



CLIMATE ENERGY FINANCE

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Presentation to Rotary
Club of Sydney

Debunking economic
myths of climate action

12 April 2022

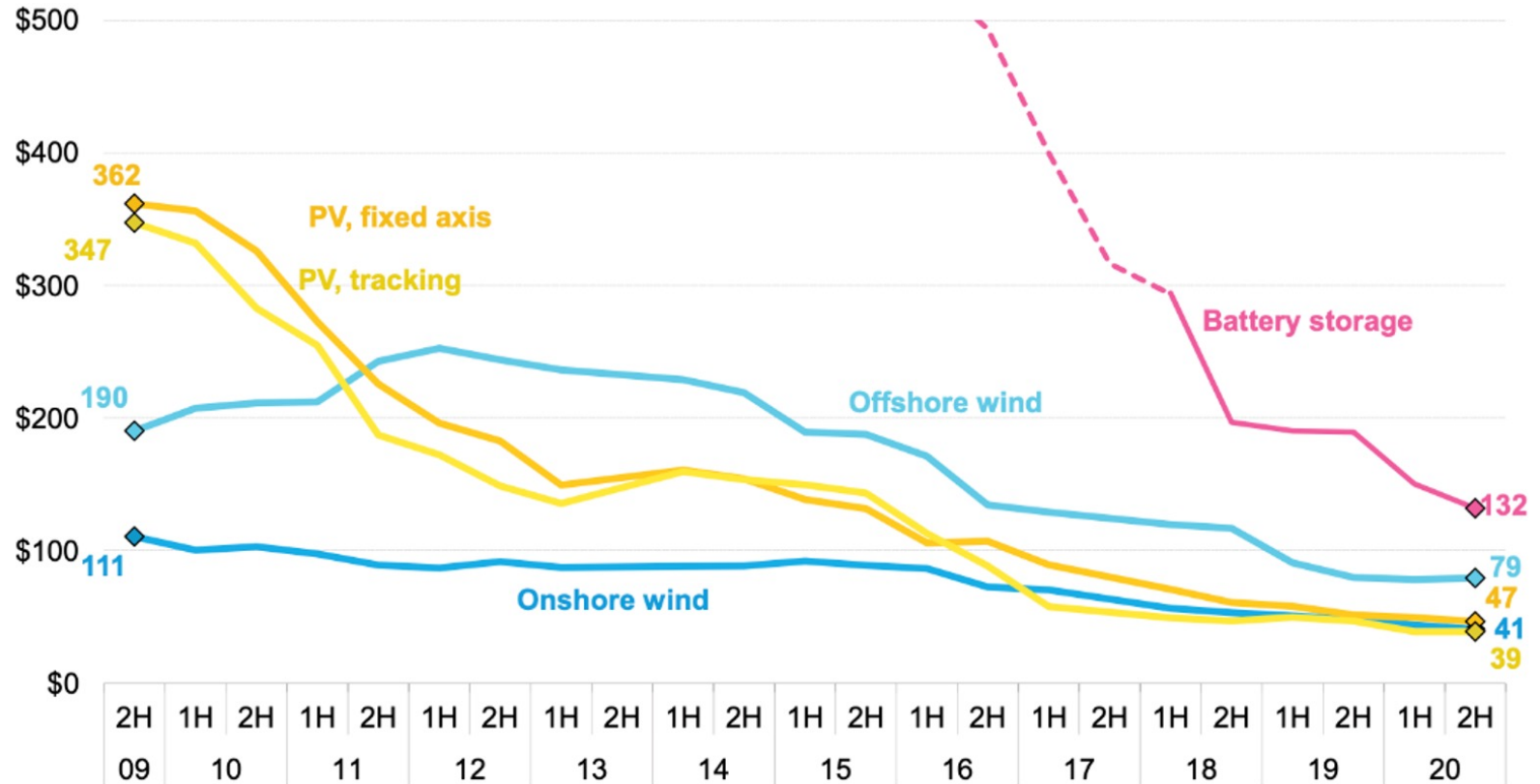
Agenda

- Technology-Driven Deflation in Renewables
- Global Policy Developments in Decarbonisation
- Global Finance Zero Emissions Pledges –US\$130 trillion
- The Structural Decline of Coal (the EIA, NSW Treasury, IEA)
- The Growth in Carbon Emissions Pricing
- The Massive Outperformance of Nextera vs Exxon (US)
- Australia's Massive Fossil Fuel Export Exposure
- Australia's Massive Forward Facing Mining Opportunities
- Australia's Massive Forward Facing Renewables Opportunities

