Global Energy Transition Trends

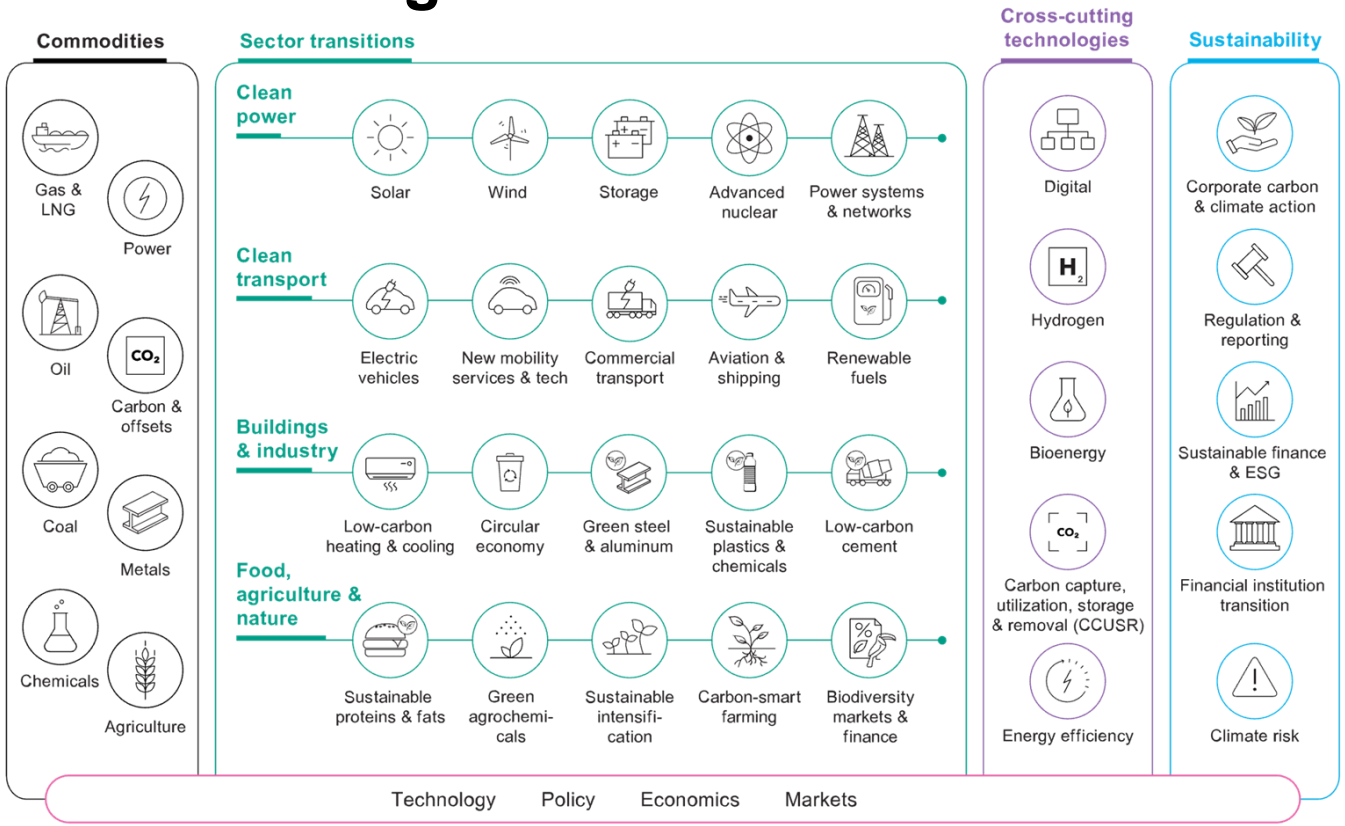
Green Energy Export Day 2025, Copenhagen

Oliver Metcalfe

August 27, 2025

BloombergNEF

BNEF coverage



Global presence, regional perspective

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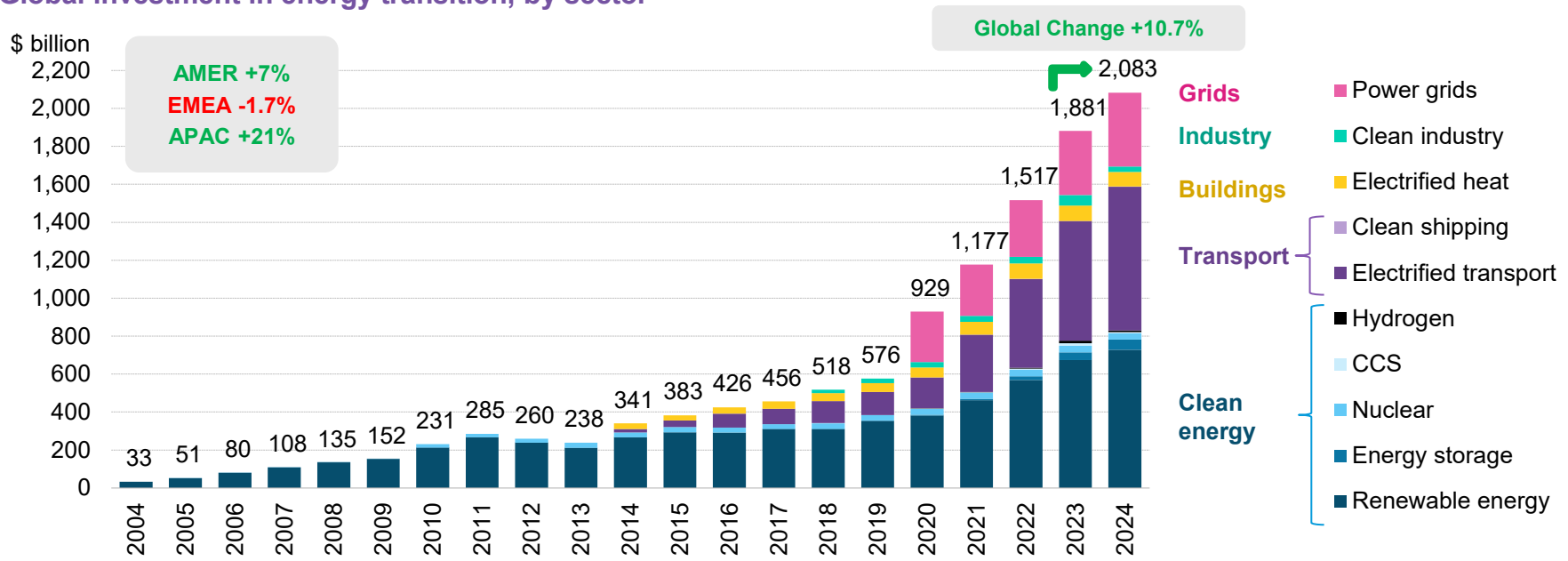
Source: Getty Images.

