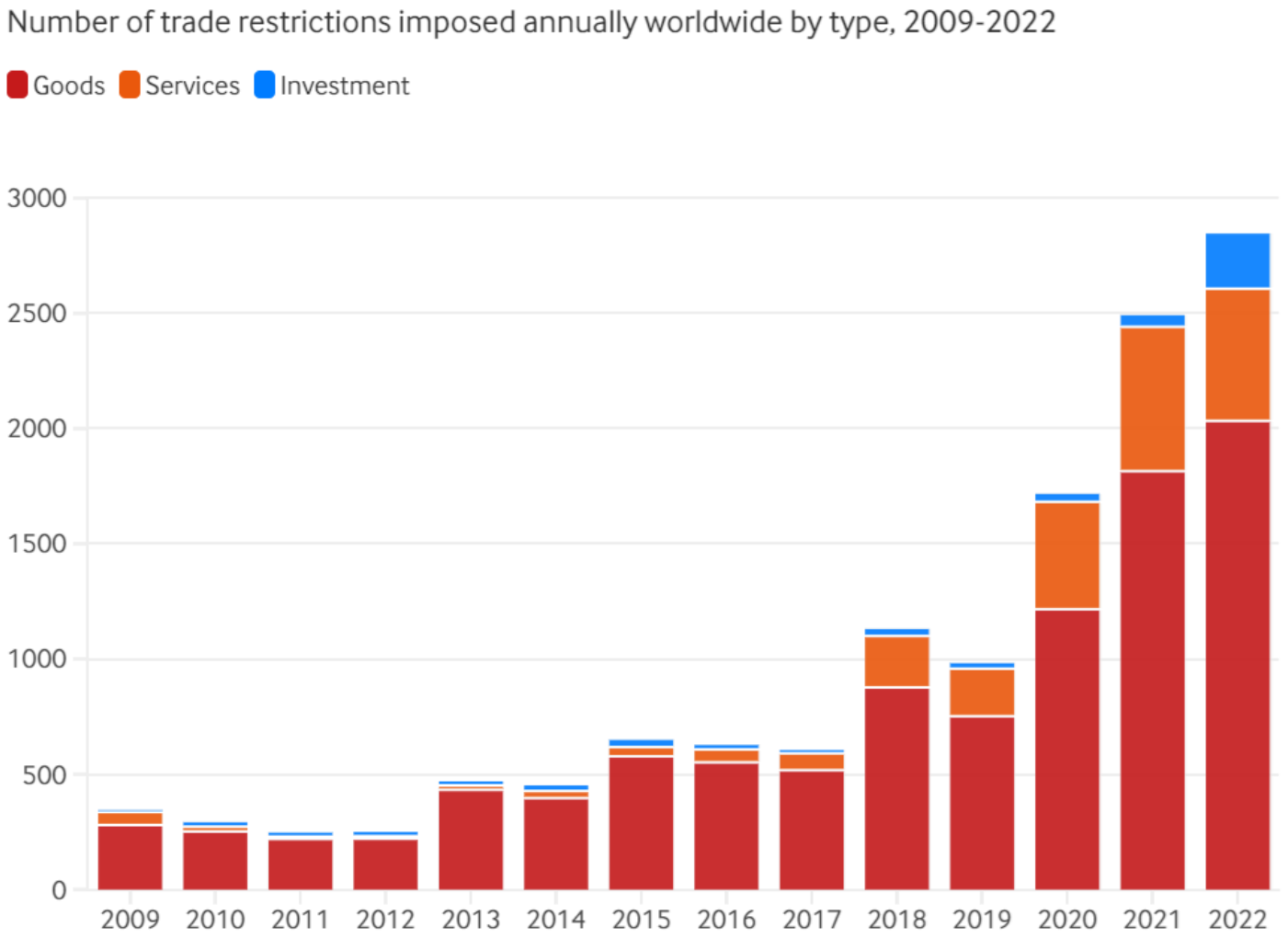
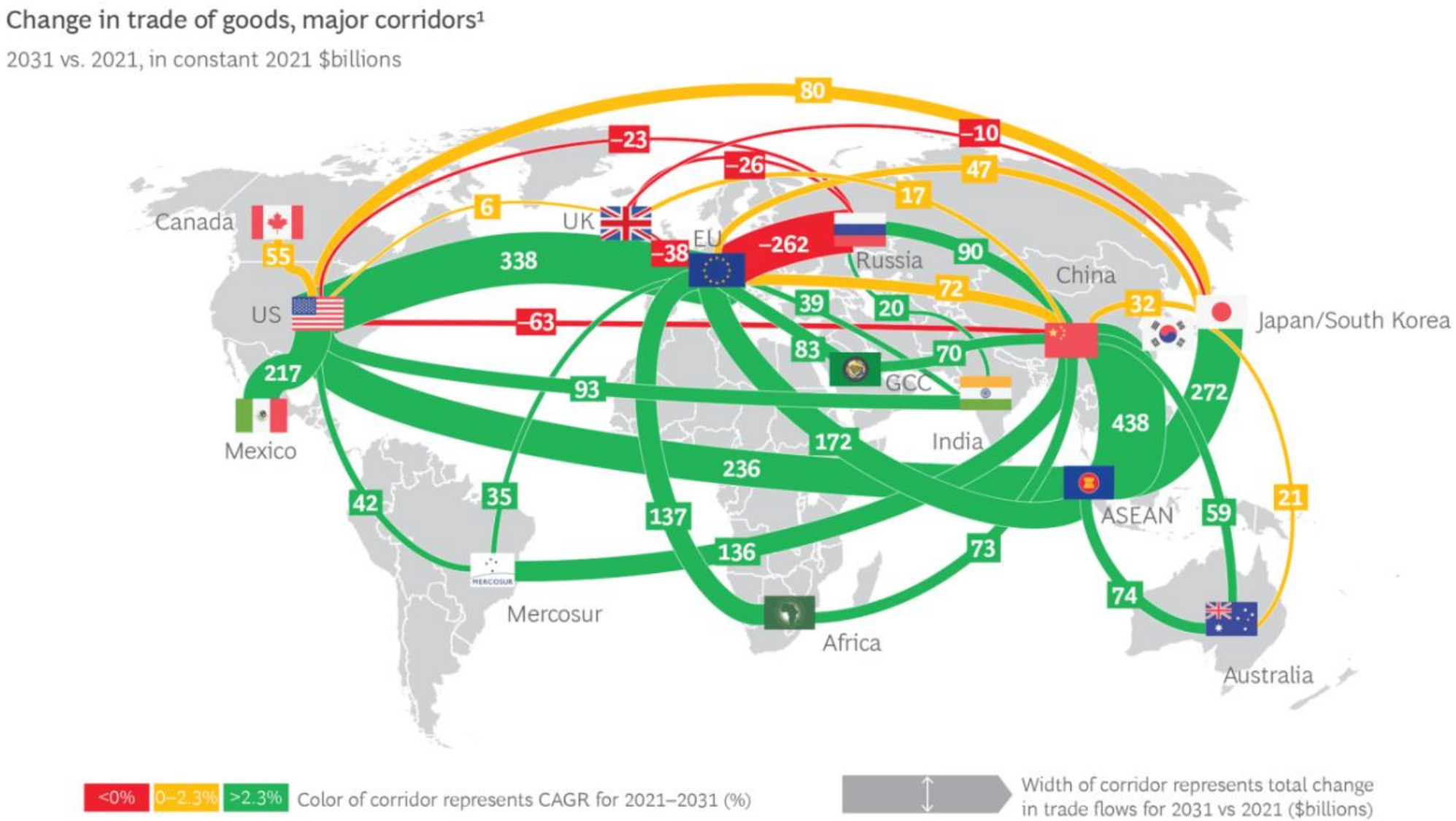
2 Increased Protectionism & Geoeconomic Fragmentation



- **Russian-Ukrainian war** and competition between the **US and its allies** with **China** has fomented **further protectionism**
- **Trade restrictions**, such as tariffs and export bans, have also proliferated in sectors including commodities and semiconductors, which are often viewed as central to national security
- It could lead to new **inefficiencies**, **increased costs** for **Multinationals** and **Foreign direct investment (FDI)**
- Potentially, "**Geoeconomic fragmentation**", which would be if the world split into **two exclusive trading blocks** - one aligned to the US and EU, and another aligned with China and Russia. It would exacerbate hardship in the sub-Saharan Africa region.

