



Tim Buckley, Director CEF
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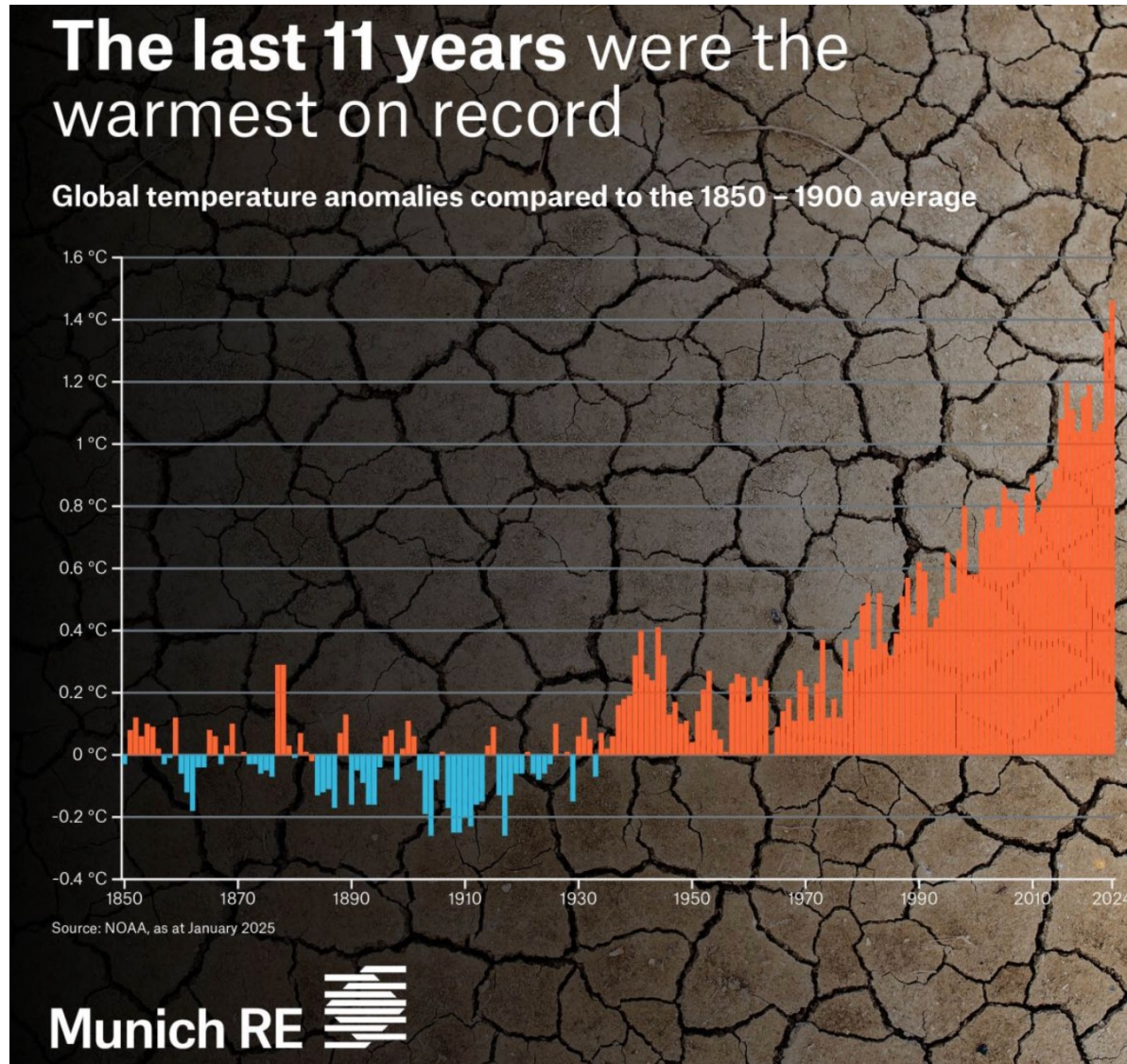
**Griffith University:
Integrating Climate Change
Adaptation and Disaster Risk
Reduction**

**Navigating strategic, financial
and geopolitical dynamics to
accelerate South Asia's net
zero transition through
regional collaboration,
investment, and technology
convergence**

26 June 2025

CEF accepts the climate science

CEF is a public interest thinktank with no government or corporate funding

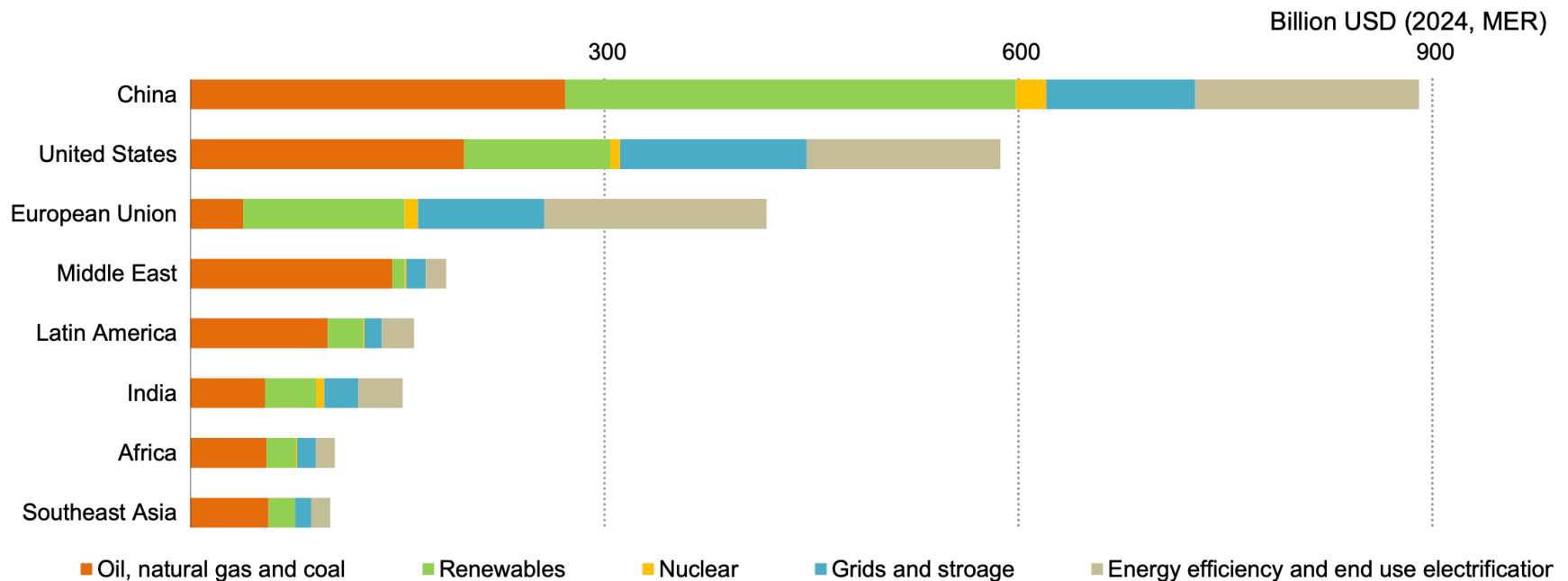


Global Cleantech Investment: China's Dominance

China sets the pace, as energy security drives spending growth



Energy investment by region, 2025



IEA. CC BY 4.0.

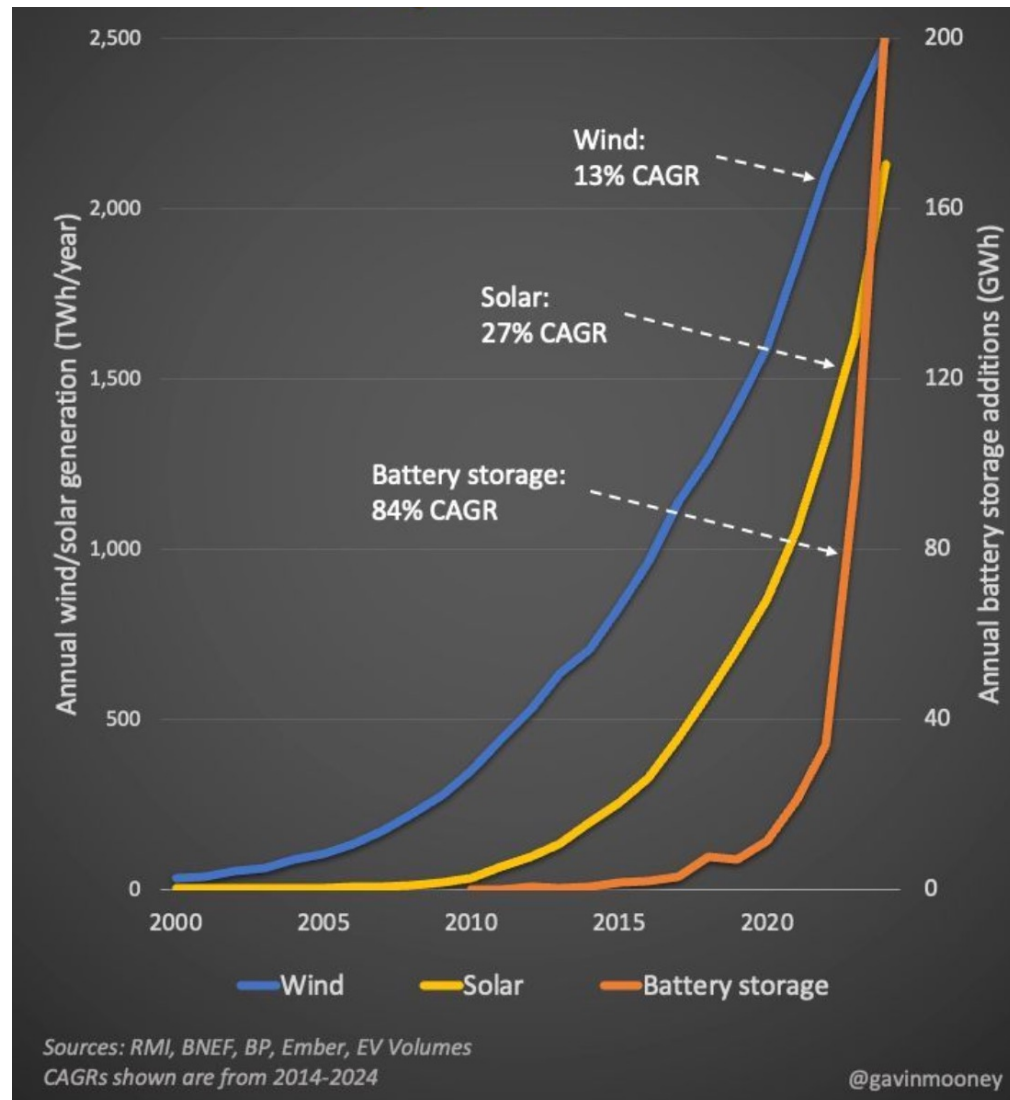
More than one-quarter of global energy investment takes place in China. Most of the growth in spending in recent years has been in fossil fuel importing countries looking to bolster their energy security by accelerating transitions

Note: 2025e= estimated values for 2025

Source: IEA World Energy Investments <https://www.iea.org/reports/world-energy-investment-2025>