1. Investment and deployment

“Different directions”

Global energy transition investment exceeded $2 trillion for the first time

Global investment in energy transition, by sector



Source: BloombergNEF. Note: Start years differ by sector but all sectors are present from 2020 onward. Most notably, nuclear figures start in 2015 and power grids in 2020. CCS refers to carbon capture and storage.

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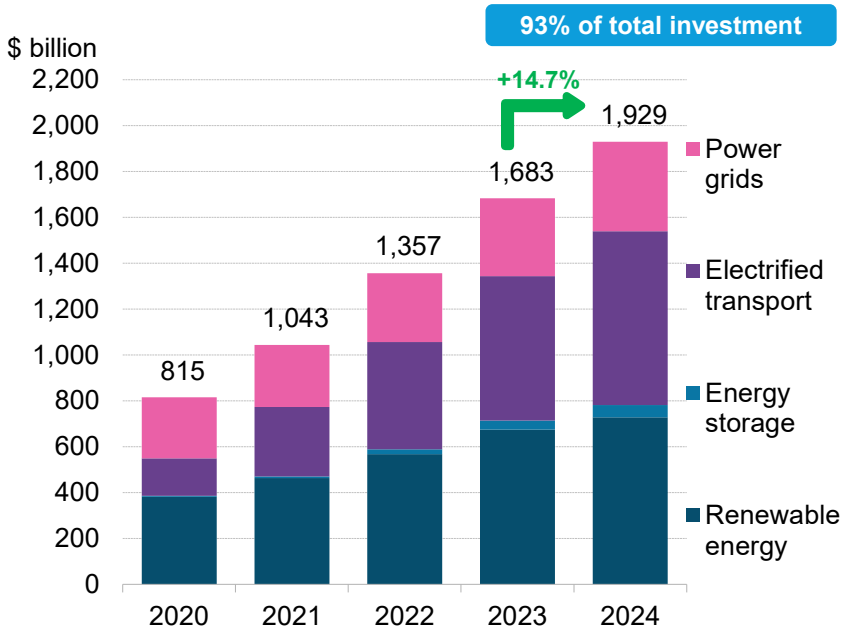
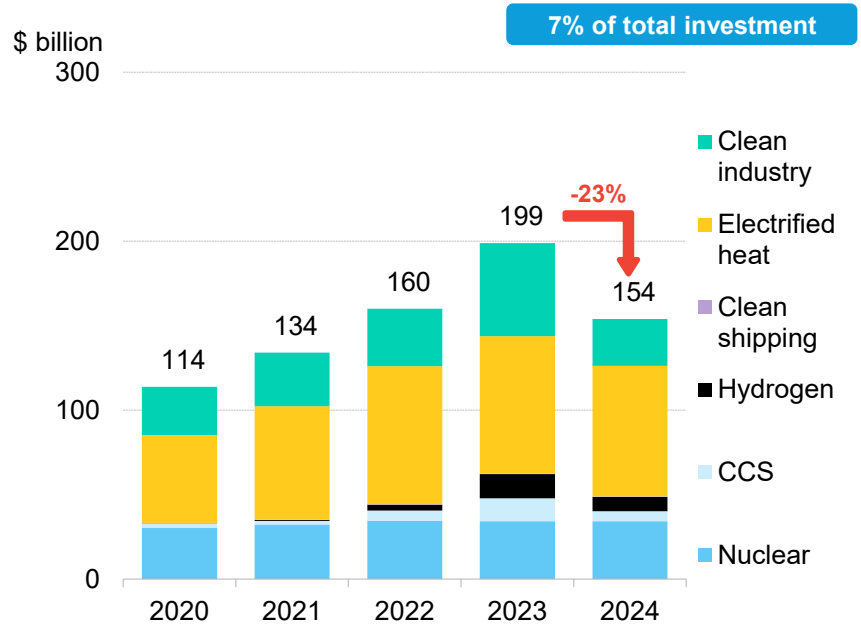
Energy transition investment trends diverged by sector maturity

Energy transition investment trends: "mature" sectors



Energy transition investment trends: "emerging" sectors



Source: BloombergNEF. Note: CCS refers to carbon capture and storage.

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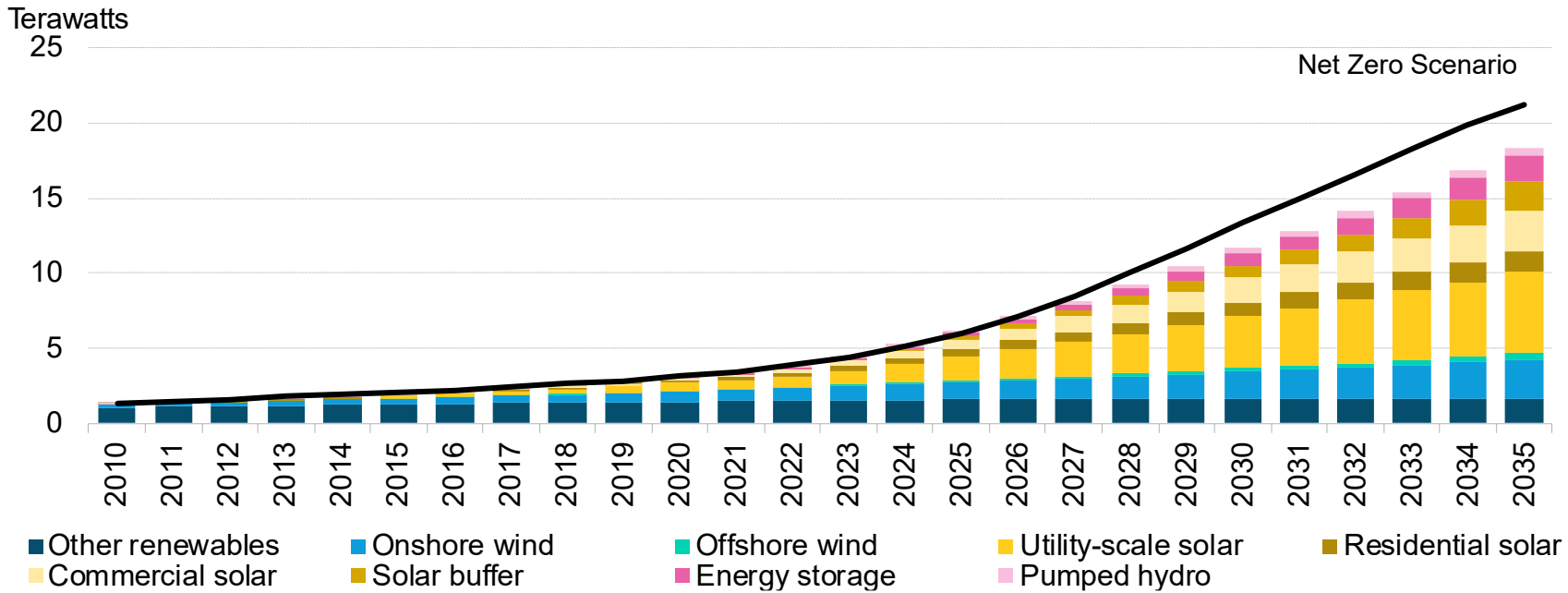
…but still falls short of what's needed for a net-zero pathway