Source: IMF's analysis of Global Trade Alert data

2 The Future of Trade to impact our *Project Vendor Lists*?



Source: BCG

2 Local Content is a traditional form of Protectionism, at the very hearth of our Energy industry

Main Countries with LC policies

- KSA
- UAE
- QATAR
- OMAN
- BRAZIL
- GHANA
- KAZAKHSTAN
- INDONESIA
- MALAYSIA
- VIETNAM
- NIGERIA

…

- **LC regulations** differ from country to country, requiring a tailored approach
- The real Local Content to be delivered requires all the **key sub-supplies and sub-works to be performed locally**
  - foundries
  - forges
  - heat treatment
  - mechanicals works

IN-COUNTRY VALUE CERTIFICATE

Certificate ID:
Issue Date: 21.03.2021
Valid Until: 14.09.2021

LLC

%

Company General Information
License No.: CN-
Company Type: SME in UAE
Financial Year End Date: 31.12.2019
Company based in: Within UAE
Company Business: SERVICE PROVIDER

For Cases of Re-Certification
Re-Certification (*) No.:

Reason for this Re-Certification

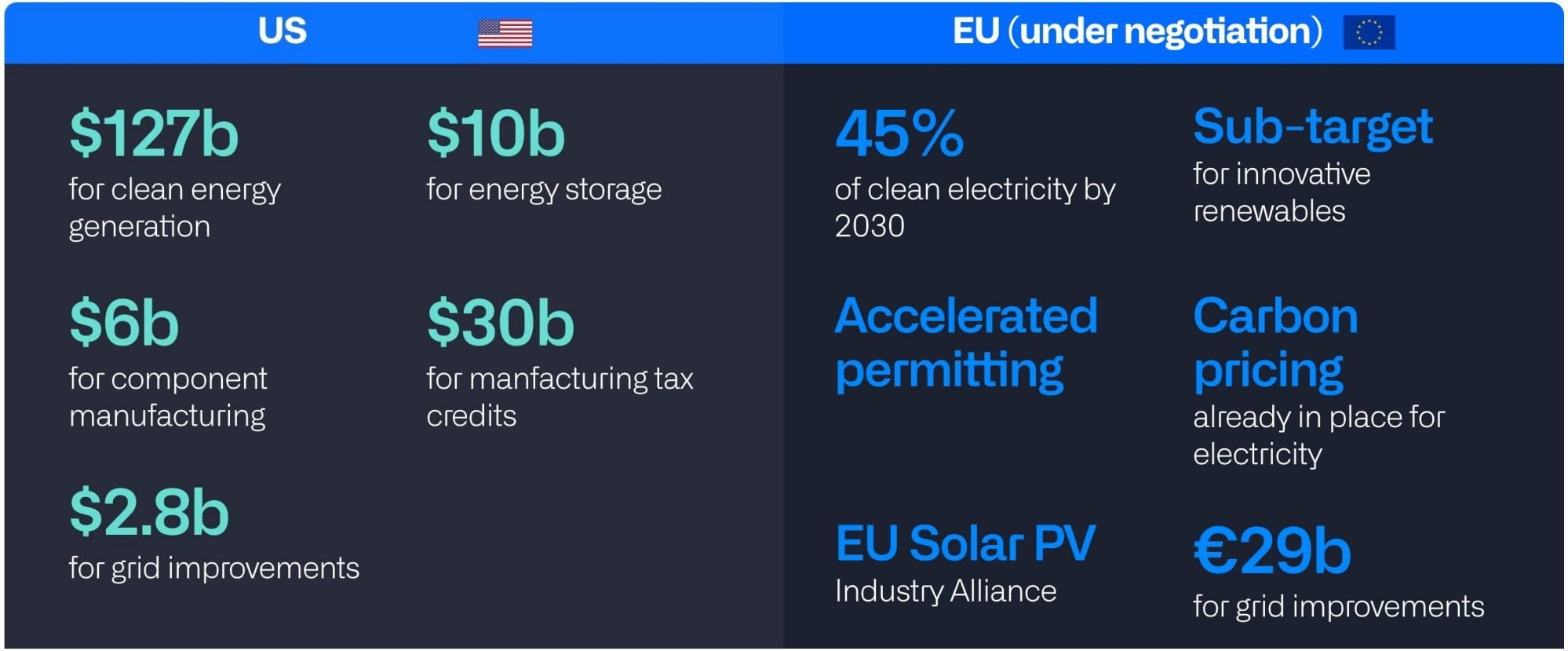
Signed By
On behalf of Supplier
Name:
Designation:
CEO/Managing Partner

Verified as per ICV Agreed Upon Procedures (AUP)
On behalf of Certification Body
Name:
Electronically signed by
Designation:
Company:

Certificate Issued Based on ICV Version: 3.0

Source: clippings

2 US & EU Green Deals share the goal of reducing dependence

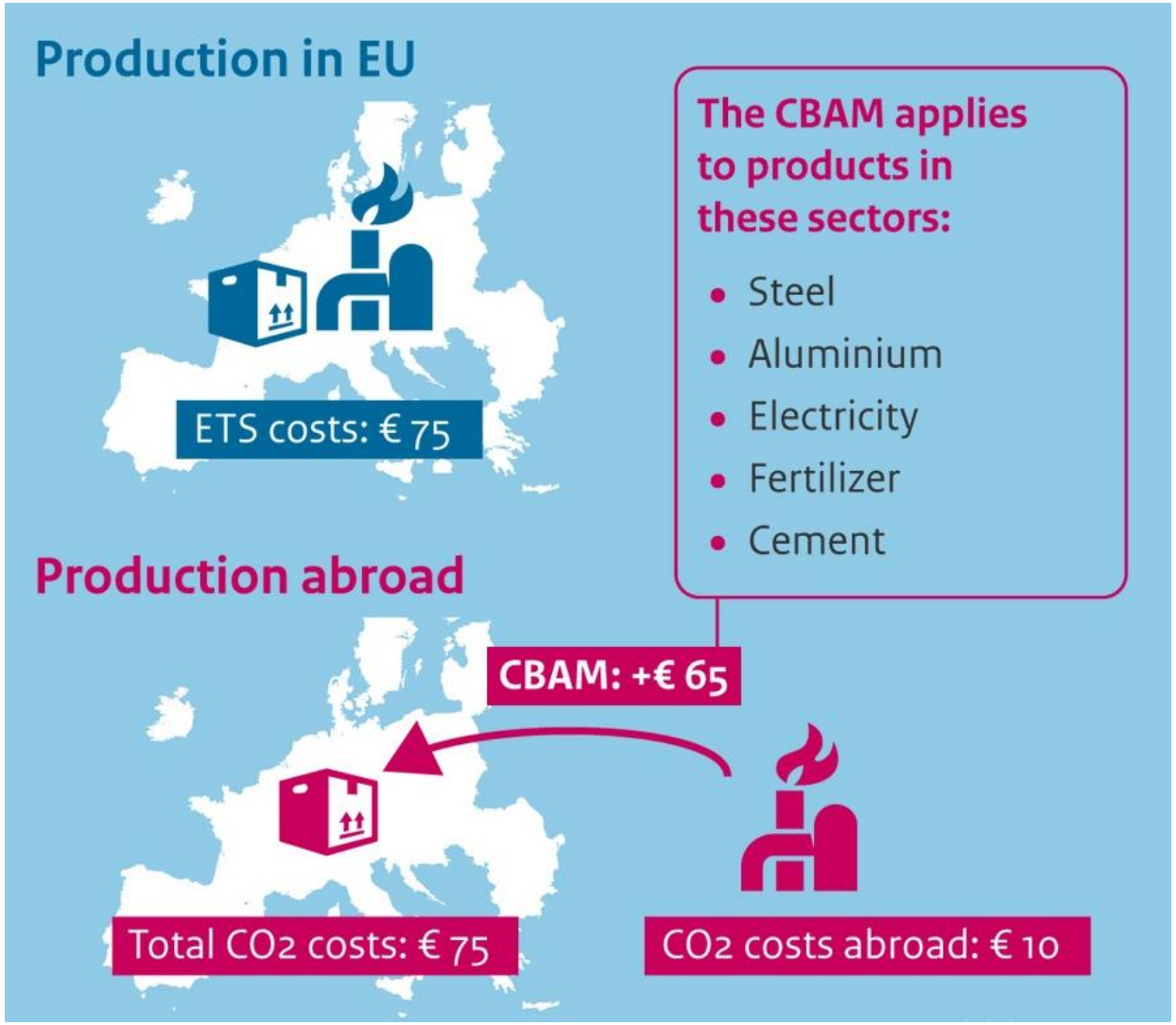


Within the US Inflation Reduction Act (IRA), mainly through tax subsidies at Federal level + for local manufacturing only

Part of the "Green Deal" Industrial Plan, with the limitations of no money and no common treasury + no source of origin limitations