Global Cleantech Investment is Accelerating

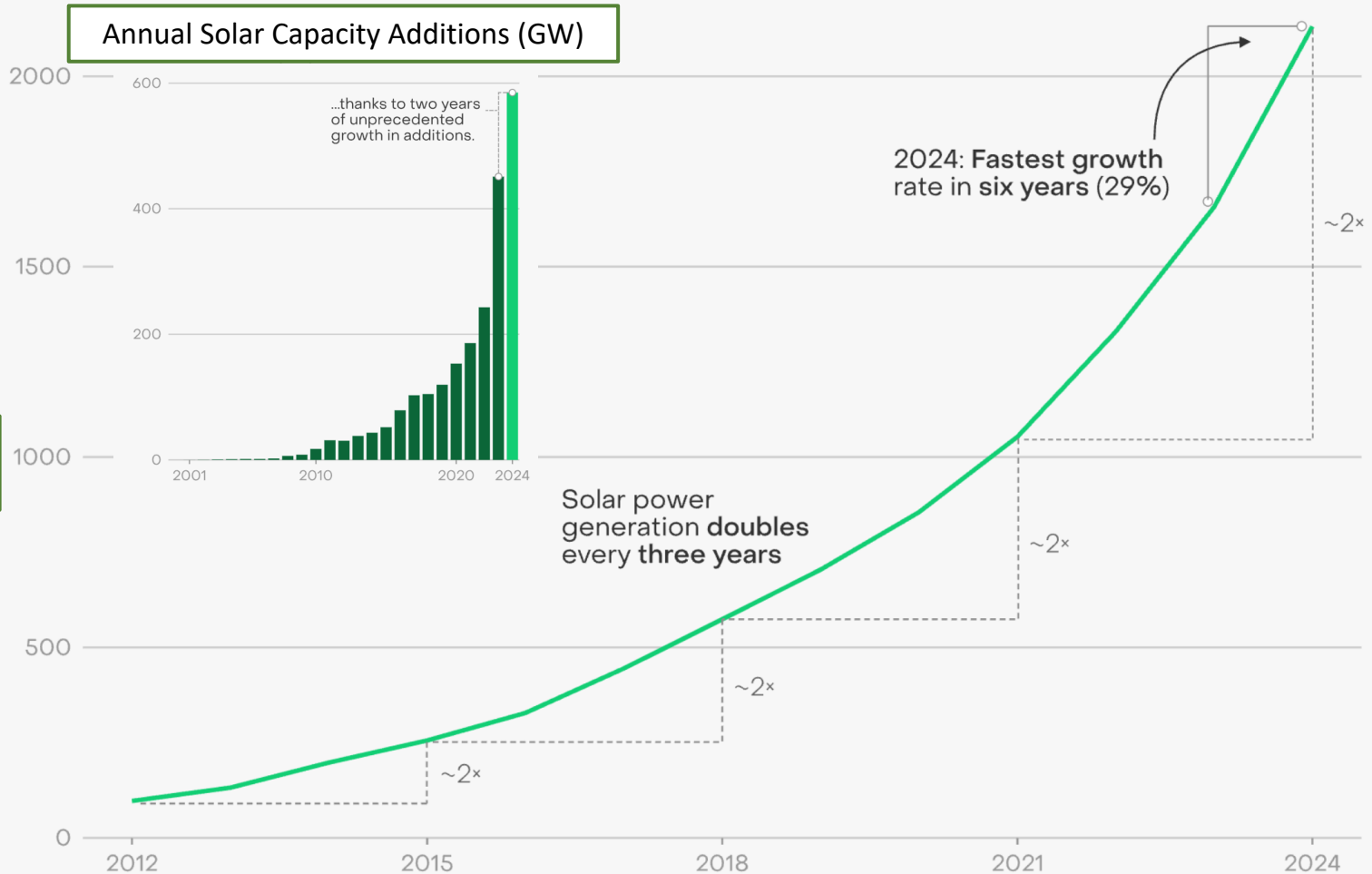
As Battery Prices fell 50% in 2 years, global Installations have Taken Off
Solar + BESS + V2G => Accelerated Energy System Transformation



Cleantech Investment Dominance

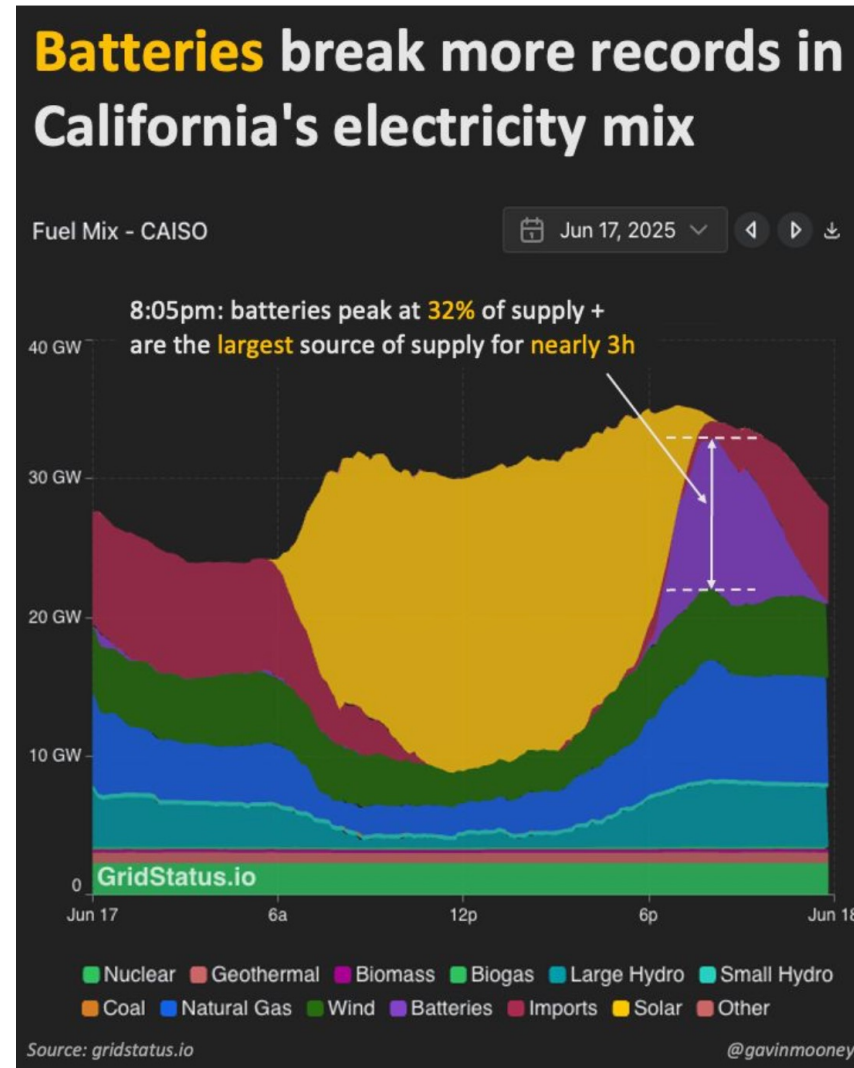
Global solar power is doubling every three years.

Electricity generation from solar power (TWh)

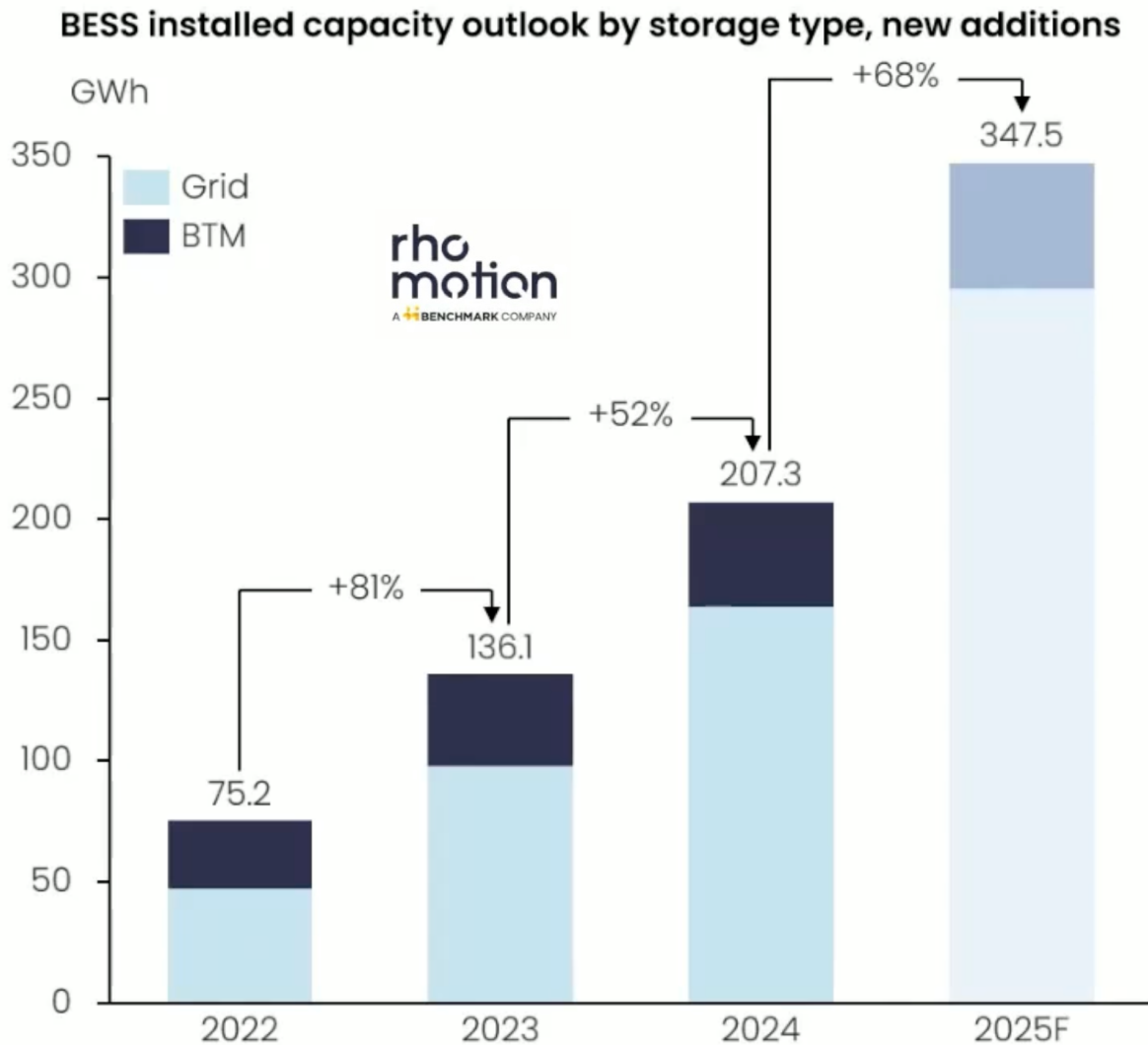


Global Cleantech Investment is Accelerating

Solar + BESS + V2G => Accelerated Energy System Transformation



BESS + Solar + EV => Accelerating Transformation



Cleantech Investment Dominance

China & India led global fossil fuel electricity generation in the last two decades, but this is about to change.