Global cumulative renewable energy capacity, historic and forecast to 2035



Source: BloombergNEF

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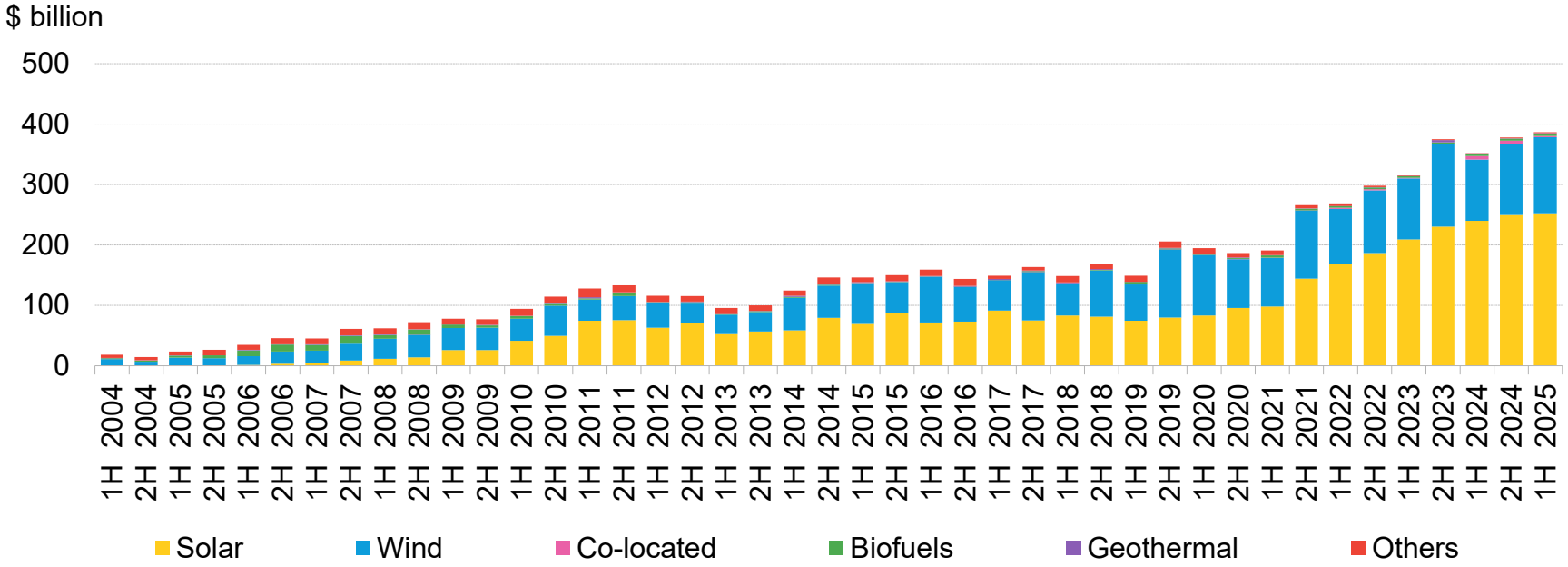
Onshore wind and utility-scale solar shrink as small-scale solar grows

Global biannual investment in renewable energy



Source: BloombergNEF. Note: 'Others' includes biomass and waste, small hydro and marine.