Source: Cleantech for Europe

2 EU's Carbon Border Adjustment Mechanism

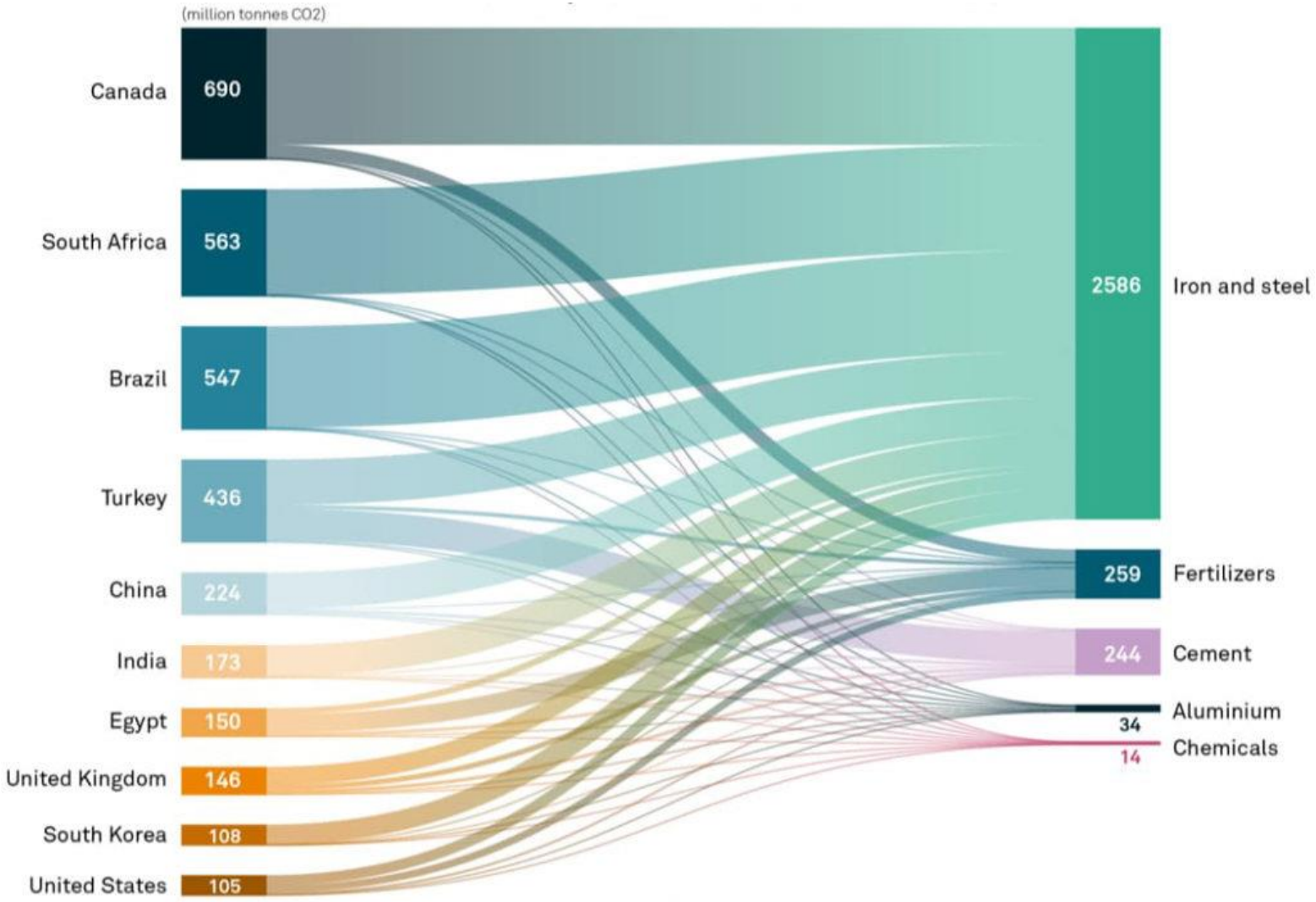


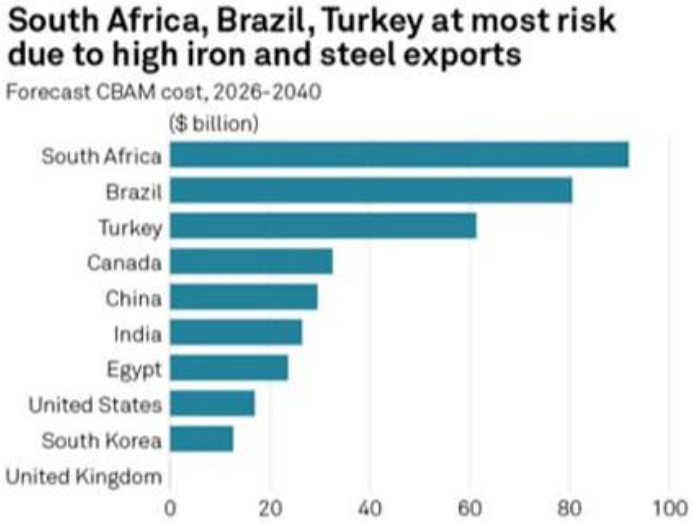
- By imposing a **tax on the embodied carbon content of some imports into the EU**, equal to the **tax imposed on domestic goods under the EU-ETS**.
- This tax is adjusted to consider any mandatory carbon prices paid in the exporting country recognized by the EU.
- The carbon equivalent price on imports **levels the playing field for EU producers and importers**.

Source: clippings

2 CBAM is also a form of EU Protectionism

Current trade of CBAM-related materials





Source: Revolve

TOP5 TRENDS in Plant Engineering Supply Chain | 2024

1 ADAPTING IN A NEW NORMAL OF DISRUPTIONS

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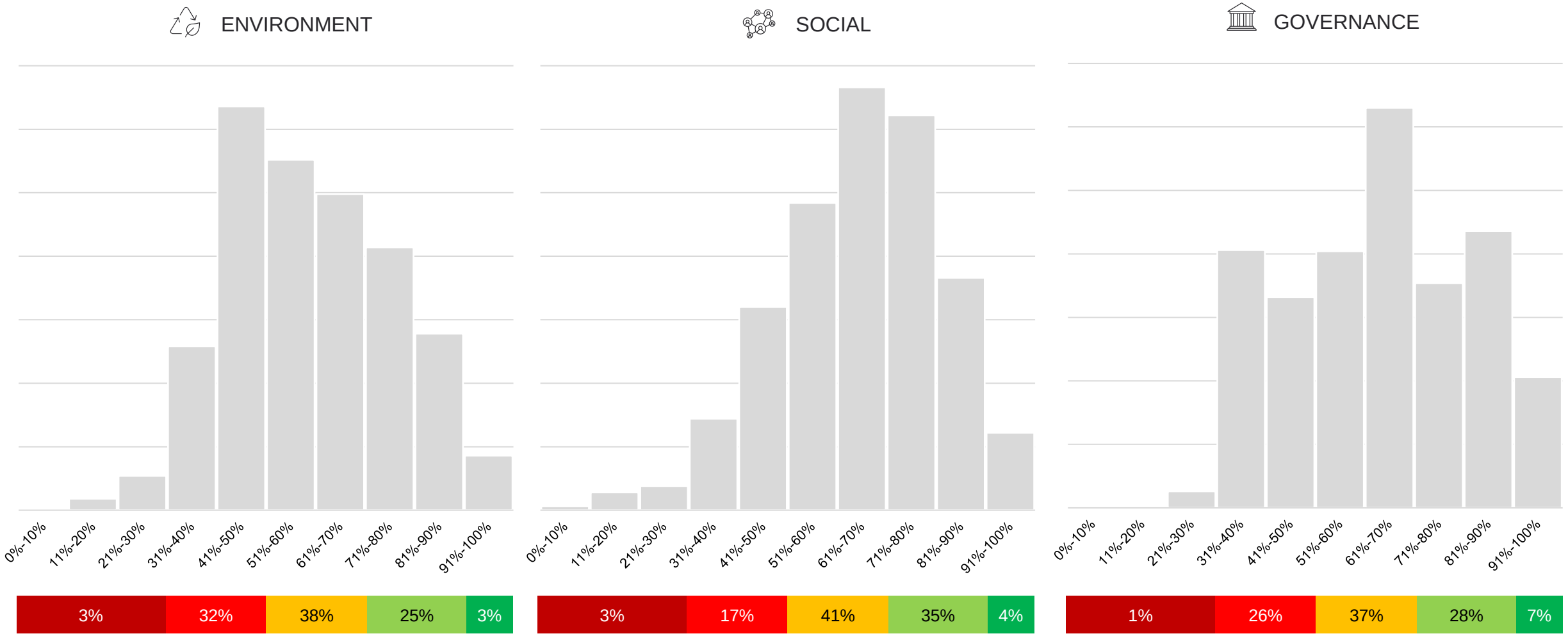
4 A PLANET TO SAVE