Reliance Power to build 930 MW of solar with 1.86 GWh of battery storage

Reliance Nu Suntech says it will build a 930 MW solar project with 465 MW/1,860 MWh of battery storage to deliver four hours of peak power daily at a fixed tariff of INR 3.53 (\$0.042)/kWh. The project aims to provide assured supply at competitive rates.

MAY 5, 2025 **UMA GUPTA**

MARKETS

MARKETS & POLICY

ASIA

INDIA

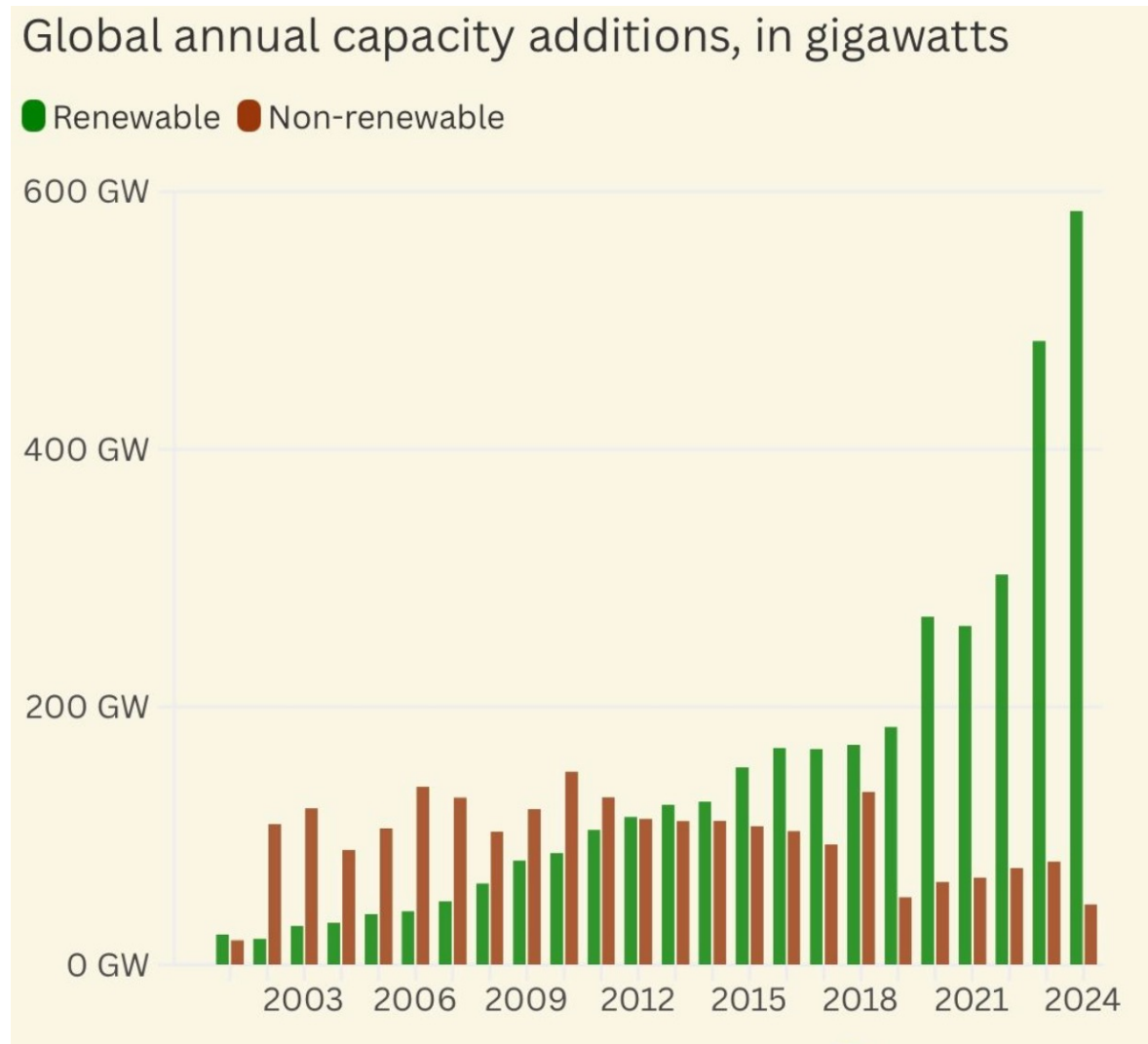
Reliance NU Energies secures 525 MW solar-plus-storage project in SJVN tender

The allocation includes 350 MW of solar generation capacity and 175 MW/700 MWh of battery energy storage system capacity. The tariff for the project has been discovered at ₹3.33 per kWh for a 25-year period.



Global Cleantech Investment

Renewables Dominate new power plant installations

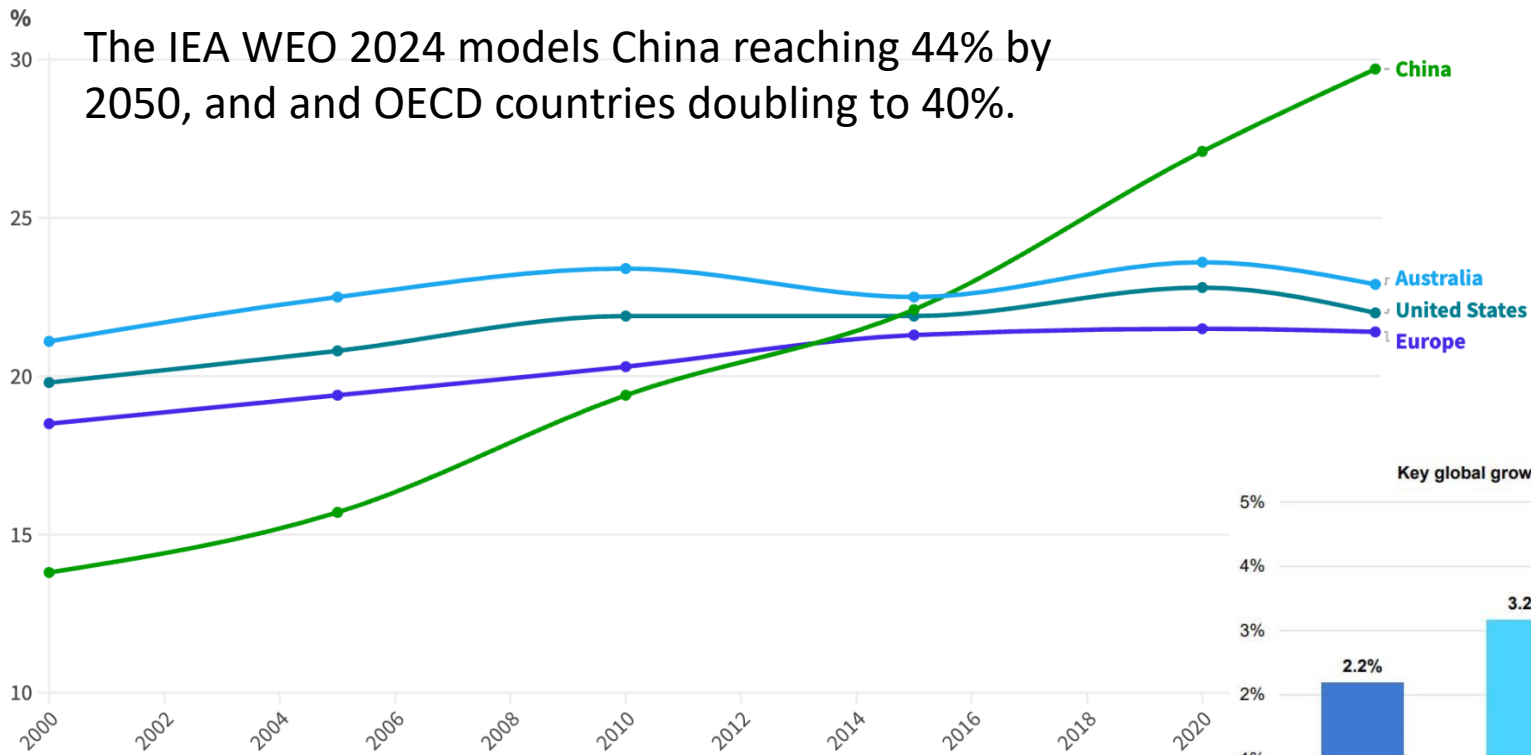


China's Electrification of Everything

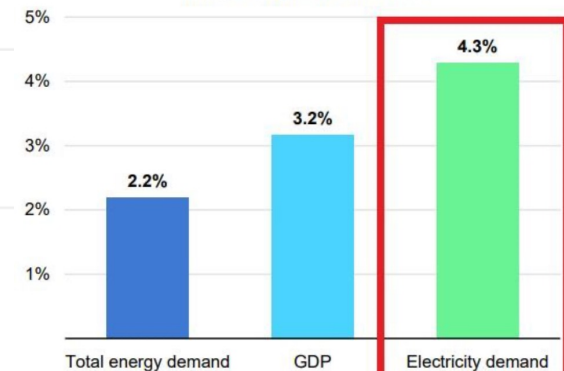
China Leads the world on Progressive Electrification of Everything

Share of final energy from electricity

China has leapfrogged United States, Europe and Australia in electrification



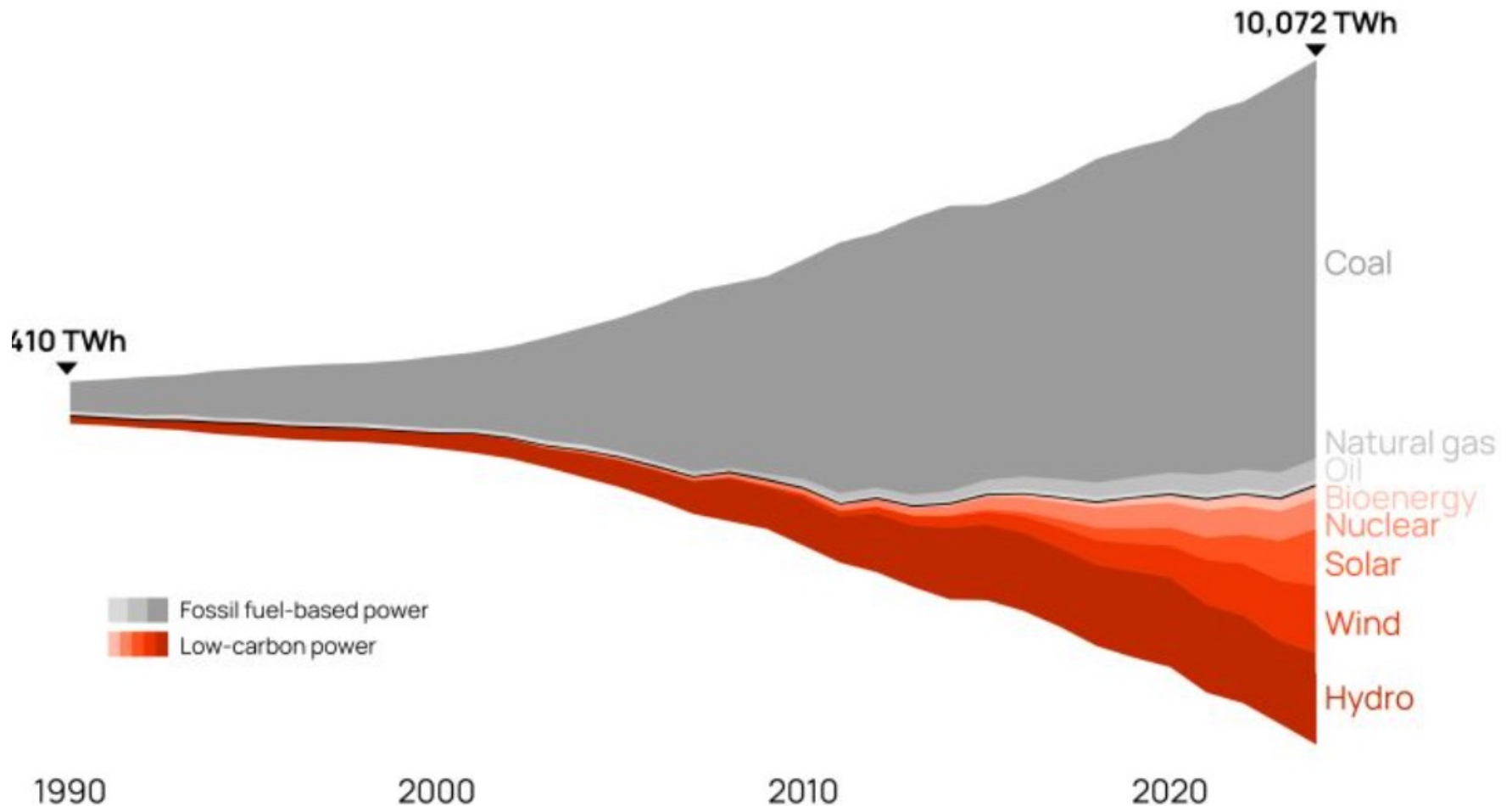
Key global growth rates, 2024



Source: CEF calculations, [Enerdata](#)