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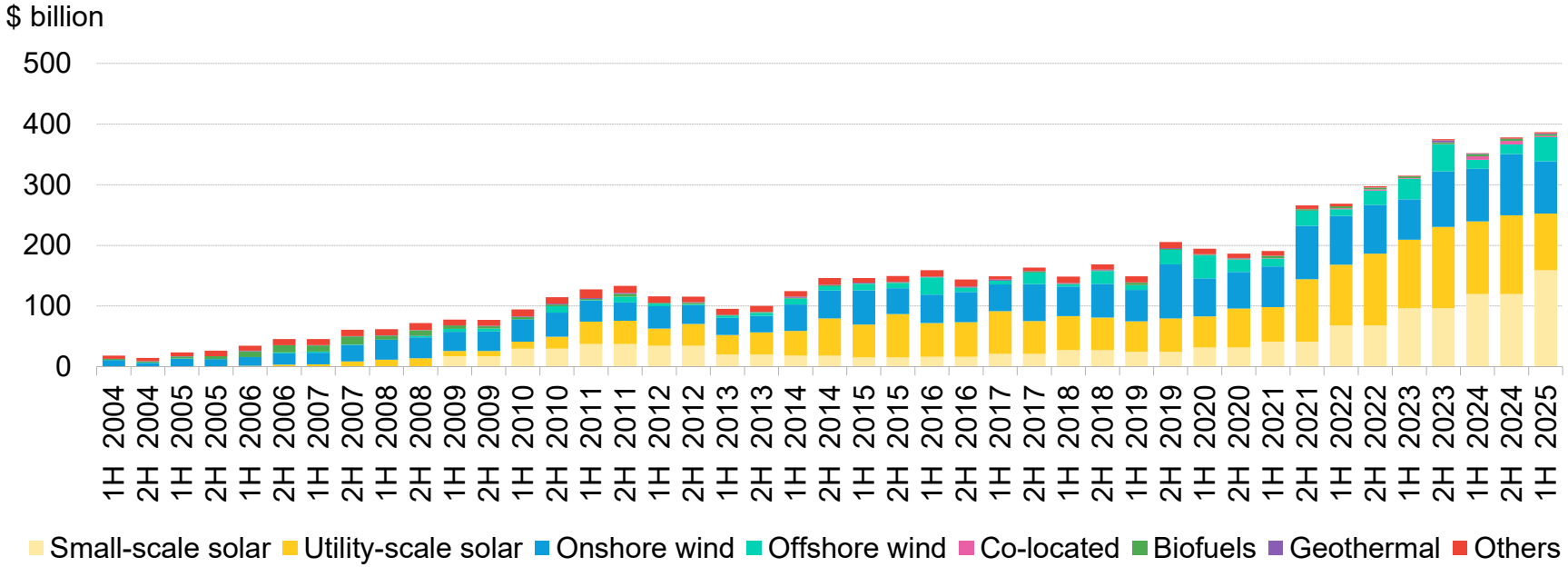
Onshore wind and utility-scale solar shrink as small-scale solar grows

Global biannual investment in renewable energy



Source: BloombergNEF. Note: 'Others' includes biomass and waste, small hydro and marine.

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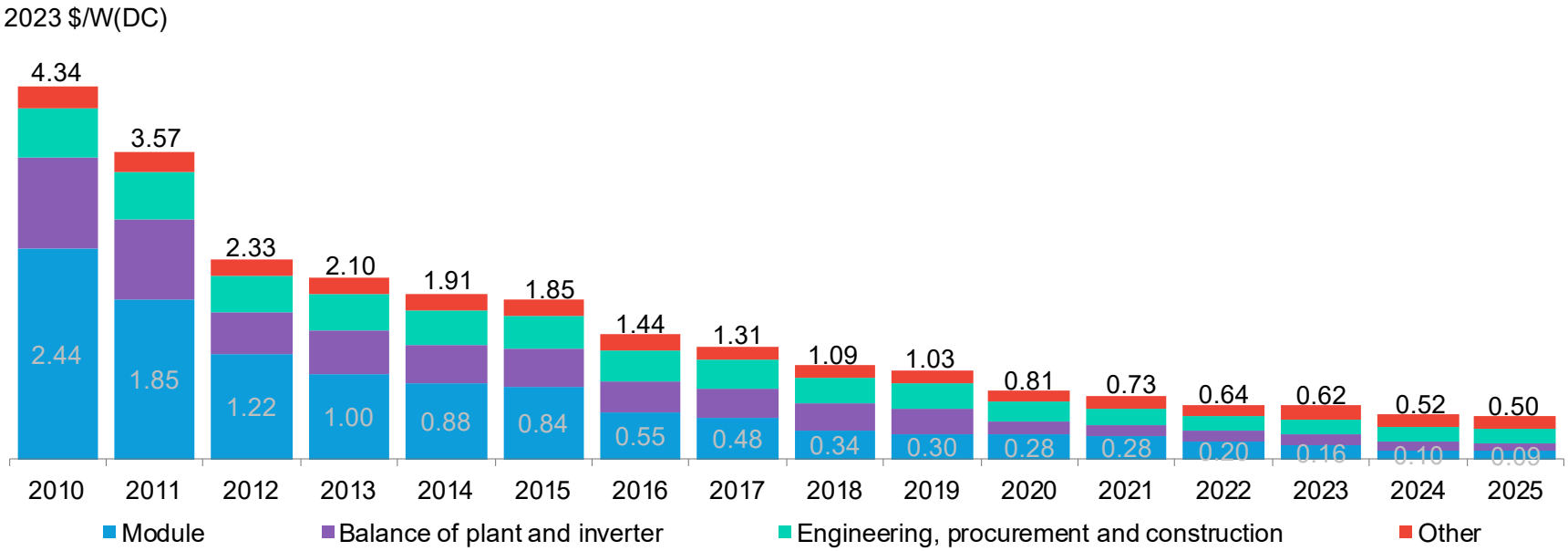
Solar module prices fall to record-low of 9.2 US cents per watt

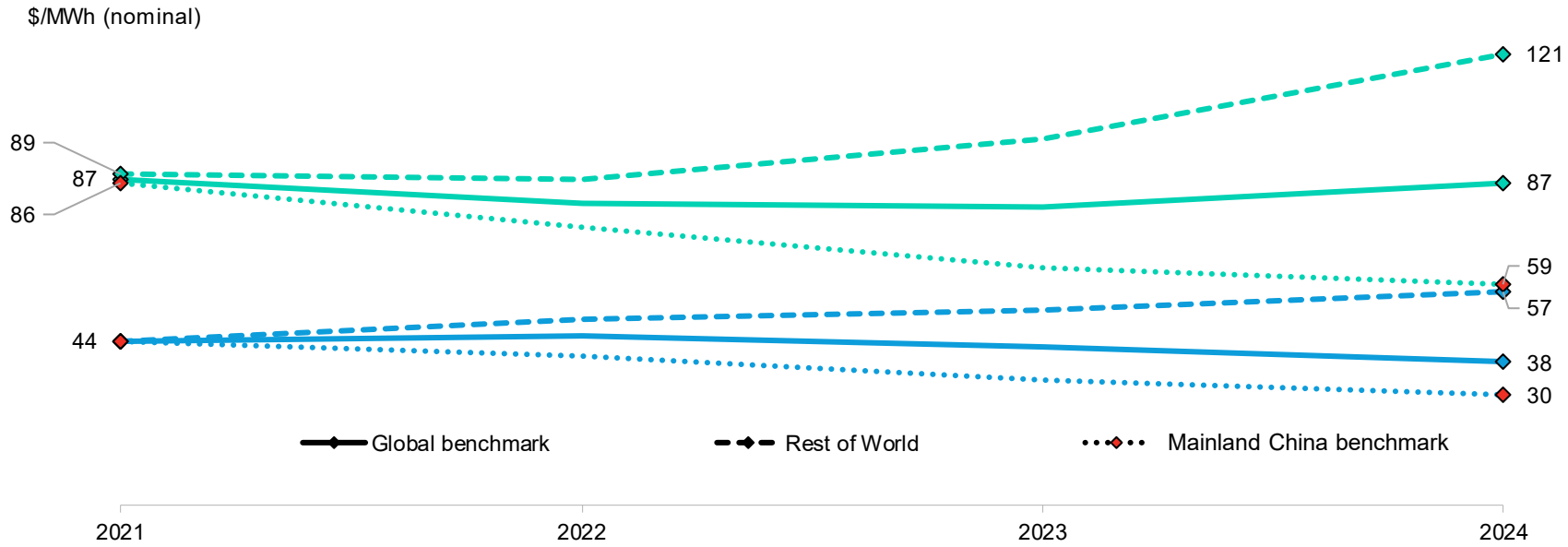
Capex benchmark for medium-sized fixed-axis utility-scale PV projects, historical and forecast