5 “SUPPLY CHAIN” INDUSTRIAL POLITICS

3 The typical Distribution of Vendor ESG Scores

ESG Supply Chain Guidelines

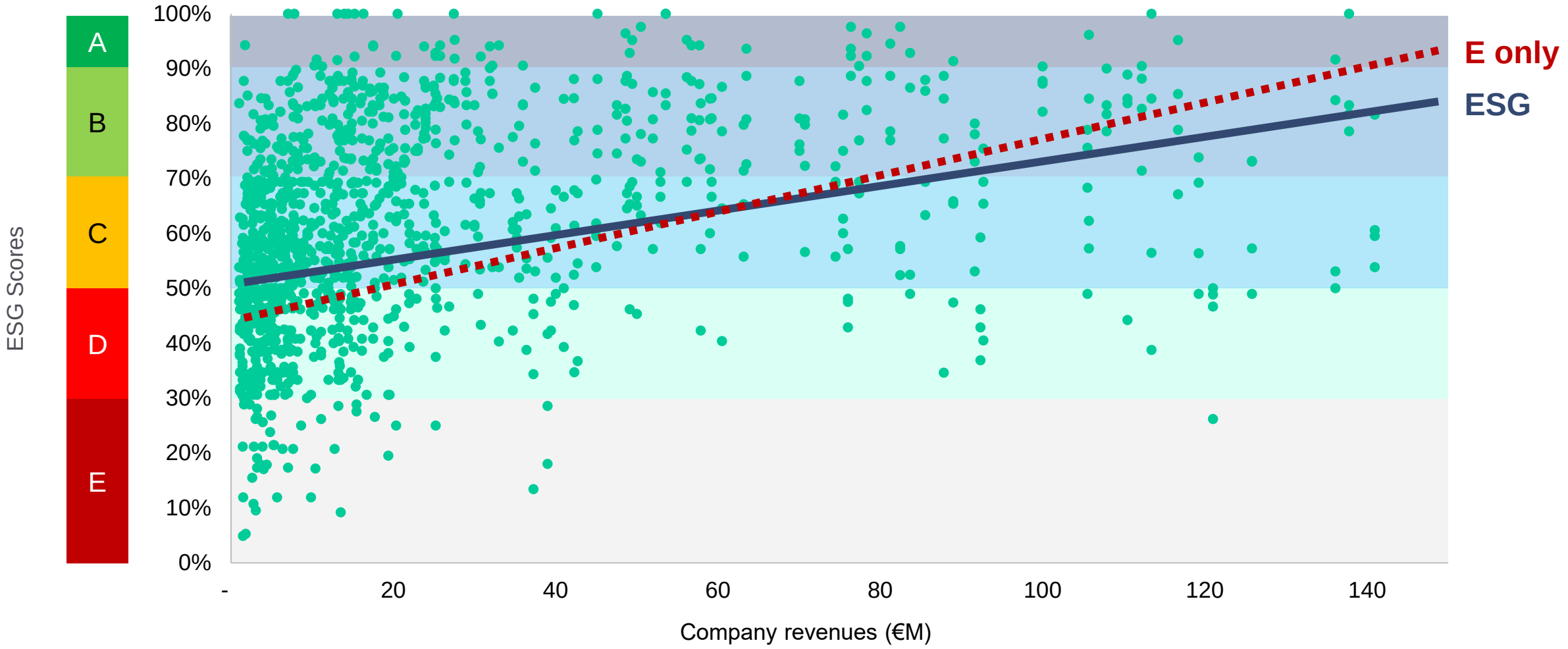


Source: SupplHi ESG Meter (based on rev02.05)

Scoring scale E D C B A

3 Relevant Correlation with the Company Size

ESG Supply Chain Guidelines

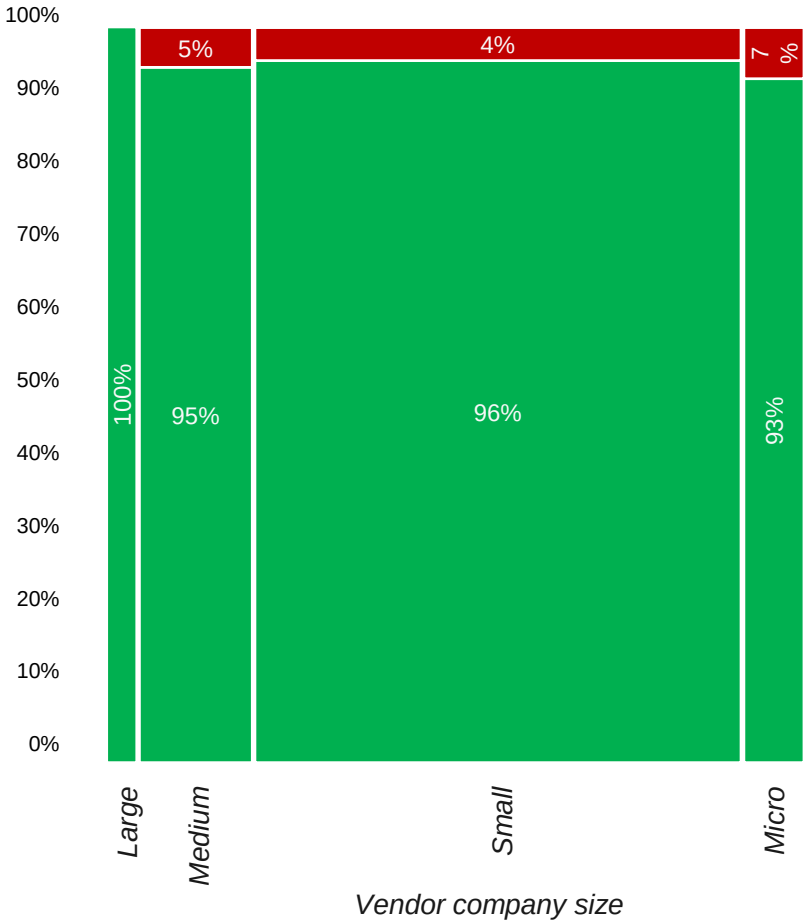


Source: SupplHi ESG Meter (based on rev02.05)