The Rise and Rise and Rise of China

China's Electricity Mix – profound unprecedented growth over 1990-2024



China is Moving in Decarbonisation, Rapidly

China is still adding flexible coal power plants (too much!), but utilization rates are down to average just 46% in 5MCY2025, balancing ever more VRE! China deployed 247GW of renewable energy capacity in 5M to-date CY2025. China deploys as much wind 4 days as Australia does each year.

New Capacity Installed in China in Jan-May 2025

		Jan-May'25	% Share of new adds	% yoy change	May-25	% Share of new adds
Thermal Power	GW	18	7%	45%	4.6	4%
Hydropower	GW	3	1%	-6%	0.6	0%
Nuclear Power	GW	-	0%	0%	-	0%
Wind Power	GW	46	17%	134%	26.3	21%
Solar Power	GW	198	75%	150%	92.9	75%
Total capacity added	GW	265	100%	129%	124.4	100%
Renewable Energy adds	GW	247	93%	142%	119.8	96%
Zero Emissions Capacity Adds	GW	247	93%	139%	119.8	96%
YTD power grid investment	US\$bn	28		20%		

Source: National Energy Administration

China is Moving in Decarbonisation, Rapidly

Thermal power generation -2.6% yoy YTD 2025, profound implications

China's Power Generation Year-to-date 2025 (TWh)

	Jan-May 25	Jan-May 24	% change yoy	May-25	May-24	% change yoy
Thermal	2,381	2,445	-2.6%	449.6	441.8	1.8%
<i>Coal</i>	<i>2,265</i>	<i>2,326</i>	<i>-2.6%</i>	<i>427.7</i>	<i>420.3</i>	<i>1.8%</i>
<i>Gas</i>	<i>109</i>	<i>112</i>	<i>-2.6%</i>	<i>20.7</i>	<i>20.3</i>	<i>1.8%</i>
<i>Other thermal</i>	<i>6</i>	<i>7</i>	<i>-2.7%</i>	<i>1.2</i>	<i>1.2</i>	<i>1.7%</i>
Bioenergy	75	77	-2.6%	14.5	14.2	1.8%
Hydropower	406	411	-1.3%	99.9	115.6	-13.6%
Nuclear Power	197	177	11.5%	38.4	36.0	6.7%
Wind Power	511	439	16.4%	99.7	84.4	18.1%
Solar Power	454	326	39.1%	103.8	81.4	27.5%
Total power generation	4,024	3,875	3.8%	805.9	773.5	4.2%
Variable Renewable Energy	965	766	26.0%	203.5	165.9	22.7%
Zero Emissions	1,643	1431	14.9%	356.3	331.7	7.4%

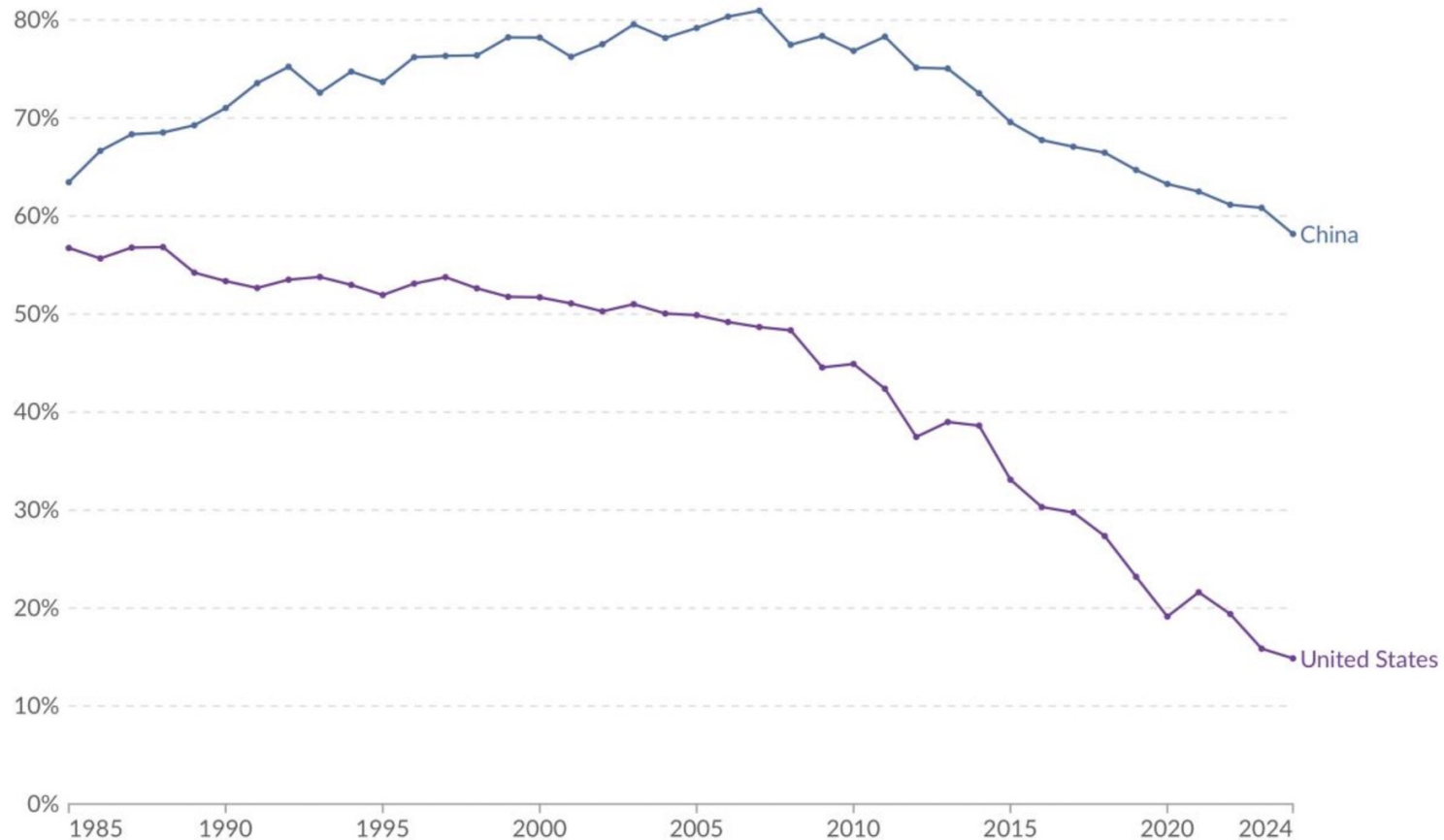
Global Cleantech Investment Dominance

Renewables Dominate new power plant installations

Share of electricity production from coal

Measured as a percentage of total electricity produced in the country or region.

Our World
in Data

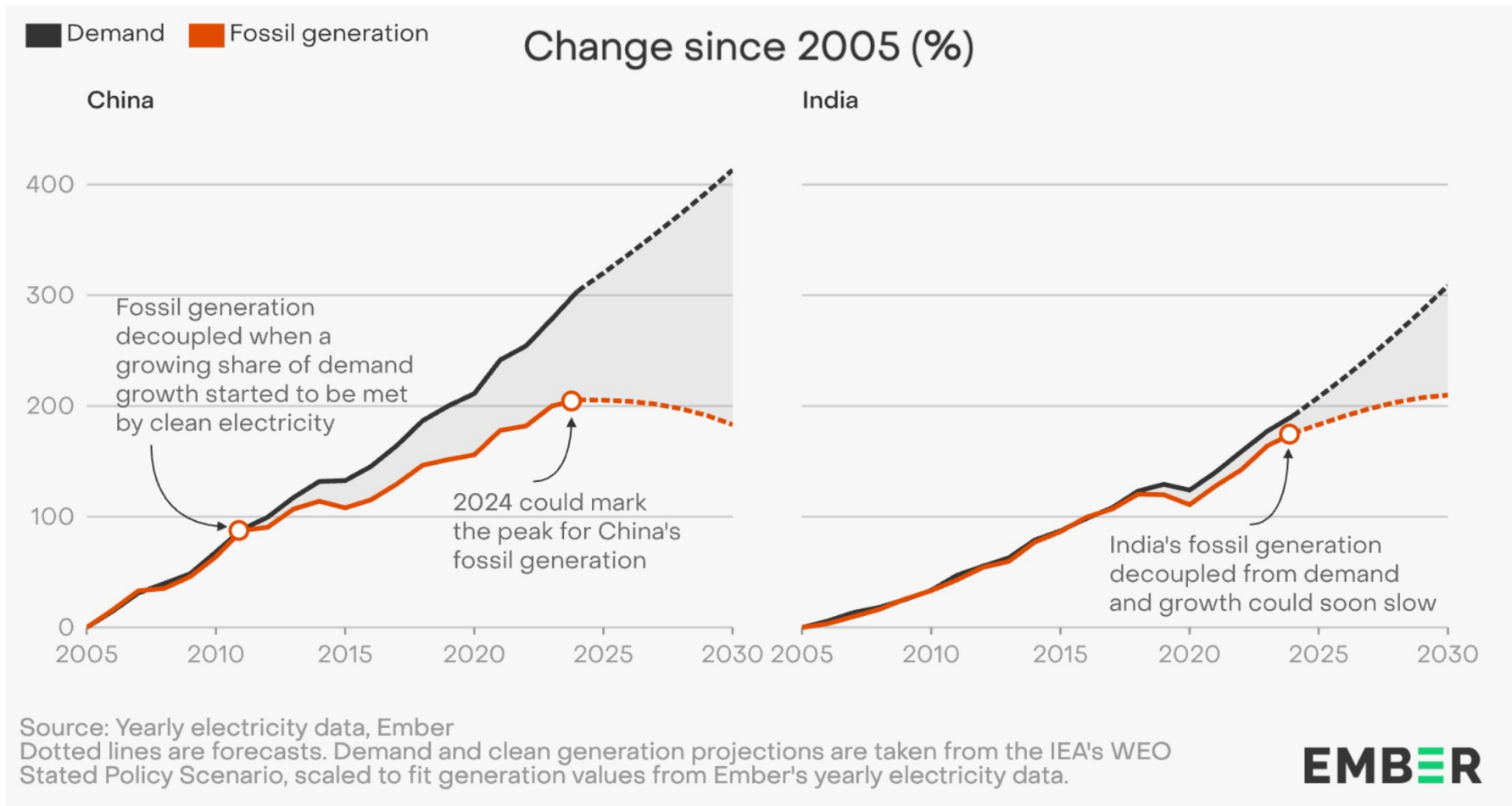


Data source: Ember (2025); Energy Institute - Statistical Review of World Energy (2024)