Source: BloombergNEF, PV Infolink. Note: Values shown for a market without major trade barriers, such as Europe, mainland China and Latin America. Modules are bifacial TOPCon modules. W(DC) is watts (direct current).

Wind cost divide has widened between mainland China market and rest of world

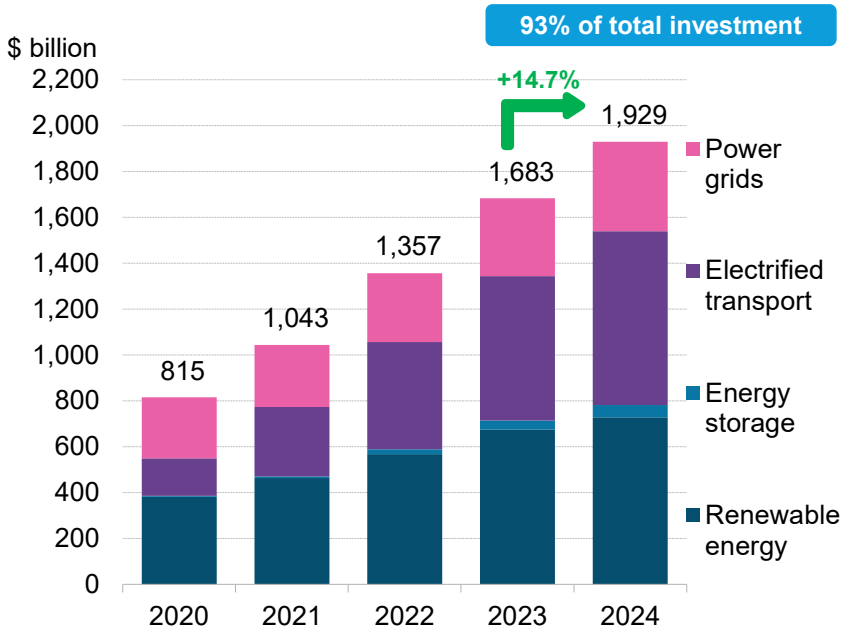
Impact of mainland China on global wind LCOE benchmarks



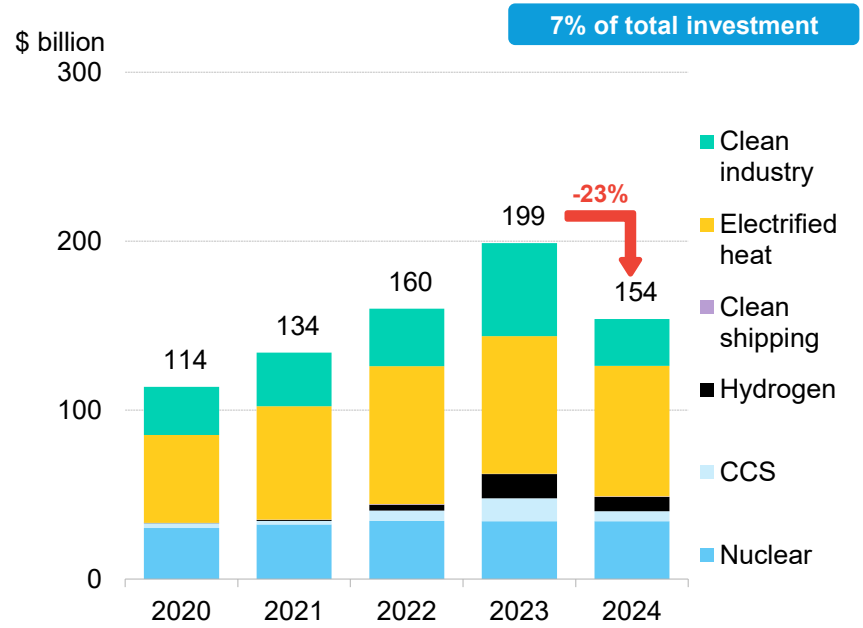
Source: BloombergNEF. Note: LCOE is levelized cost of electricity. Offshore wind includes offshore transmission costs. The global benchmarks are capacity-weighted averages. LCOEs do not include subsidies or tax-credits. MWh is megawatt-hour.

Energy transition investment trends diverged by sector maturity

Energy transition investment trends: "mature" sectors



Energy transition investment trends: "emerging" sectors



Source: BloombergNEF. Note: CCS refers to carbon capture and storage.