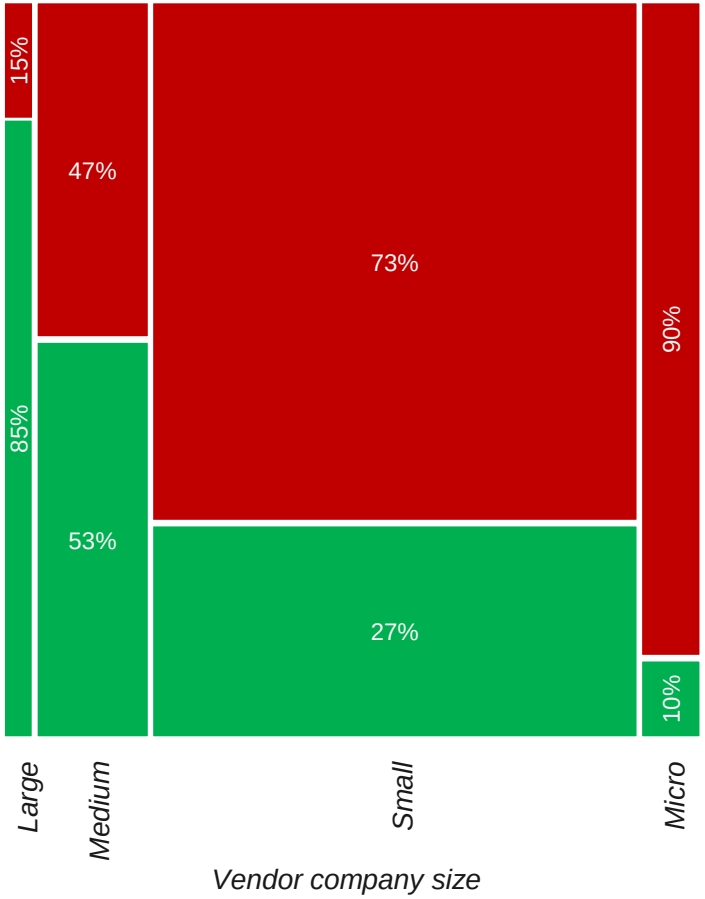
Scoring scale E D C B A

3 Cyber-Security practices of Vendors need to improve

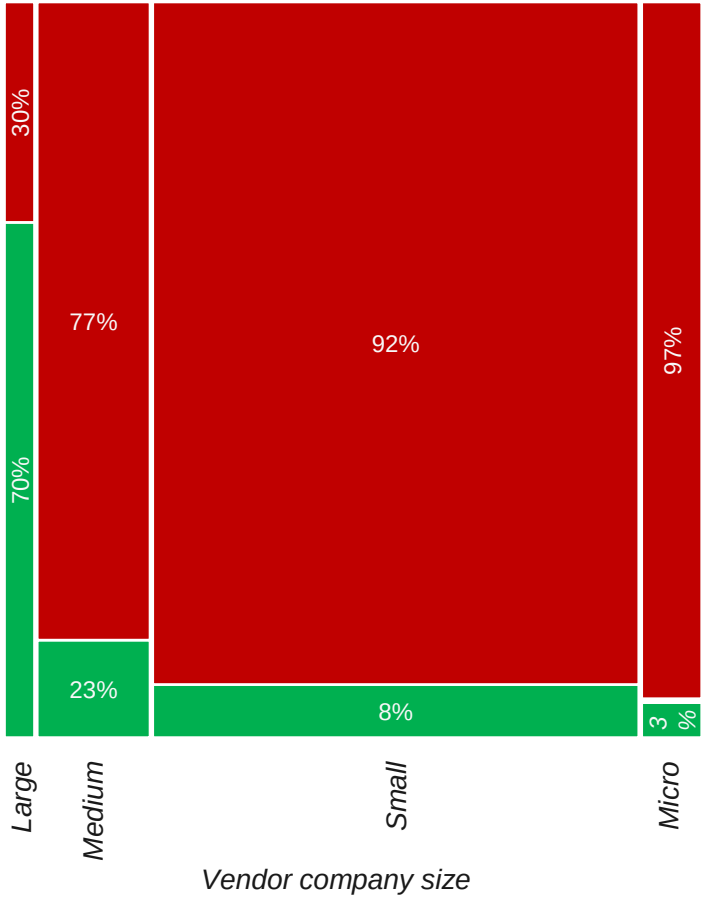
Presence of antivirus/malware protection installed on all systems



Presence of an "Information Security Policy"



Presence of the ISO 27001 Certification



Source: SupplHi on 5,000 Vendors

3 ESG and Cyber as an extended "Quality Management System" of the Supply Chain

- **Quality and HSE Management are already rooted in our industry and integrated into every process**
- Just like in the past, how "Quality" was seamlessly integrated into the business operations, **so will ESG and Cyber, beyond "Fashion-oriented" messages**
- **<u>To cater only clear, pragmatic and realistic messages to the Vendors</u>** (e.g. avoid unrealistic criteria in tenders, …)

Source: Microsoft, Clippings

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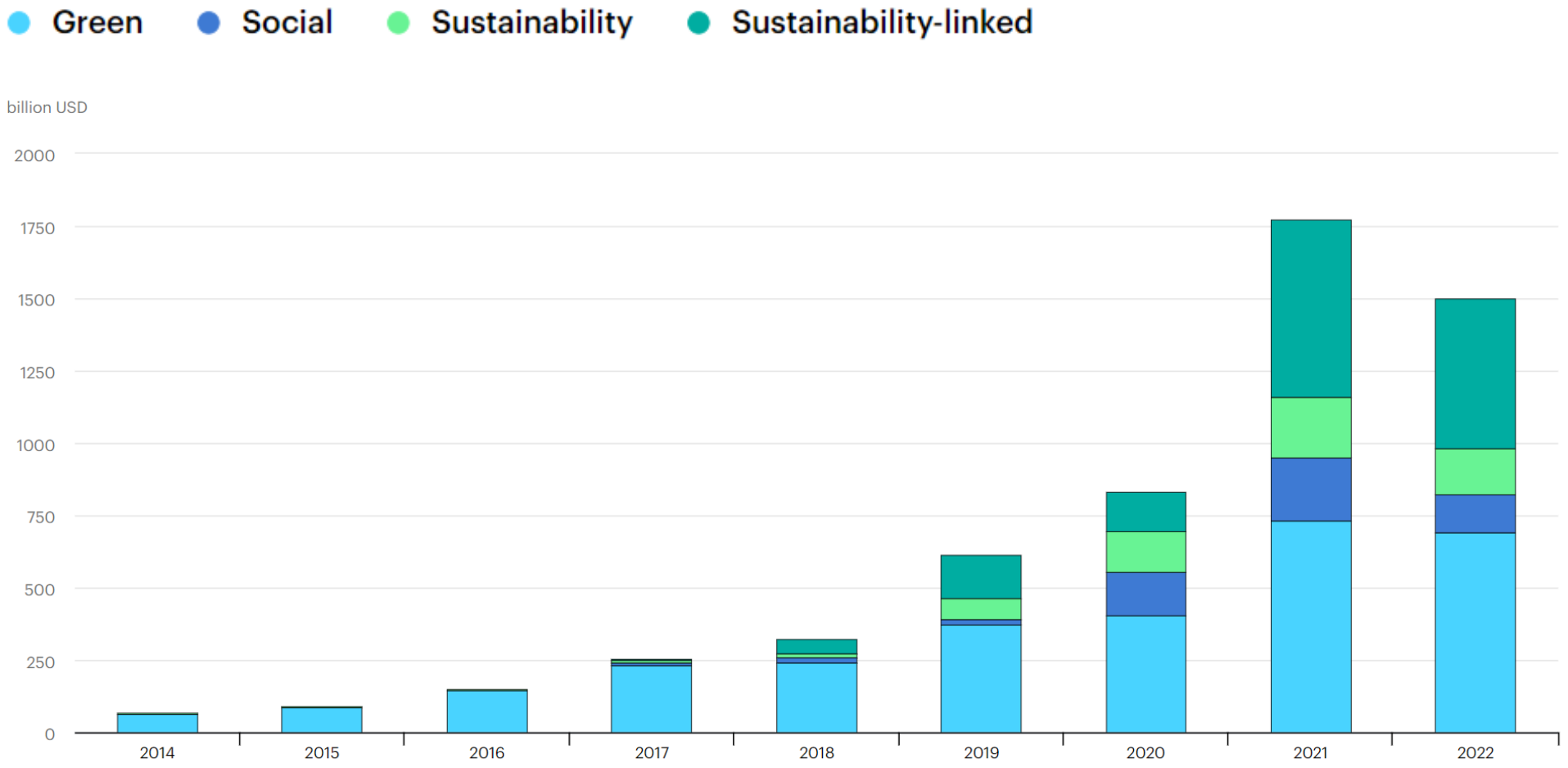
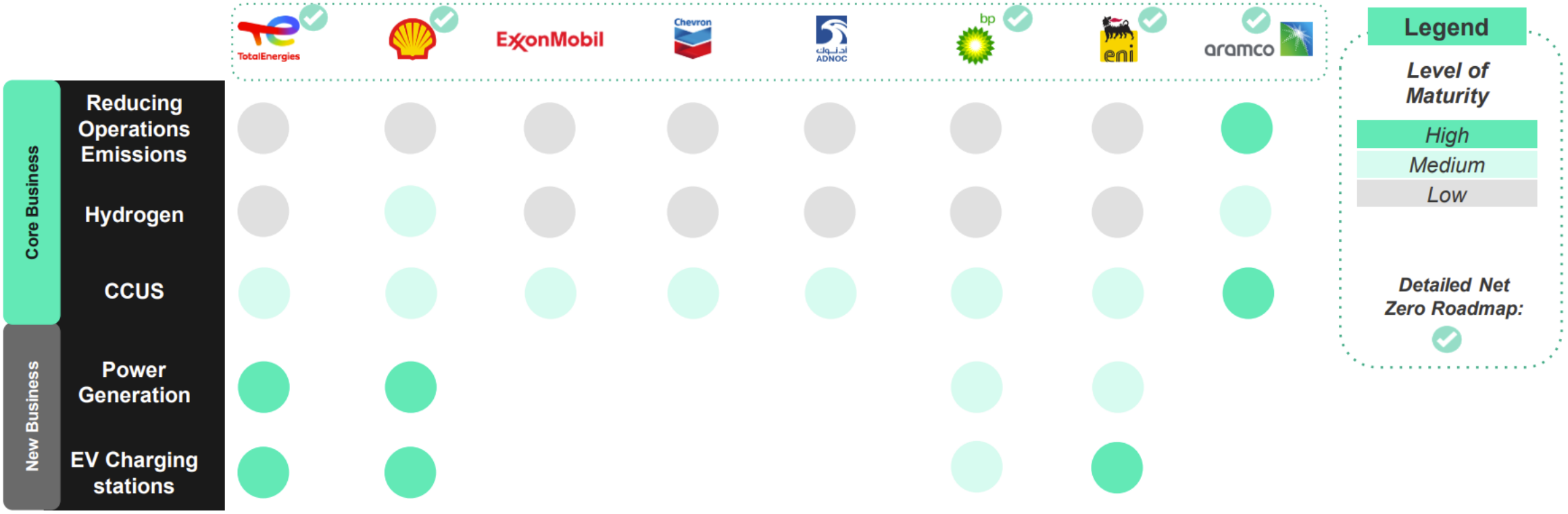
4 Finance is becoming Greener