OurWorldinData.org/energy | CC BY

Cleantech Investment Dominance

Fossil generation has decoupled from electricity demand growth in China (since 2014) & India (2024/25) due to accelerated pace of clean deployments



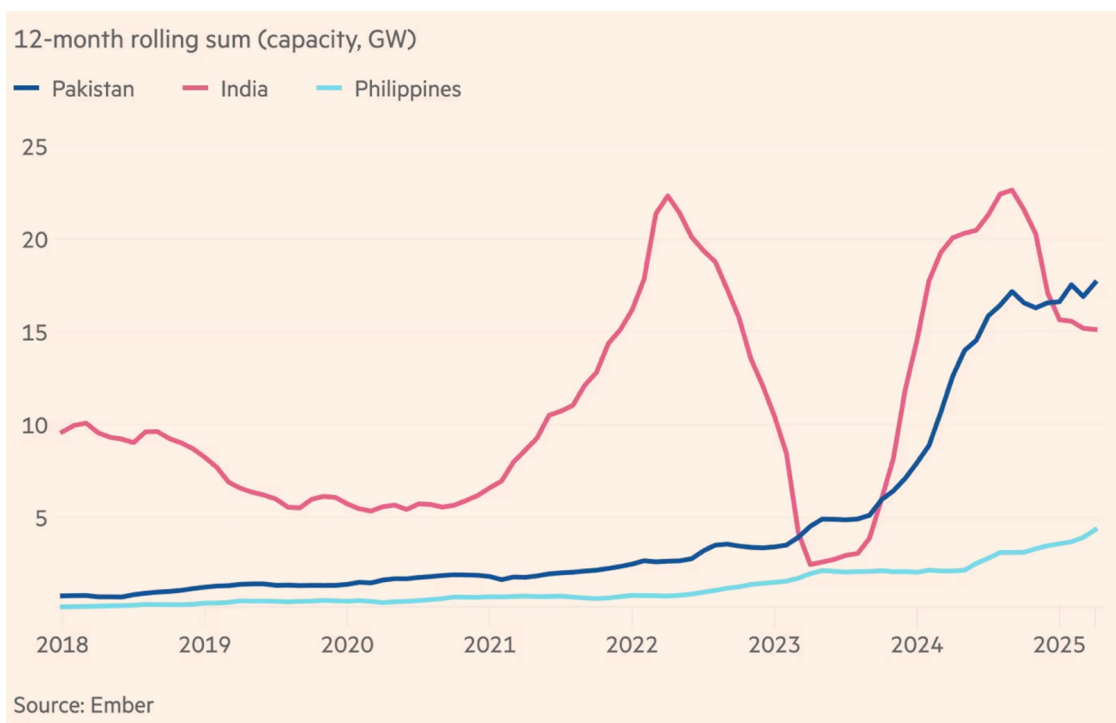
Pakistan

Chinese battery glut plugs into solar boom to power Pakistan

Steep fall in energy storage prices proves a game-changer for businesses

Humza Jilani in Nooriabad 2 June 2025 – Financial Times

<https://www.ft.com/content/2b4c598e-a4b3-4c6e-9c38-97e46357f819?emailId=1788e85f-e0b2-4ff5-9904-035ad8c4864a&segmentId=60a126e8-df3c-b524-c979-f90bde8a67cd>

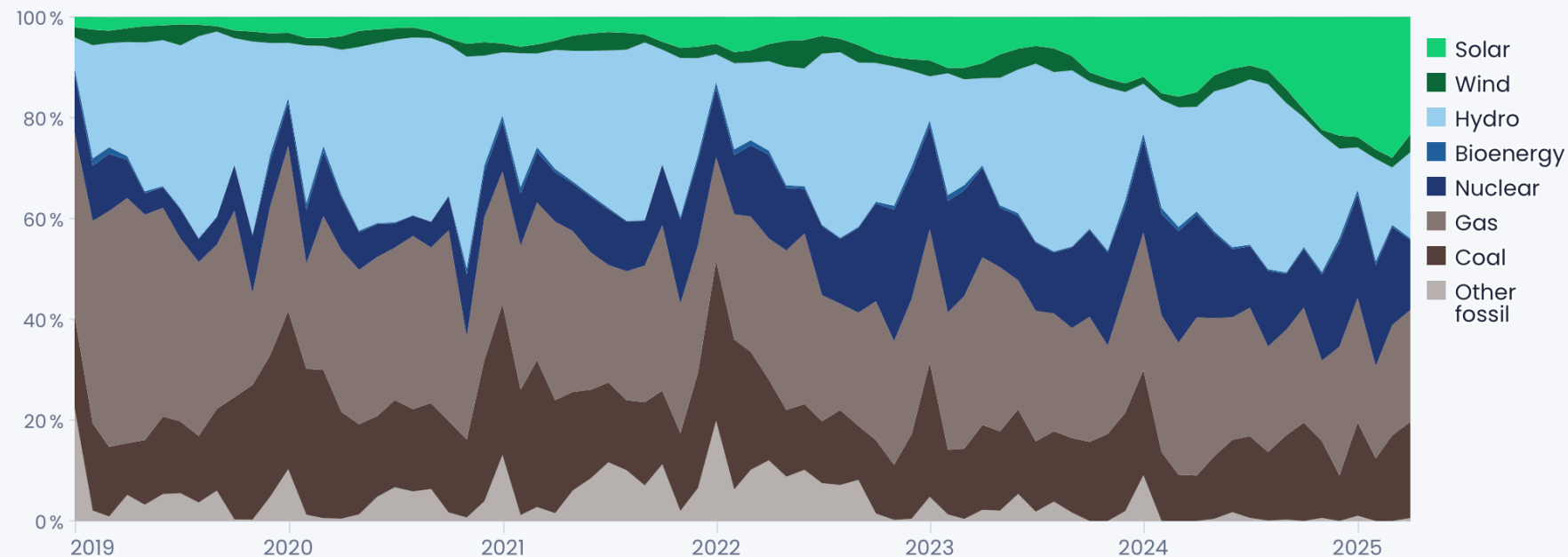


Pakistan

Share of Pakistan's electricity by fuel type - Monthly

Share of electricity generation in Pakistan

Percentage share



Data: Ember Electricity Data Explorer, ember-energy.org

EMBER

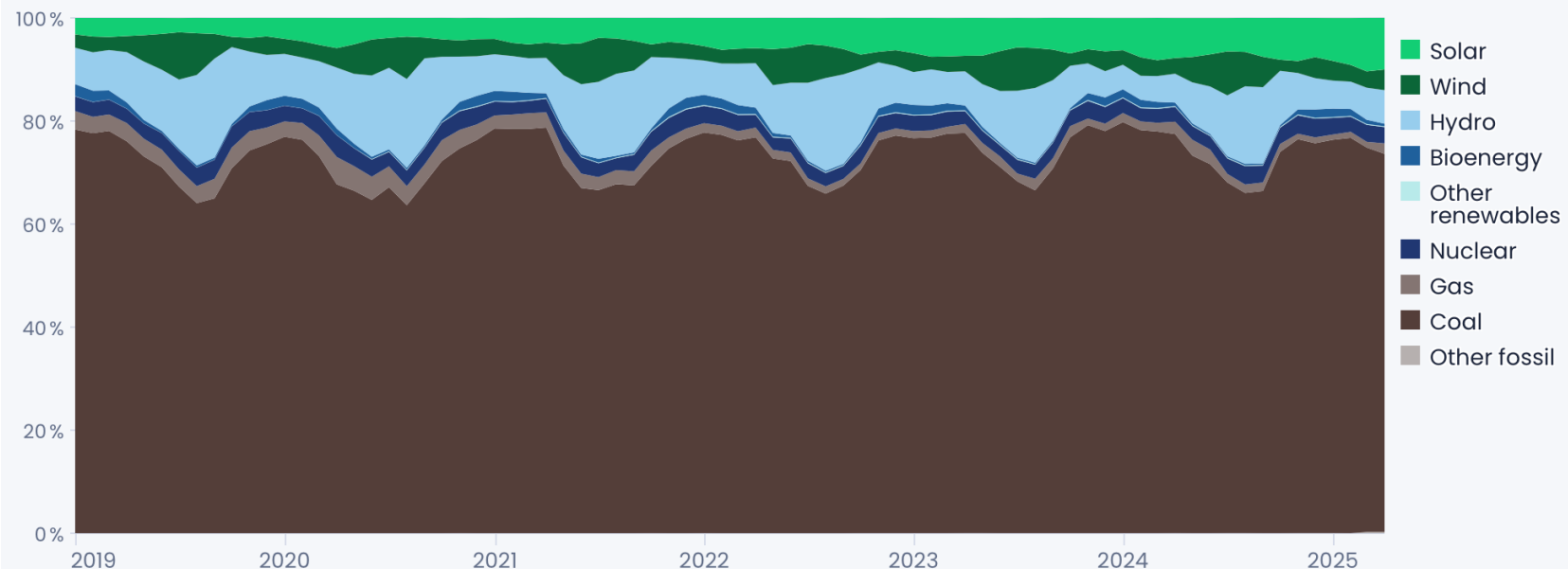
https://ember-energy.org/data/electricity-data-explorer/?entity=Pakistan&metric=pct_share

India

Share of India electricity by fuel type – Monthly April 2025 – solar a record 10% share, wind 4%, hydro 7%