Technology-Driven Deflation

Ongoing Renewable Energy and Battery Deflation

LCOE (\$/MWh, 2019 real)

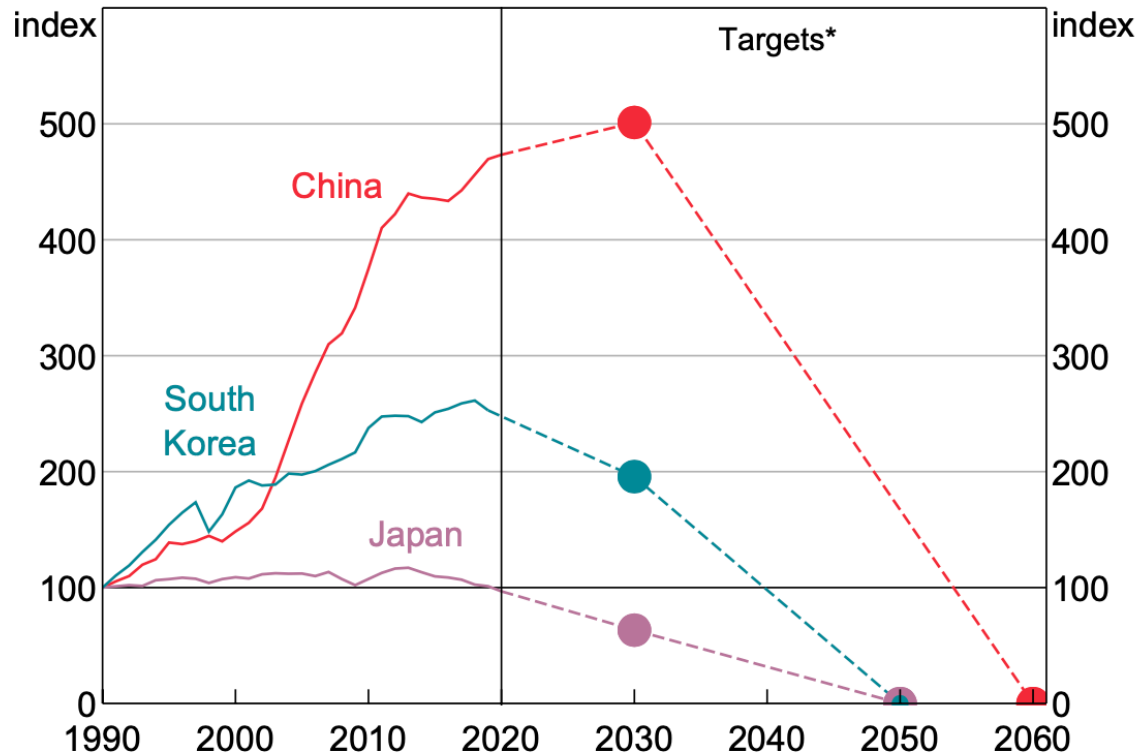


Source: Bloomberg New Energy Finance

Global Policy Developments

Carbon Dioxide Emissions

Selected economies, 1990 = 100



* Bubbles show targets; dashed lines show indicative paths to achieve them; Japan and South Korea's greenhouse gas targets are shown in terms of carbon dioxide; China's 2030 target is authors' estimate based on carbon intensity target for 2030 and authorities' desire for GDP growth to 2035

Sources: CEIC Data; International Energy Agency; RBA

Global Finance Zero Emissions Pledges

UN Net Zero Finance Alliance 1.5°C

New Financial Alliance for Net Zero Emissions Launches



PRESS RELEASE ISSUED ON BEHALF OF THE COP25 and COP26 CLIMATE CHAMPIONS

Industry-led and UN-convened Net Zero Banking Alliance also announced today, co-launched by the UNEP Finance Initiative and the Financial Services Taskforce of the Sustainable Markets Initiative