Sustainable debt issuances by theme, 2014-2022



Source: IEA analysis (2023) based on Bloomberg and Environmental Finance, October 2023

4 Not all Major Energy Co. have fully disclosed their Net Zero Roadmap

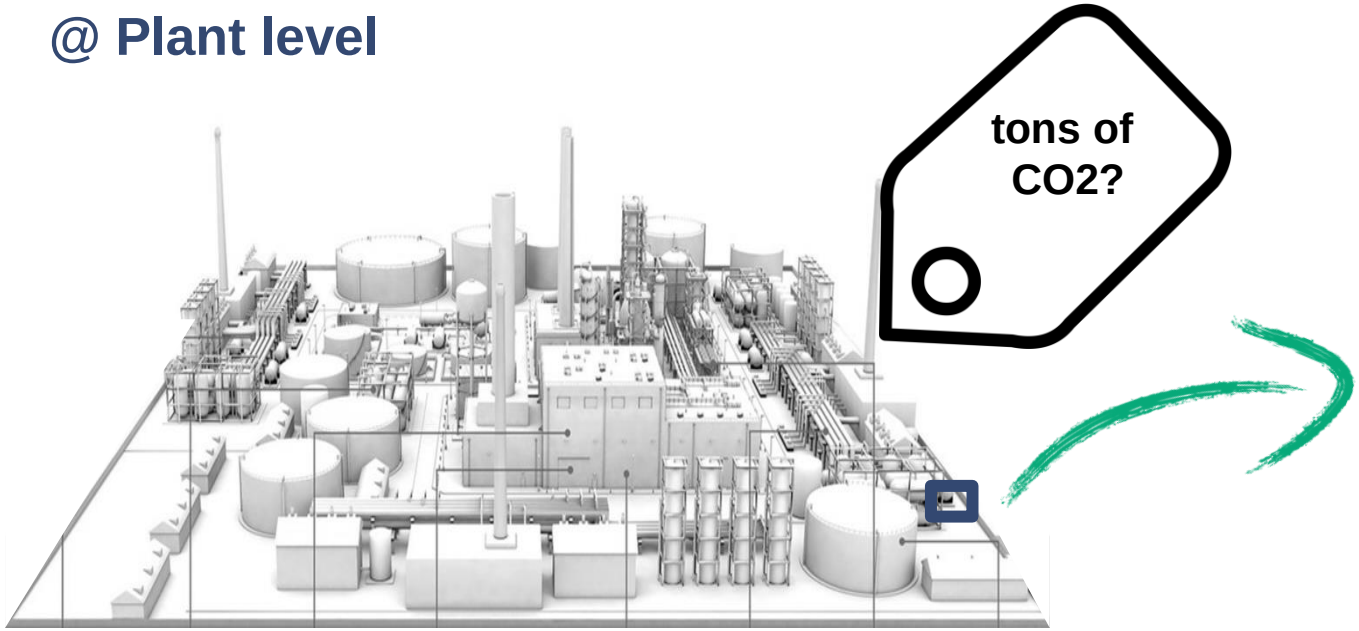


- Not all companies have fully disclosed their Net Zero Roadmap
- Hydrogen & CCUS are two technologies that make consensus between the studied companies
- European supermajor diversify in electrification unlike extra-European which focus on their core business

Source: SIAPartners, “Achieving Net Zero: Strategies in the Oil & Gas Industry” March 2023

4 Scope 3 GHG Emissions require Transparency

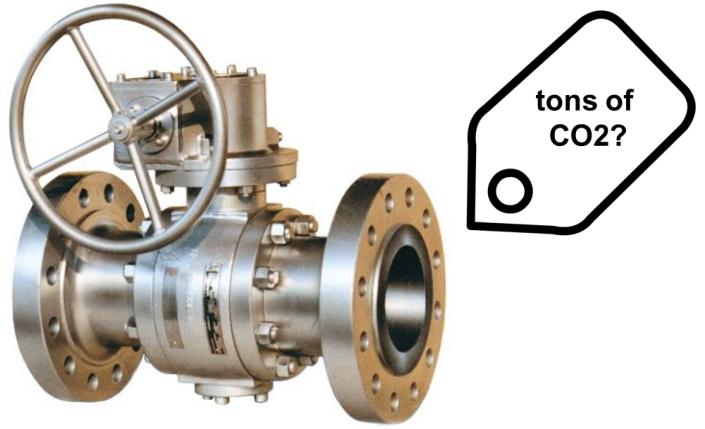
@ Plant level



Each project to have its own Carbon Footprint certificate over its entire lifetime:

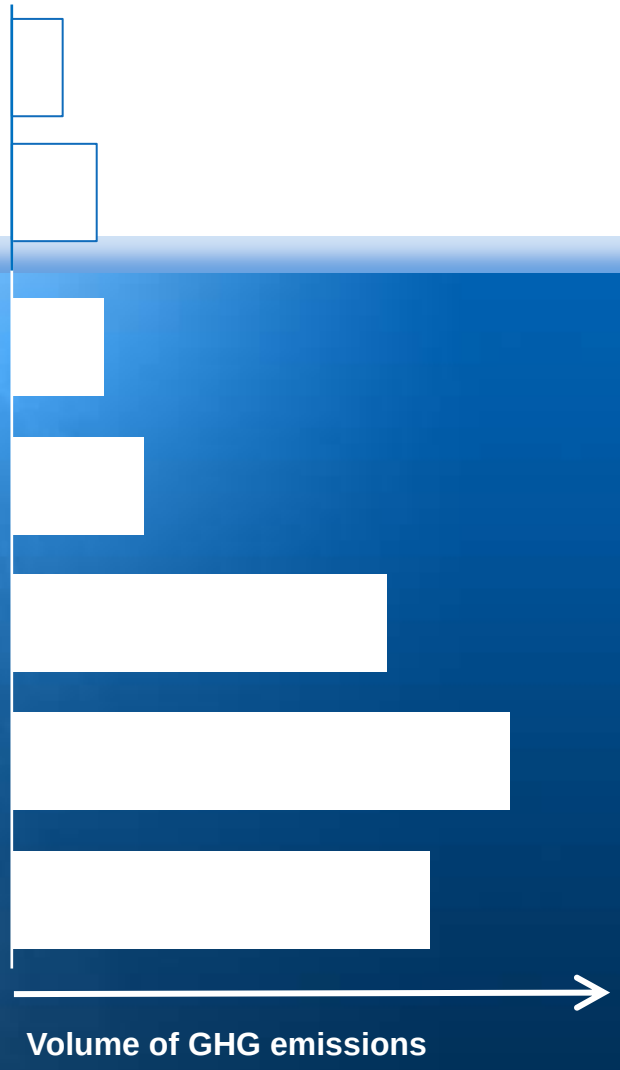
- Production of raw materials
- Fabrication of equipment
- Logistics
- Installation
- Usage