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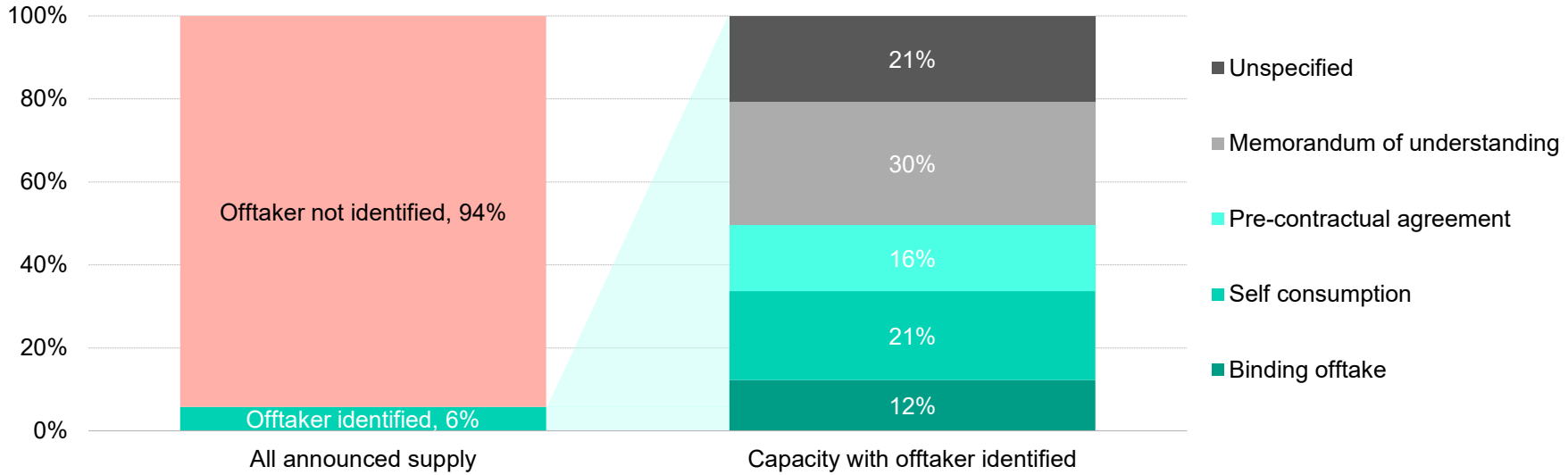
Finding a buyer willing to sign a binding offtake agreement is even harder

Clean H_2 offtake by agreement type

Share of total capacity, share of offtake capacity



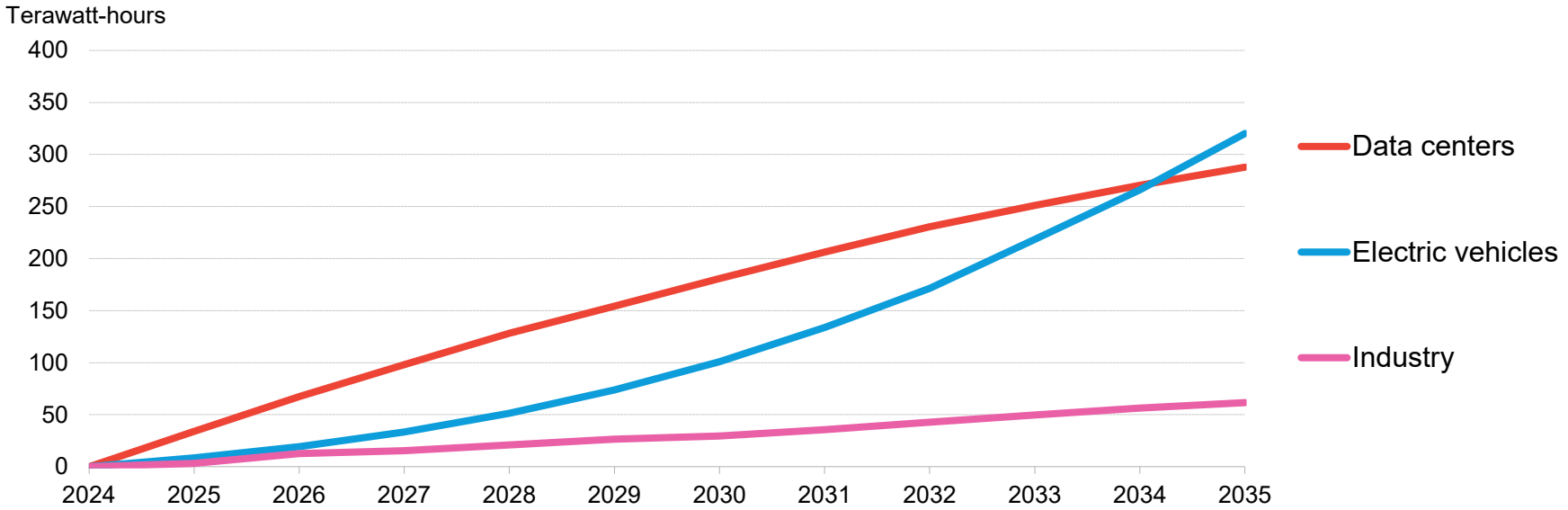
Source: BloombergNEF. Note: Data as of October 31, 2024. BNEF's Hydrogen Offtake Agreement Database only includes projects of over 20 megawatts or 2,800 metric tons/year of capacity. Pre-contractual agreements include term sheets, letters of intent (LOI), and heads of agreements.

2. Data centers

“Ramping up demand”

Data centers will add as much power demand as EVs in the coming decade

Average hourly US data-center electricity demand



Source: BloombergNEF. Note: Data-center demand refers to total energy demand. BNEF's Economic Transition Scenario combines near-term market analysis, least-cost modeling, consumer adoption trends, and historical patterns to project how commercially available technologies are likely to scale. It assumes no new policy interventions and is designed to reveal the economic fundamentals driving the energy transition.