- The Glasgow Financial Alliance for Net Zero (GFANZ), chaired by Mark Carney, UN Special Envoy on Climate Action and Finance, brings together over 160 firms (together responsible for assets in excess of \$70 trillion¹) from the leading net zero initiatives across the financial system to accelerate the transition to net zero emissions by 2050 at the latest.
- All GFANZ member alliances must be accredited by the UN Race to Zero campaign. They must use science-based guidelines to reach net zero emissions, cover all emission scopes, include 2030 interim target setting, and commit to transparent reporting and accounting in line with the UN Race to Zero criteria.
- 43 banks from 23 countries (with assets of \$28.5 trillion) form the Net-Zero Banking Alliance (NZBA) today - which joins GFANZ - with its members committing to align operational and attributable emissions from their portfolios with pathways to net-zero by 2050 or sooner.

US\$130 trillion by Nov 2021 (+90% in 6 months)

A Tectonic Shift Accelerates

In January of last year, I wrote that climate risk is investment risk. I said then that as markets started to price climate risk into the value of securities, it would spark a fundamental reallocation of capital. Then the pandemic took hold – and in March, the conventional wisdom was the crisis would divert attention from climate. **But just the opposite took place, and the reallocation of capital accelerated even faster than I anticipated.**

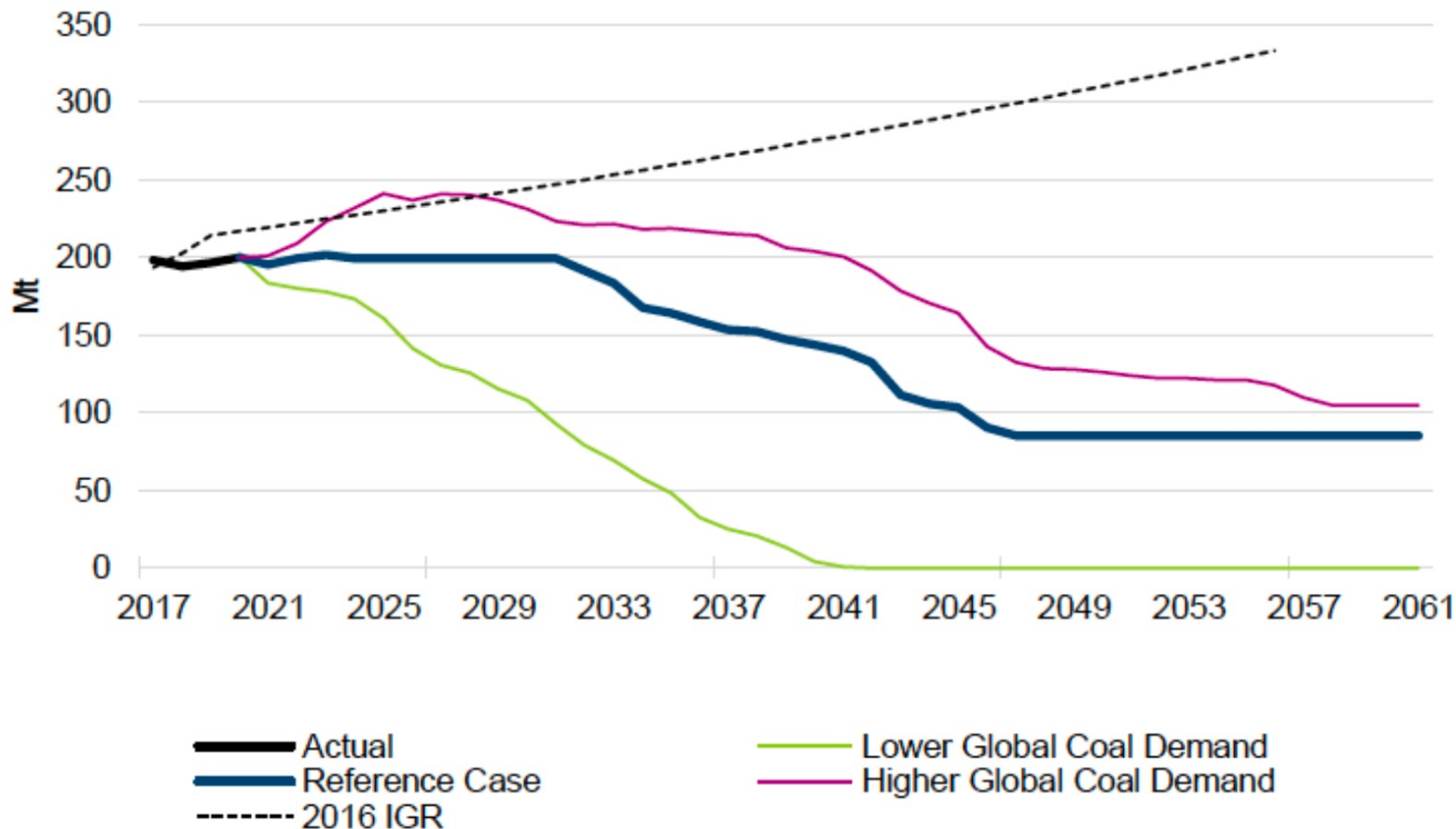
From January through November 2020, investors in mutual funds and ETFs invested \$288 billion globally in sustainable assets, a 96% increase over the whole of 2019.¹ I believe that this is the beginning of a **long but rapidly accelerating transition** – one that will unfold over many years and reshape asset prices of every type. **We know that climate risk is investment risk. But we also believe the climate transition presents a historic investment opportunity.**