Share of electricity generation in India

Percentage share



Data: Ember Electricity Data Explorer, ember-energy.org

EMBER

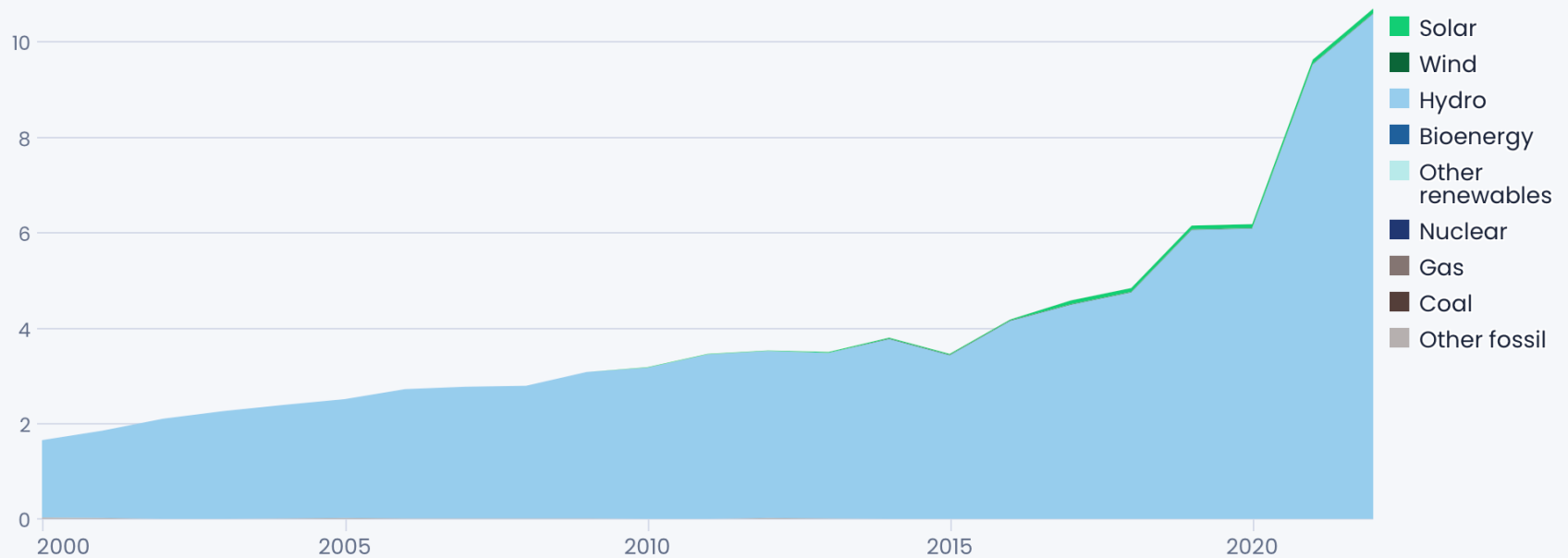
https://ember-energy.org/data/electricity-data-explorer/?entity=Pakistan&metric=pct_share

Nepal

Share of Nepal's electricity by fuel type – Yearly

Electricity generation in Nepal

Terawatt hours



Data: Ember Electricity Data Explorer, ember-energy.org

EMBER

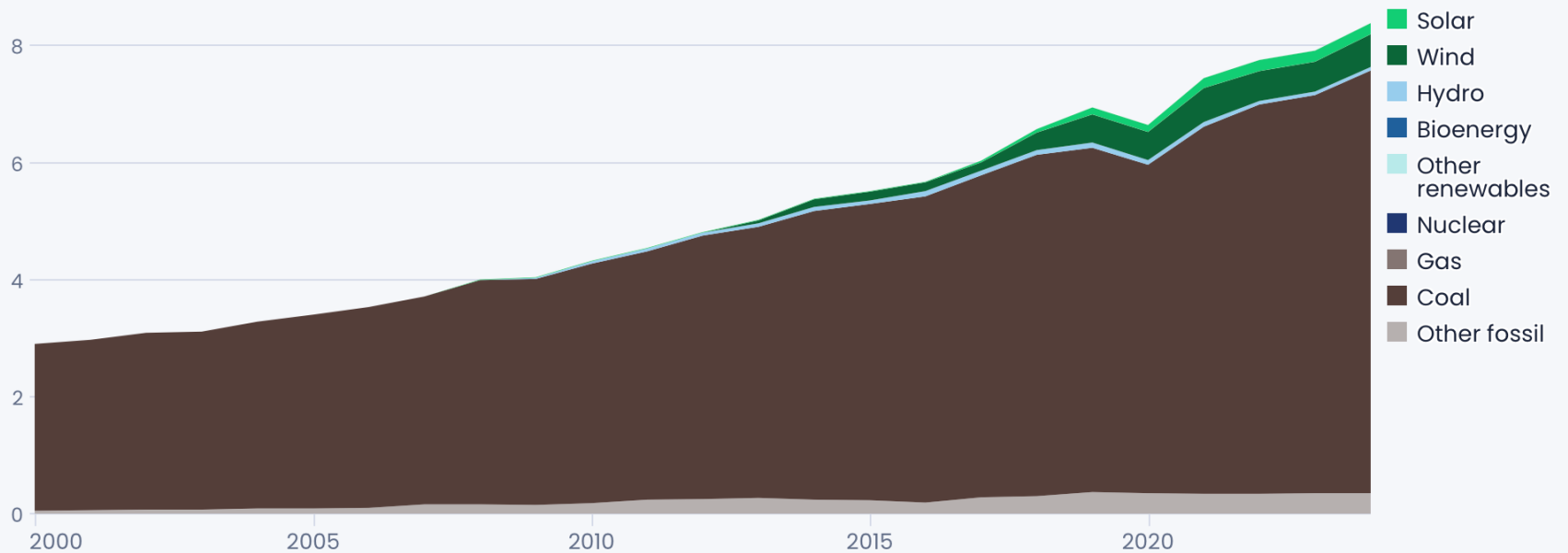
https://ember-energy.org/data/electricity-data-explorer/?entity=Pakistan&metric=pct_share

Mongolia

Share of Mongolia's electricity by fuel type – Yearly

Electricity generation in Mongolia

Terawatt hours



Data: Ember Electricity Data Explorer, ember-energy.org

EMBER

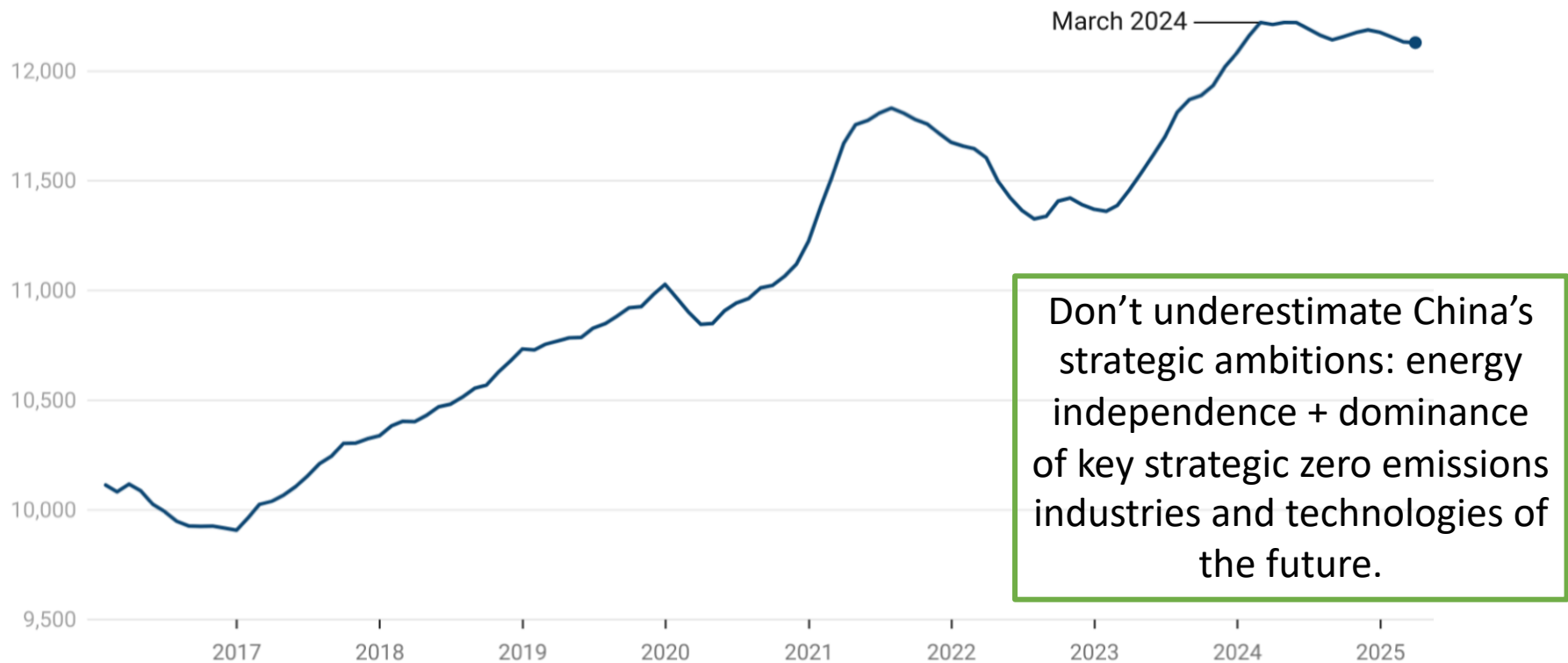
https://ember-energy.org/data/electricity-data-explorer/?entity=Pakistan&metric=pct_share

China's electrification leadership drives decarbonisation

China's electrification is about energy security i.e. permanently reducing reliance on imported fossil fuels.

China's CO2 emissions drop due to clean energy for first time

Emissions from fossil fuels and cement, MtCO₂, rolling 12-month totals



Source: Analysis by Lauri Myllyvirta for Carbon Brief

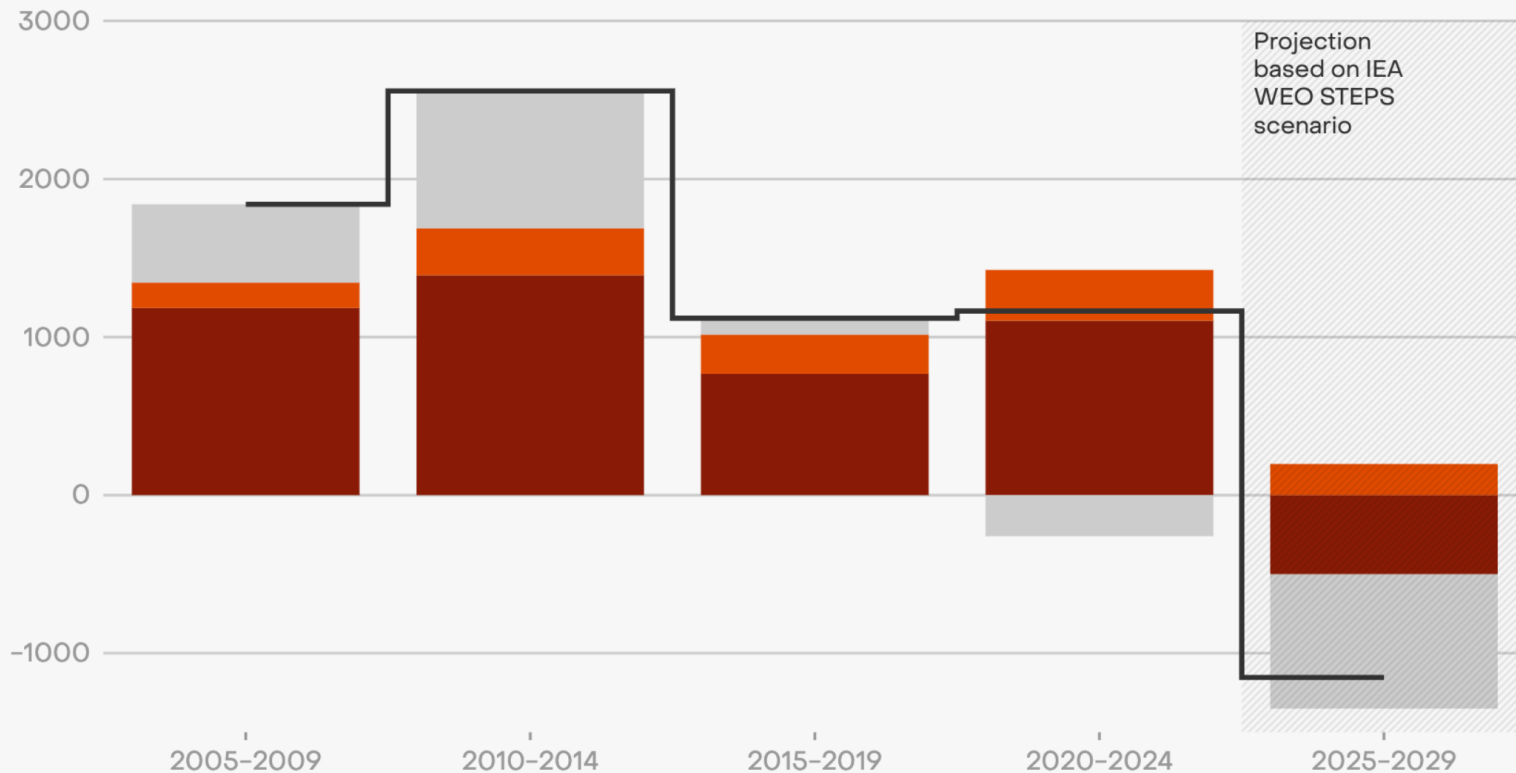
CarbonBrief
CLEAR ON CLIMATE

Cleantech Investment Dominance

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Change in annual electricity generation from fossil fuels (TWh) over five-year periods