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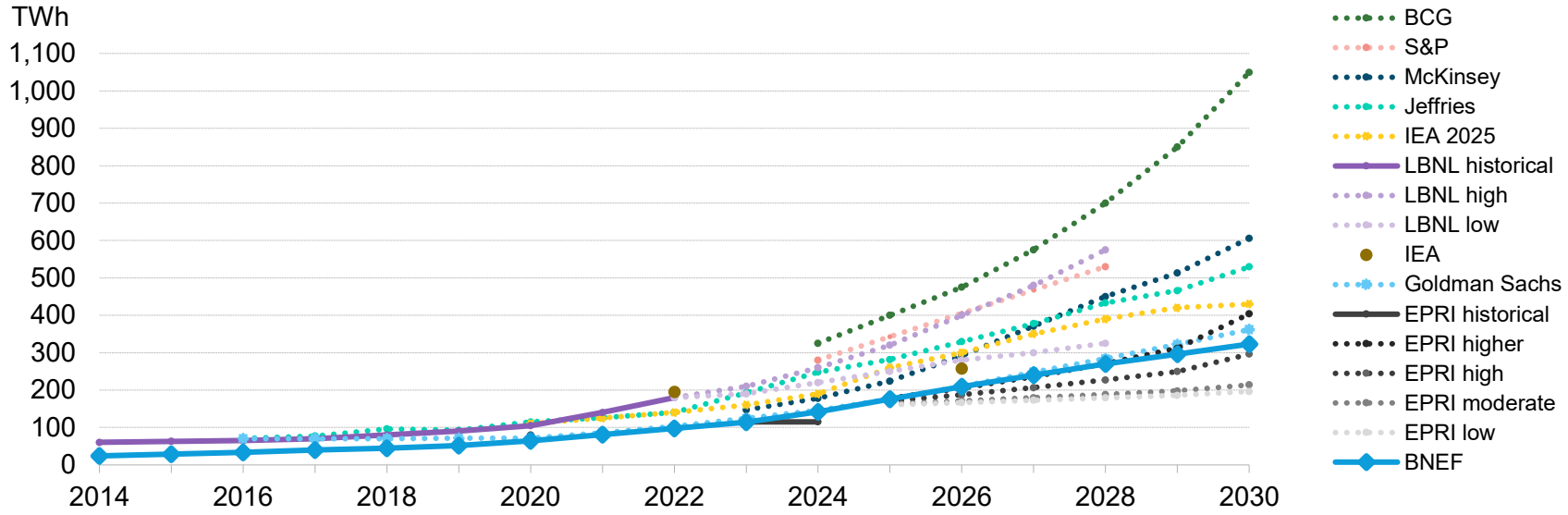
BNEF's estimates are less bullish than some others

Comparison of US data-center energy demand forecasts



Source: BloombergNEF, Lawrence Berkeley National Lab (LBNL) , International Energy Agency (IEA) 2024 , Boston Consulting Group (BCG) , Electric Power Research Institute (EPRI) , Jefferies, Goldman Sachs, McKinsey, S&P, IEA 2025. Note: The data underlying the above forecasts include both published figures and BloombergNEF estimates, derived from visuals in third-party reports using chart extraction software and data interpolation methods. All sources are cited and linked in the report. Derived estimates represent the independent interpretation of BloombergNEF and do not imply endorsement by the original data providers.

3. Tariffs

“Reshoring, rewiring, and bewildering”

Tariff uncertainty

IMF warns of 'major negative shock' from Trump's tariffs

Trump Has Added 145% Tariff to China, White House Clarifies

China Raises Tariffs on U.S. to 125%, Says More Tit-for-Tat Would Be a Joke

Beijing signals this is the last levy increase, but says it will keep fighting against Washington's moves

White House Considers Slashing China Tariffs to De-Escalate Trade War

Levies could be cut by more than half in some cases although Trump hasn't yet made final decision

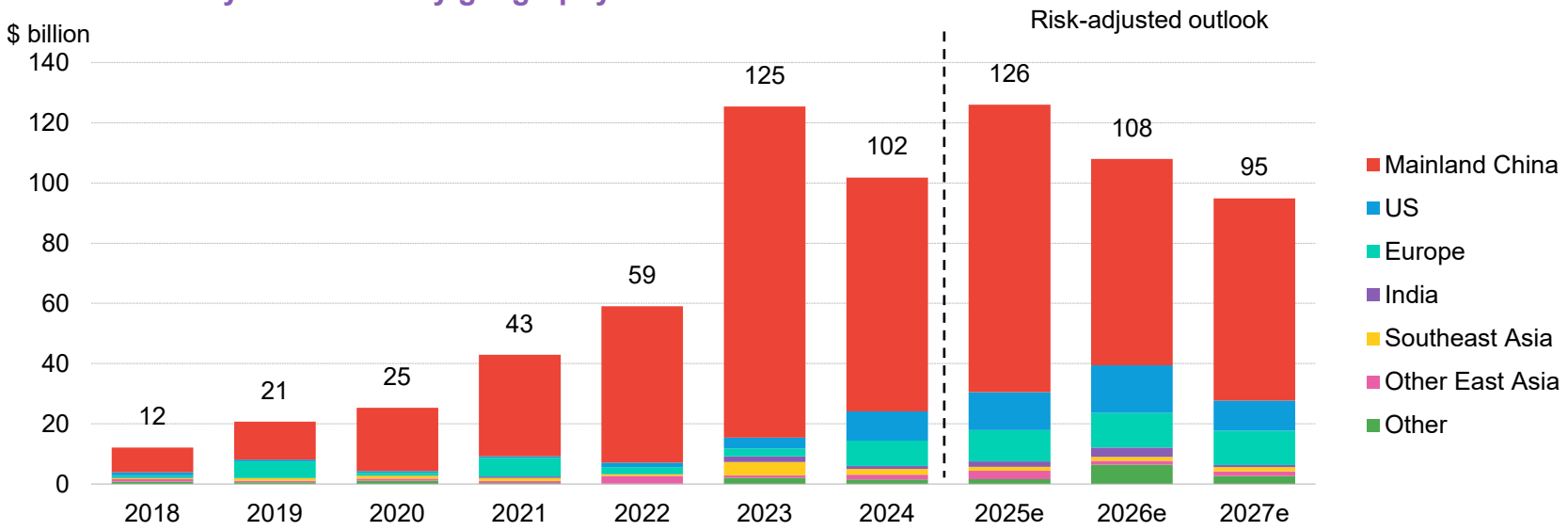
S&P 500 Suffers Worst Drop Since Covid as Tariffs Rattle Traders

Stocks Rebound as Wall Street Latches Onto Hope for Tariff Easing

Source: BloombergNEF, Bloomberg, The Wall Street Journal, The New York Times, The Economist, The Guardian