BlackRock (AuM US\$10 trillion)
[Larry Fink 2021 CEO Letter](#)

The Structural Decline of Coal

“The NSW Government recognises the need for urgent and deep reductions in GHG emissions.”

NSW Treasury projected coal volumes 2021 vs 2016 (Mt)



Source: NSW Treasury. The Sensitivity of the NSW Economic and Fiscal Outlook to Global Coal Demand and the Broader Energy Transition for the 2021 NSW Intergenerational Report. May 2021

Technology-Driven Deflation

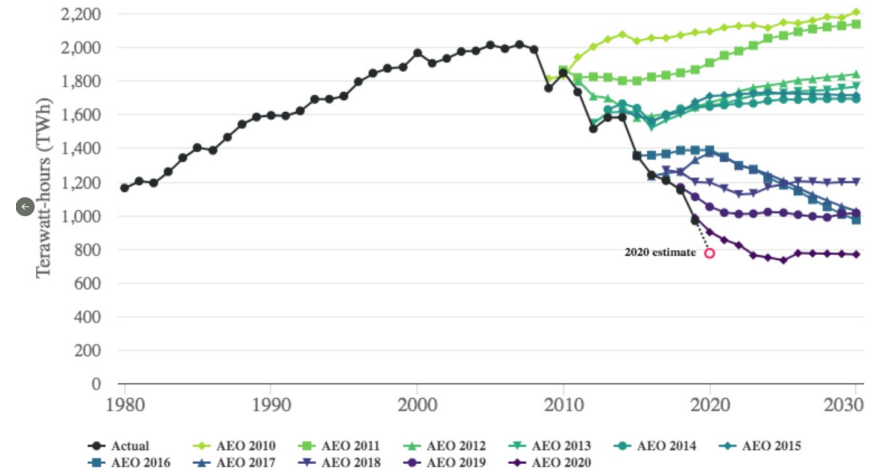
Coal Power Plants Are Becoming Stranded Assets

U.S. Coal Capacity Closures by Year (MW)



Source: S&P Global Market Intelligence, 10 February 2022

EIA Coal Demand Projections against Actual Outcomes (2010-2020)



Source: U.S. Energy Information Administration Annual Energy Outlook (2010-2020)

The Structural Decline of Coal

Coal-fired power in Australia could be over within 10 years concedes lobbyist Ian Macfarlane

3 Mar 2022 ABC By Matt Bevan, Jess O'Callaghan and Scott Mitchell for Australia



Ian Macfarlane previously said new coal-fired power stations were virtually inevitable

Only five years ago former Coalition resources minister and now lobbyist Ian Macfarlane argued Australia needed to build more coal-fired power stations, now he concedes there could be none left in 10 years.

The CEO of the Queensland Resources Council told ABC podcast [Australia, If You're Listening](#) that he was realistic about the future of coal-fired power. "In Queensland, in terms of domestic issues, I'd be realistic and say that domestic coal-fired generation is rapidly approaching the time when it will close and that might be within the decade," Mr Macfarlane said.