@ Equipment level



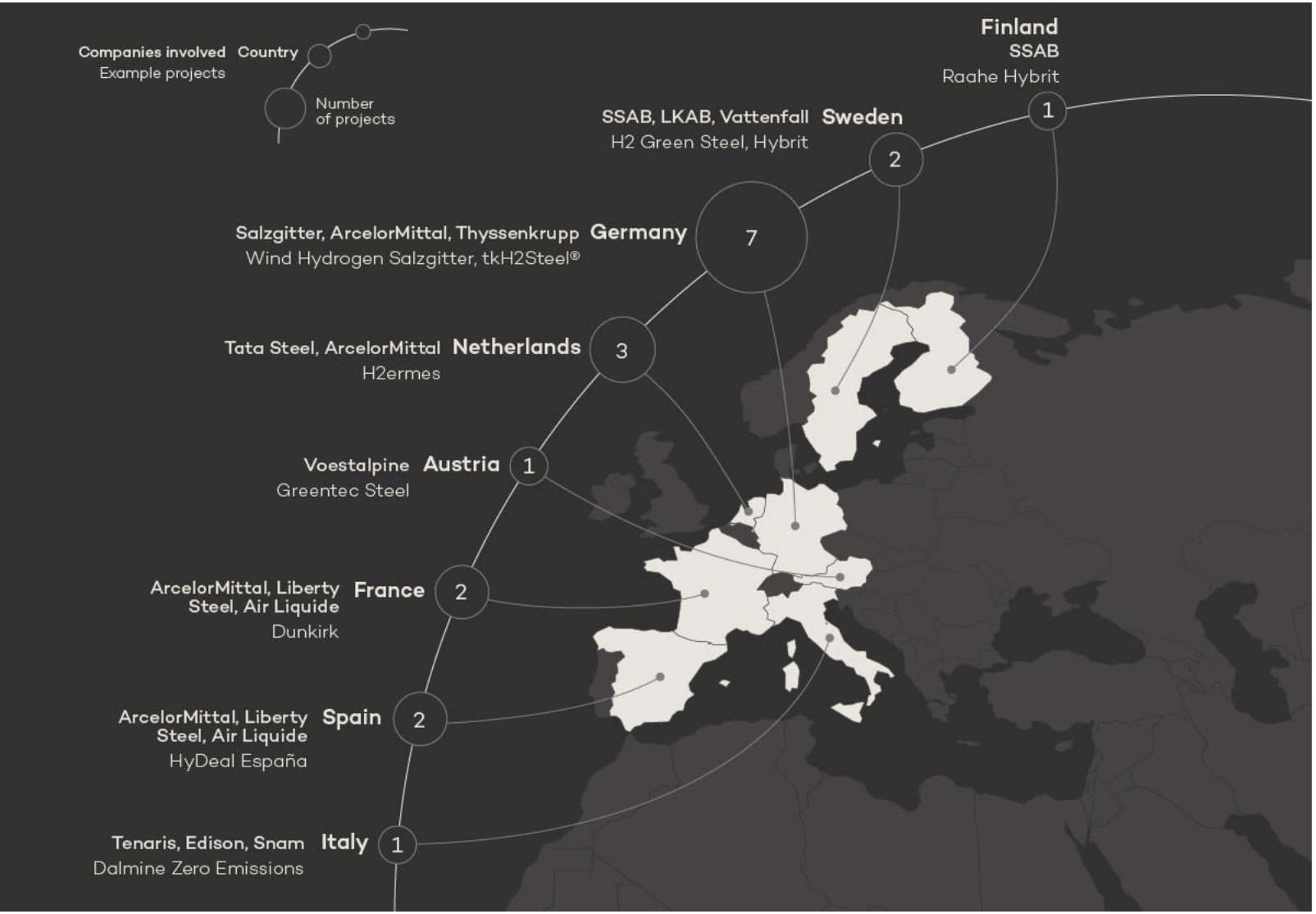
4 GHG Emissions are deep in the Supply Chain

88% of GHG emissions



Source: SupplHi *Carbon Tracker*

4 Europe is leading the way in Green Steel production



However:

- are the **End-Users** willing to **pay for a higher CAPEX** of more sustainable components?
- are the **End-Users updating their cost curves**, also to consider the **impact on OPEX**?

Source: Visual Capitalist

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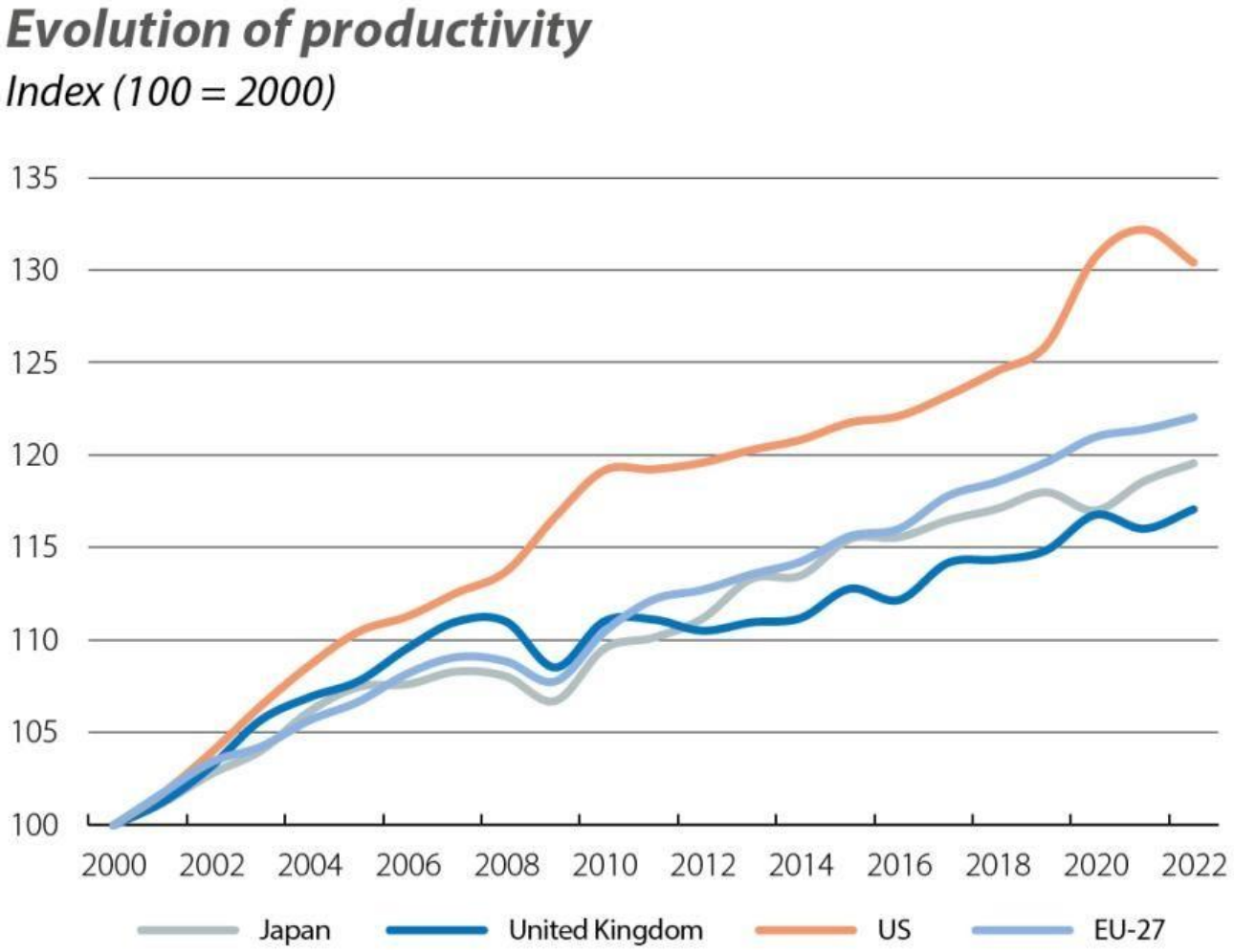
5 Stagnant Productivity in EU (only +0,9% in 2007-2022)

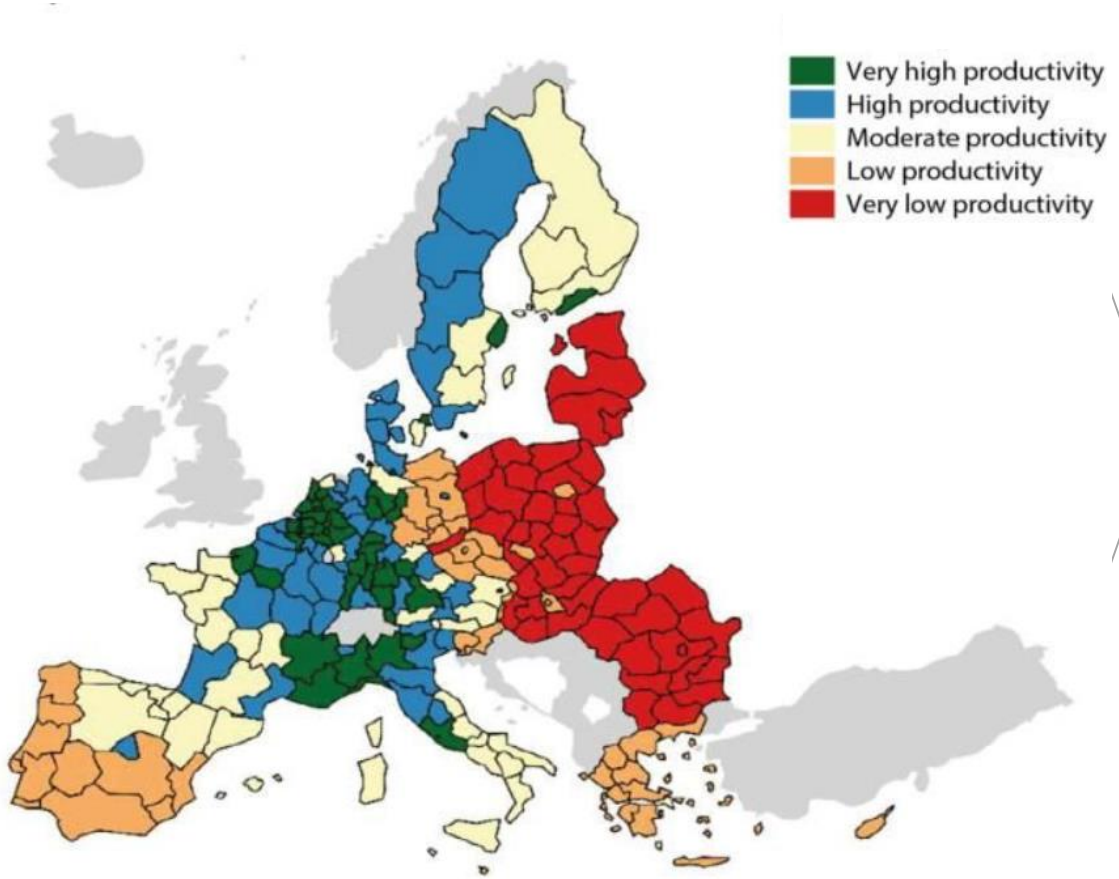


Note: *GDP in real terms per hour worked.*
Source: *CaixaBank Research, based on data from the OECD.*