Clean-tech factory investment growing outside mainland China

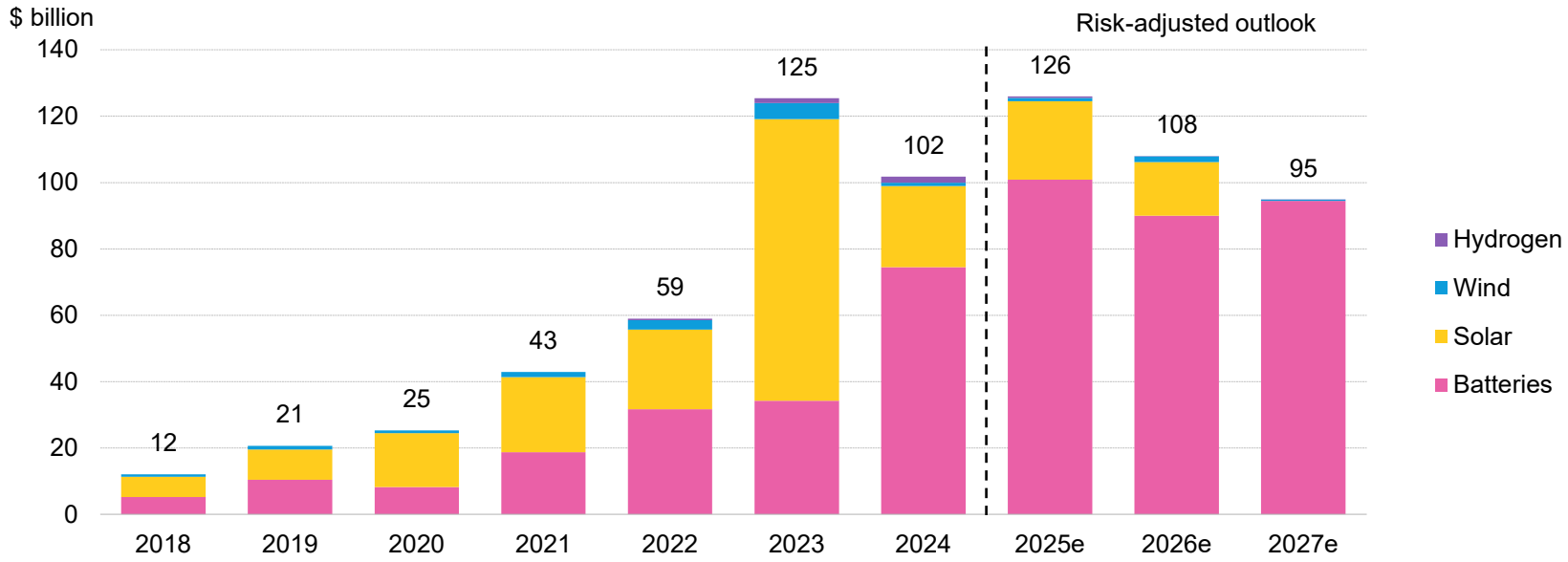
Clean-tech factory investment by geography



Source: BloombergNEF. Note: Includes factory investment across the manufacture of solar (polysilicon, wafers, cells and modules), batteries (separators, electrolytes, cathodes, anodes and cells), wind turbines (nacelles only), and hydrogen electrolyzer manufacturing (stack assembly only). Manufacturing capacity has been risk-adjusted to account for the likelihood of completion and factory ramp up according to such factors as factory location, manufacturer experience, and capacity of the plant. 'Other' refers to rest of world, and 'Other East Asia' comprises Taiwan, Japan and South Korea.

Batteries dominate factory investment

Global clean-tech factory investment by technology



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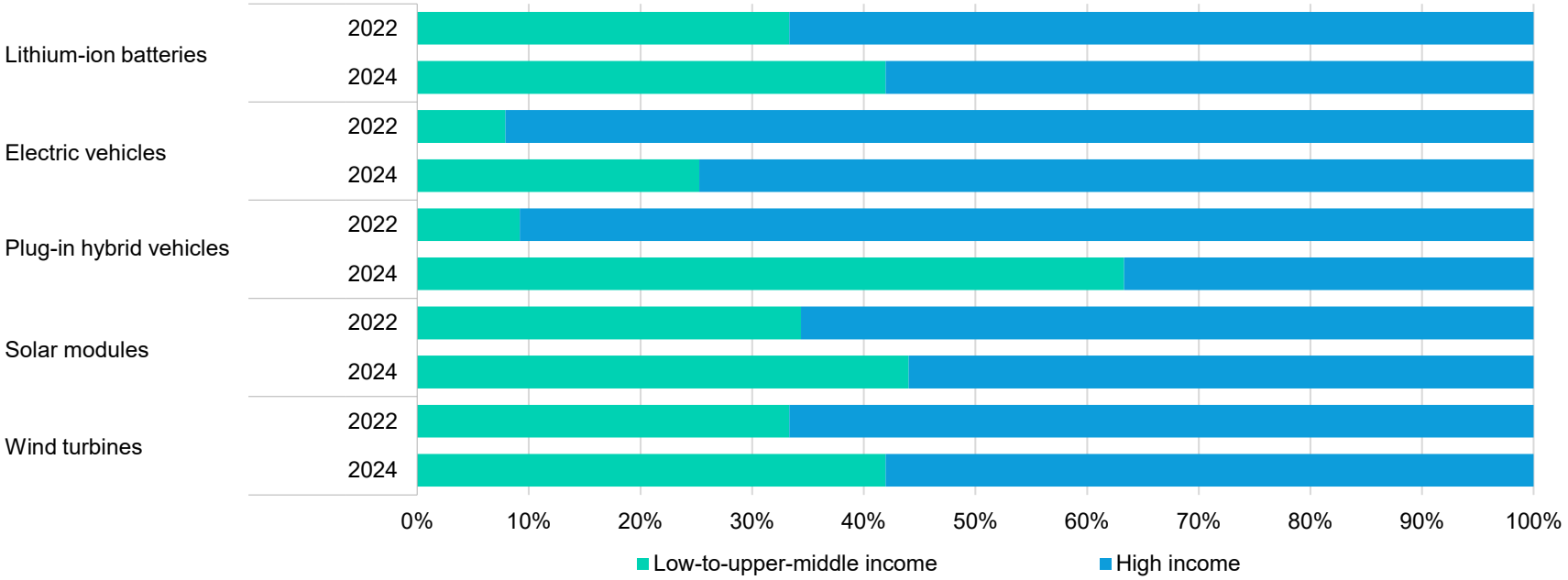
China’s clean-tech exports increasingly heading to low-to-mid income countries

Chinese clean-tech exports by value, technology and income group of destination country



Source: BloombergNEF, Sinoimex. Note: Income country group classification by the World Bank according to gross national income per capita for 2024.

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Source: Getty Images.

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Oliver Metcalfe
ometcalfe@bloomberg.net

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