The Structural Decline of Coal

	2014	2015	2016	2017	2019	2020	Decline	SDS	SDS
	Mtce	Mtce	Mtce	Mtce	Mtce	Mtce	2020 vs 2014	2050	2050 vs 2020
							% Change	Mtce	% Change
Total Coal	5,680	5,531	5,271	5,360	5,717	5,462	-3.8%	1,189	-78.2%
Coking Coal	1,016	994	967	960	973	940	-7.5%	406	-56.8%
Thermal Coal	4,374	4,254	3,979	4,134	4,485	4,296	-1.8%	771	-82.1%

Source: IEA WEO2017 page 644-645, WEO 2021 page 318, CEF calculations

Emissions – CO₂ Prices are Rocketing Up

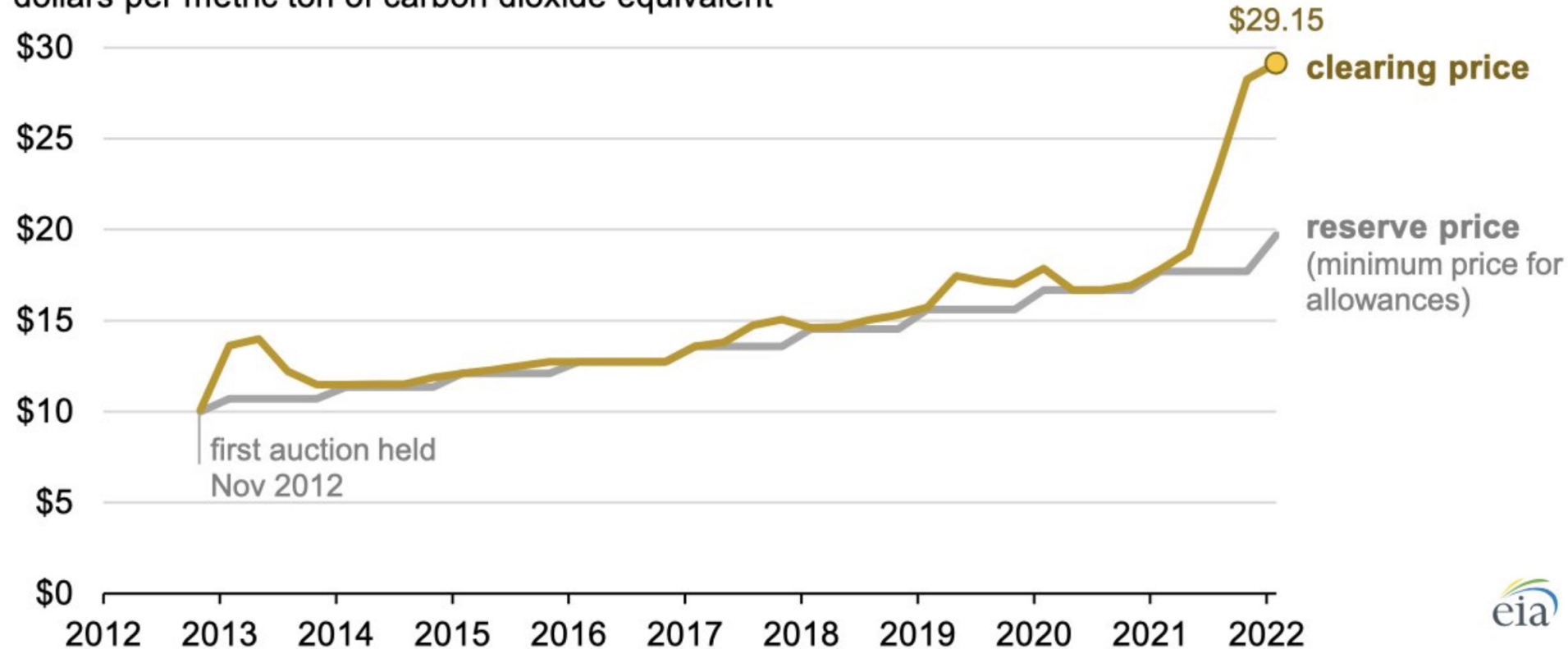
The Five-Year EU ETS Pricing (€/t)