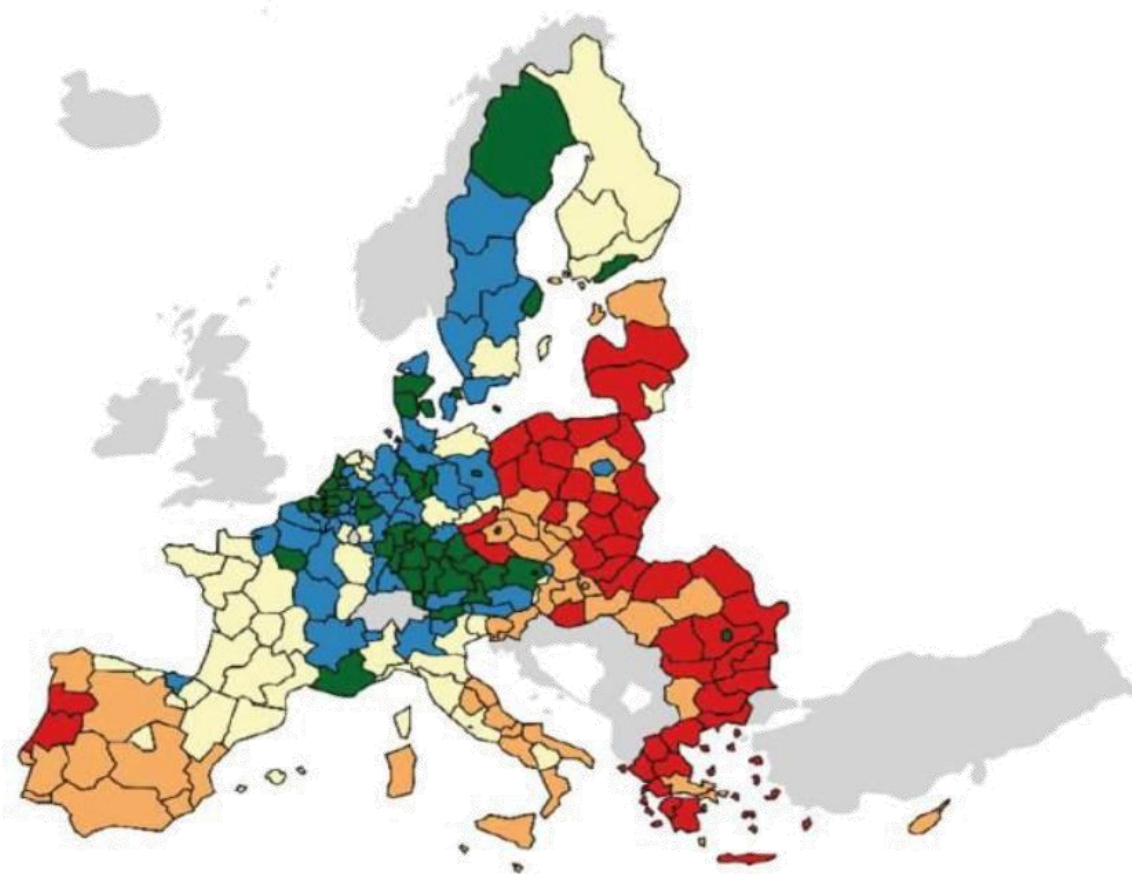
- The average **annual growth** of GDP per hour worked between the year 2000 and 2022 was **1,2%**
- Productivity growth in Europe: **low, uneven and slowing**
- The rate at which productivity is growing **has slowed in recent years**
- Productivity growth in the EU has been **lower than in the US economy over the last few decades**

5 Italy had five regions in the highest productivity group in the year 2000, whereas by 2022 it had only one

Productivity in **2000**



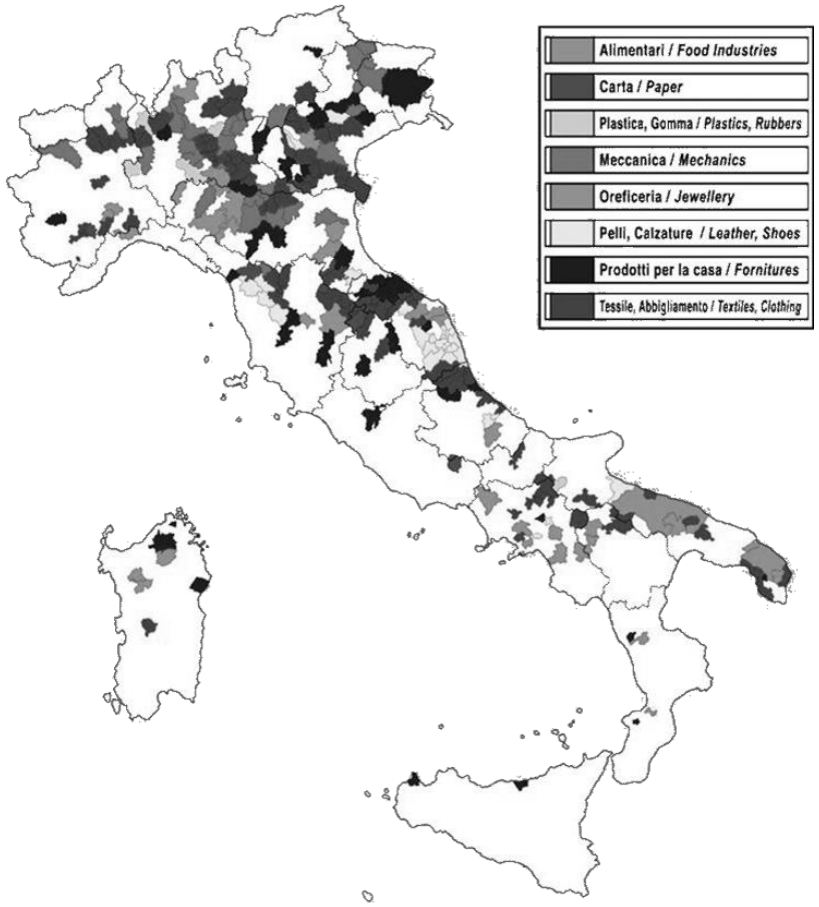
Productivity in **2022**



Source: CaixaBank Research based on data from the European Commission (ARDECO)

5 Are the old recipes still valid?

An example from the Italian “industrial district” model



COLLABORATION

+

SPECIALIZATION

+

SHARED INFRASTRUCTURE

Source: SupplHi analysis

5 Leaders increasingly caring about their Supply Chain

Supplier Programs

Small programs with, on average, 100 Vendors in total, with a mix of Large and SMEs.

Mainly managerial workshop to increase awareness and presence of selected frame agreements with universities and institutional actors.

Control Tower & Vendor Actions

Pragmatic adoption of Vendor Risk Monitoring Tools on the broader Vendor arena to identify risks and to define Vendor Actions (e.g. improvements on ESG, Cyber, Quality, …), especially with SMEs.

"Supply Chain Welfare"

To actively support the relevant SMEs, by providing Customer incentive to deliver the Action Plan.

Possibility to support it through "supply chain credit".

Source: SupplHi analysis

Opportunities for a Supply Chain Leader

1		ADAPTING IN A NEW NORMAL OF DISRUPTIONS	Achieve higher transparency in supply chain through Risk Monitoring
2		PROTECTIONISM	Define scenarios and maintain “friend shores” where to source also in complex times
3		“SAME, SAME, BUT DIFFERENT”: ESG, CYBER & OTHERS	Ride the waves, only through clear, pragmatic and realistic messages to the supply chain
4		A PLANET TO SAVE	How to really support a Net Zero plant and how to educate the End-Users to take bold decisions?
5		“SUPPLY CHAIN” INDUSTRIAL POLITICS	Stimulate specialization and prioritize, monitor and support the SMEs that are critical for you

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October 22nd, 2024

Thank you for your attention