World China India Rest of world

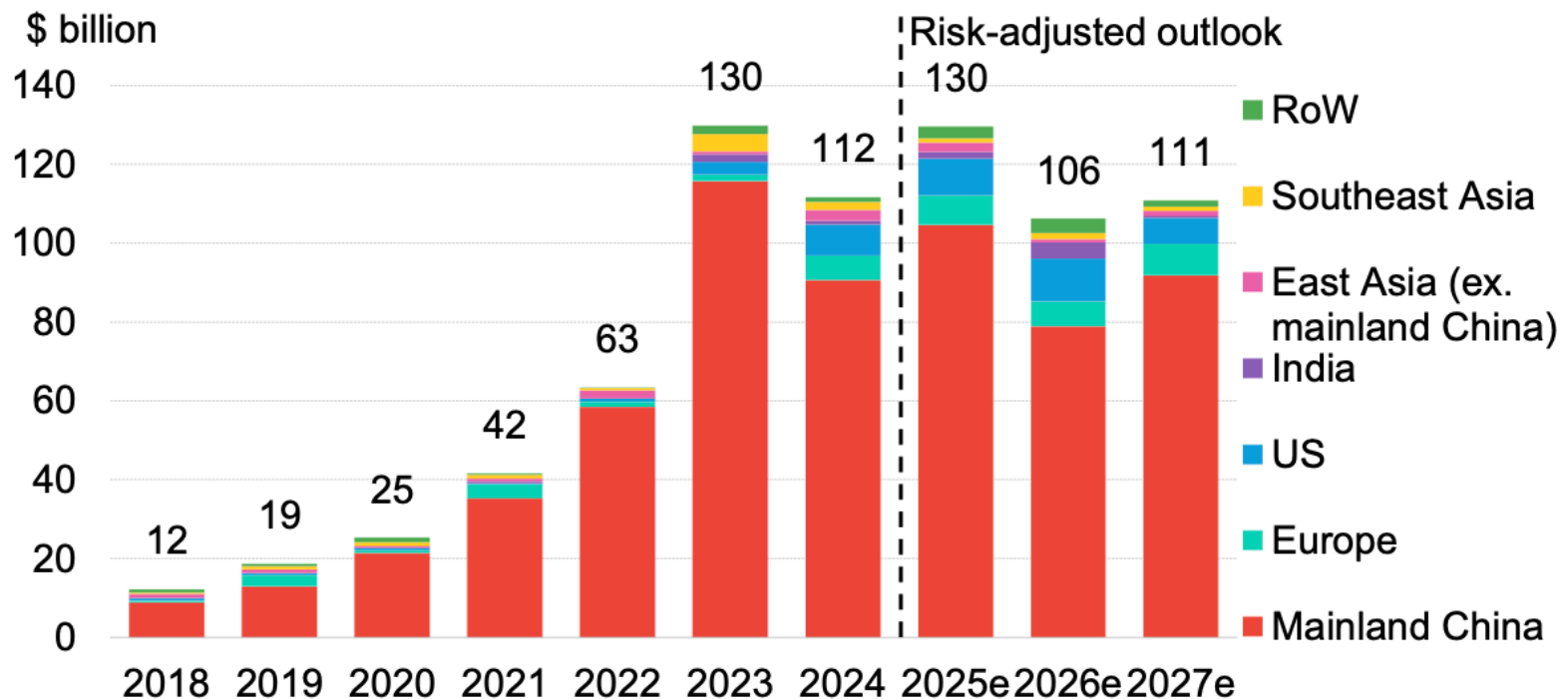


Source: Yearly electricity data, Ember, IEA Stated Policy Scenario (STEPS)

China's Global Cleantech Investment Dominance

BloombergNEF

Global clean-tech factory investment by geography

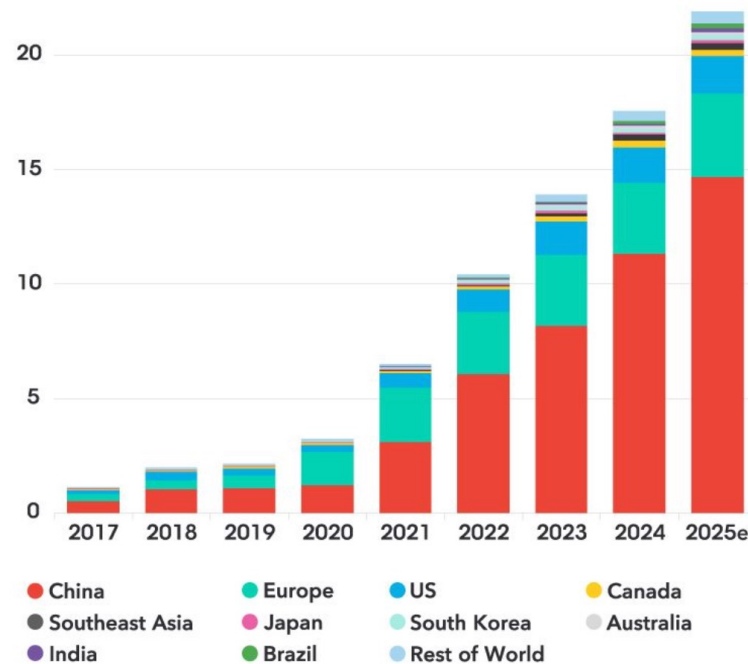


China's Global Cleantech Investment Dominance

Global EV Sales By Region

Global EV sales are on track for another record-breaking year, but some markets are experiencing a significant slowdown. 🚗📉

- ⚡ Electric vehicles are set to make up one in four cars sold globally in 2025.
- ⚡ China leads, with nearly two-thirds of all EVs sold.
- ⚡ The US market is slowing sharply amid policy uncertainty.
- ⚡ Emerging markets like Brazil and Thailand are seeing record adoption, driven by affordable Chinese models.



Source: BloombergNEF, MarkLines, Jato Dynamics
Note: Includes battery electric and plug-in hybrid passenger vehicles. 2025 is BNEF's forecast for the year.

BloombergNEF

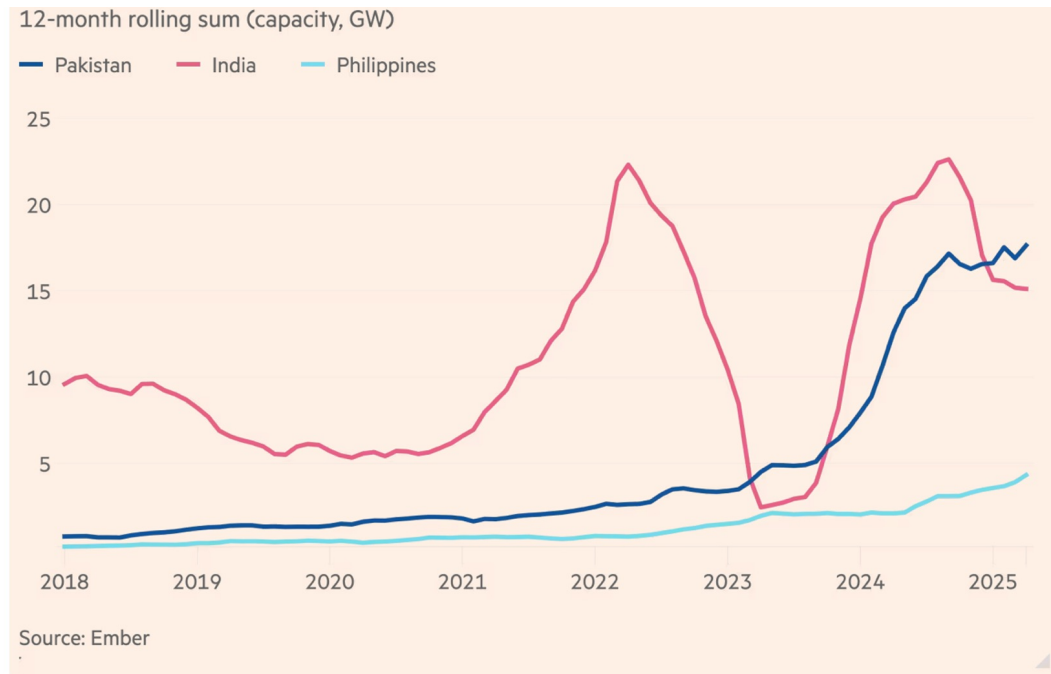
Pakistan's Solar Boom

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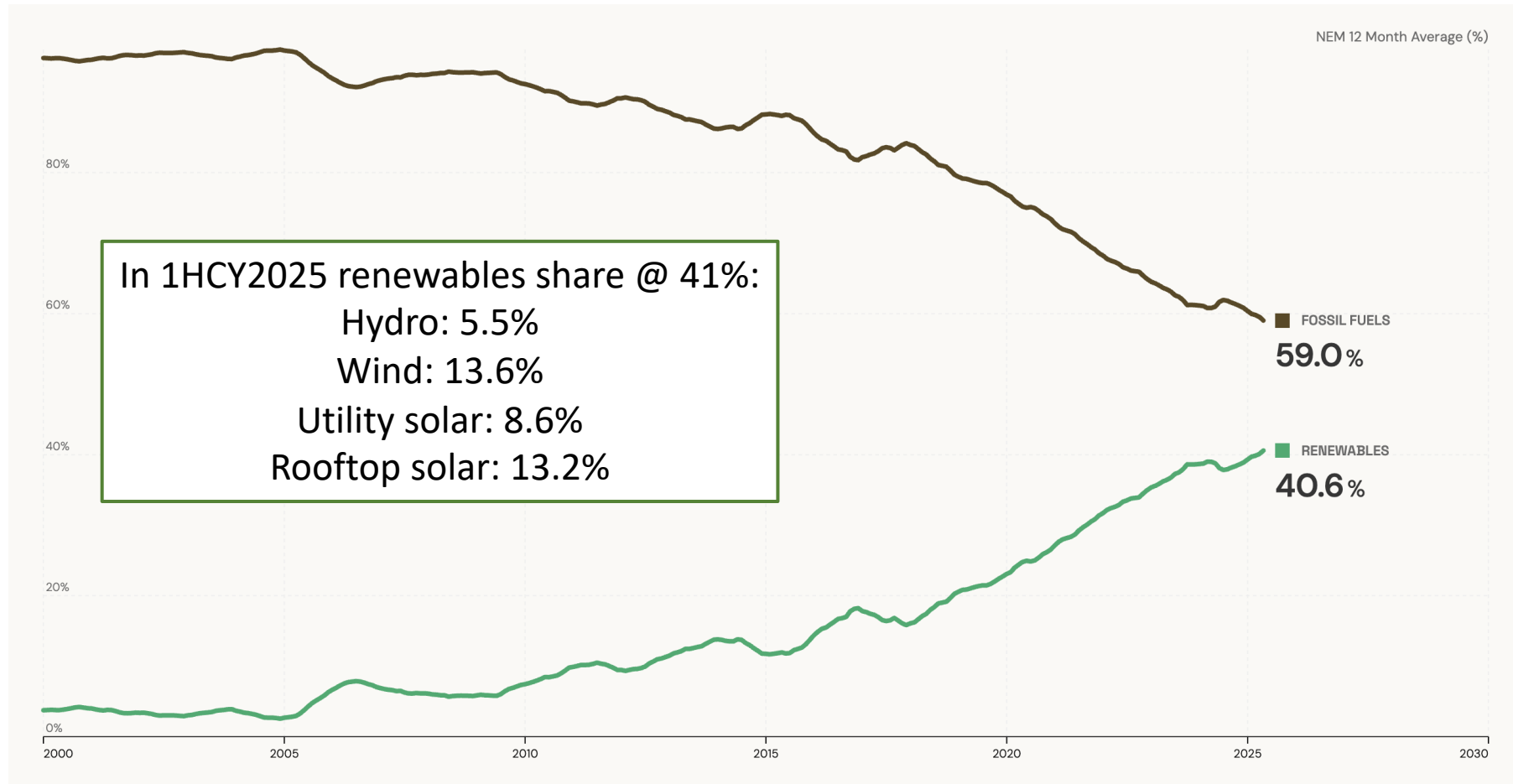
<https://www.ft.com/content/2b4c598e-a4b3-4c6e-9c38-97e46357f819?emailId=1788e85f-e0b2-4ff5-9904-035ad8c4864a&segmentId=60a126e8-df3c-b524-c979-f90bde8a67cd>



The BESS will help factories to more cheaply extend their operations beyond daylight hours and scale back the use of fossil fuels, compensating for reliability issues from the grid's renewable sources.

Australia is Half-way to 82% Renewables by 2030

Australia has exceeded 40% renewable share on a 12-month rolling average, 46% in 4QCY2024, 41% in 1HCY2025



Australia is Responding to China's Challenge

Strategic public capital is a key facilitator, in the absence of a CO₂ price signal

FMIA, CIS, RTN, NRF, Future Fund, CEFC, ARENA, EFA, NAIF

Capacity Investment Scheme

The Capacity Investment Scheme (CIS) is an Australian Government revenue underwriting scheme to accelerate investment in:

- 23 GW of renewable capacity representing \$52 billion in investment
- 9 GW of clean dispatchable capacity representing \$15 billion in investment.

South Australia

Australian
Associated Press

20 Feb 2025

Troubled Whyalla steelworks gets \$2.4bn government bailout as hunt for new owner begins

“Crucial support:” Federal Labor launches \$2bn green aluminium production credit scheme



RENEW ECONOMY

Andrew Brown

Jan 20, 2025

Rio Tinto says aluminium could run on renewables and batteries

FINANCIAL REVIEW

Feb 6, 2025

\$19bn Rewiring the Nation Fund

The \$19 billion Rewiring the Nation (RTN) Fund is a significant expansion of CEFC investment capacity, with a particular focus on facilitating the timely delivery of grid and transmission projects, using CEFC capital to accelerate the benefits of grid transformation to consumers, including helping to lower consumer energy costs.

\$200 million investment in critical minerals to build Australia's future

15 January 2025

The Hon Ed Husic MP

Minister for Industry and Science

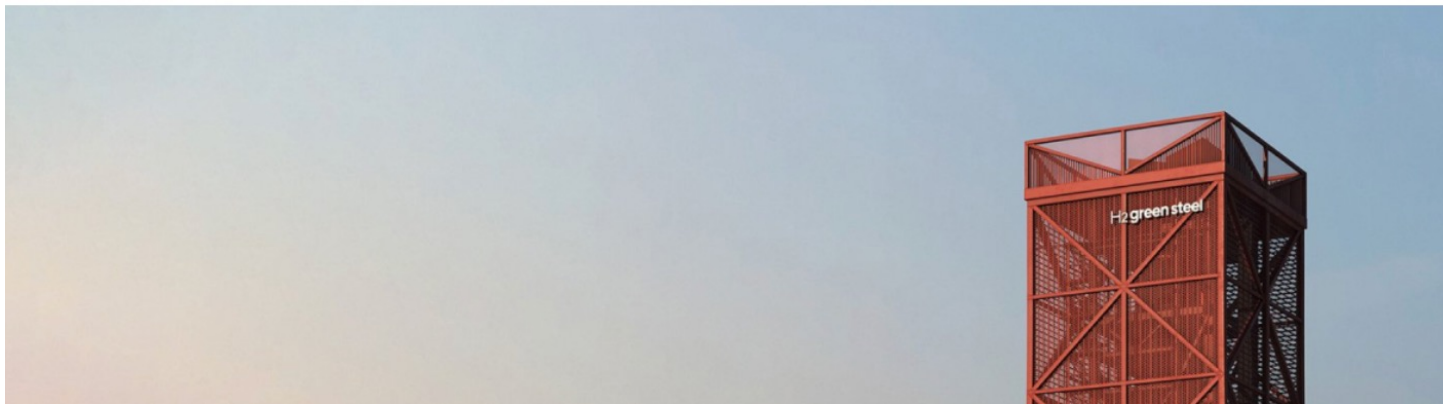
The Albanese Government's National Reconstruction Fund Corporation (NRFC) will invest \$200 million in Arafura Rare Earths to help build Australia's Future.

Australian green iron - a massive strategic opportunity



Green Metal Statecraft: Forging Australia's Green Iron Industry

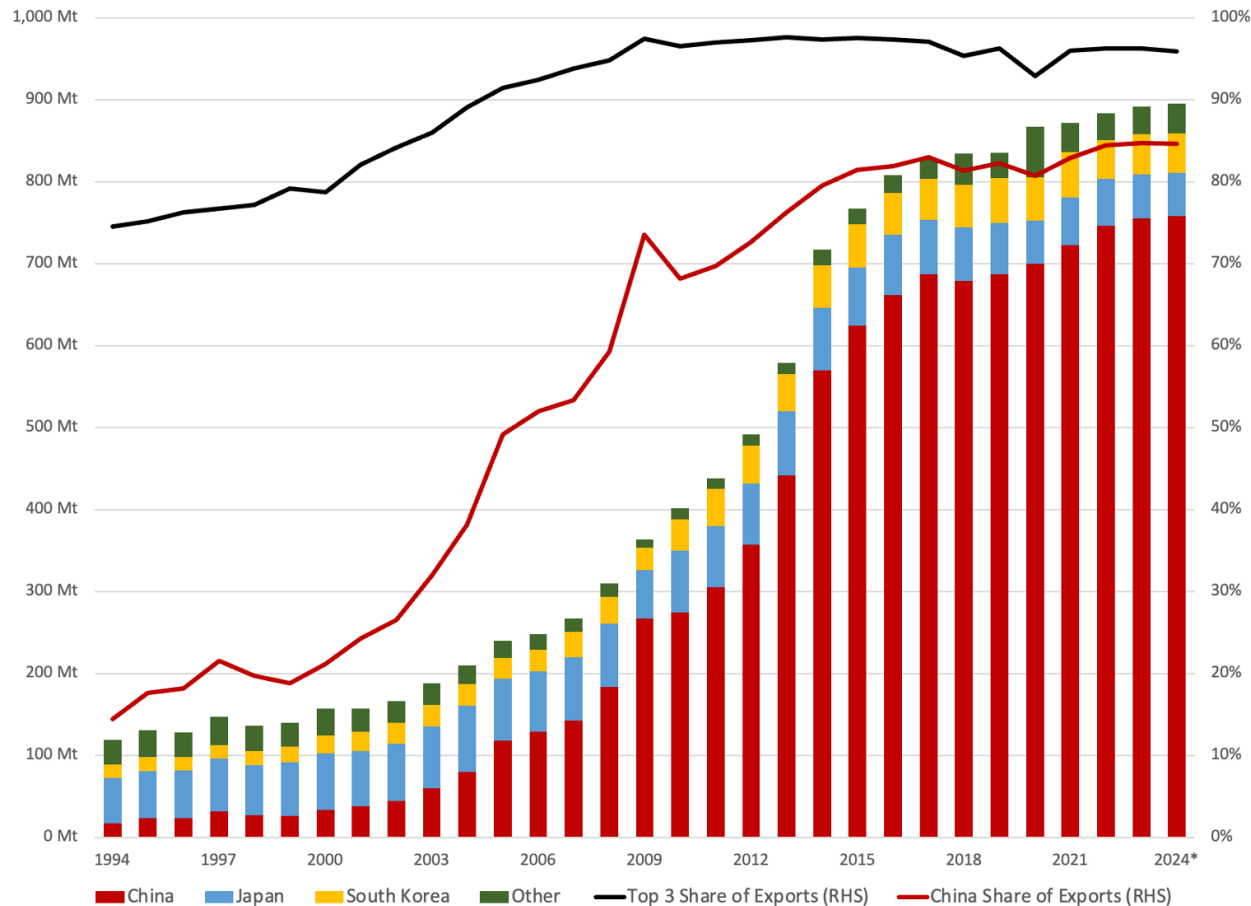
Matt Pollard, Net Zero Transformation Analyst, CEF
Tim Buckley, Director, CEF



https://climateenergyfinance.org/wp-content/uploads/2024/11/CEF_Green-Metal-Statecraft_FINAL.pdf

Australian green iron - a massive strategic opportunity

Australia's Iron Ore Export Markets



China accounted for 85% of Australia's A\$138bn pa of iron ore exports, having delivered +6% CAGR in volume over the last decade. This has been a key partnership of profound strategic value for Australia.

But Chinese steel production likely peaked in 2020 (China's steel output was -3% yoy in 2024), scrap use is rising, and China is diversifying into Simandou, Guinea (120Mtpa).

Source: Office of the Chief Economist

Note: 2024 is annualised from 1H2024

CEF's Report Advocating for Carbon Pricing

Climate Energy Finance

05 June 2025



A Price on Carbon: Building Towards an Asian CBAM

A focus on the harmonisation and integration of carbon pricing mechanisms in Asia-Pacific for the steel, aluminium and cement value chains.

Authors:

Matt Pollard, Net Zero Transformation Analyst, CEF

Tim Buckley, Director, CEF