Emissions – US CO₂ Prices are Rocketing Up

Quarterly California cap-and-trade auction prices (Nov 2012–Feb 2022)

dollars per metric ton of carbon dioxide equivalent

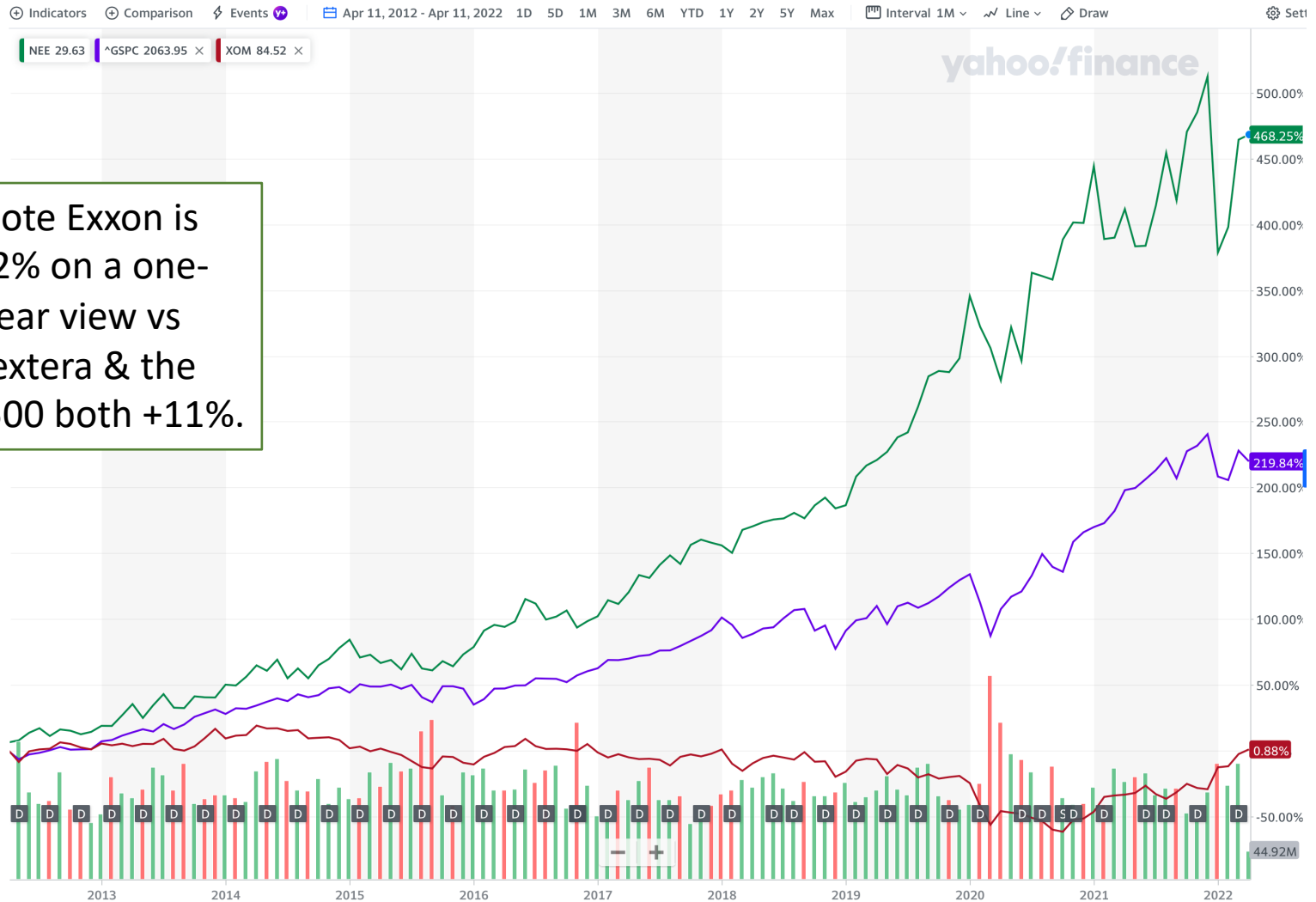


Source: Graph by the U.S. Energy Information Administration, based on [California Air Resources Board](#) data

Note: Prices are for the current vintage allowances sold in each auction.

Energy Firms Need to Transition

Ten-year performance: Exxon (Red, +1%), vs S&P500 US (Purple, +220%) vs NextEra Energy (Green, +468%)



I note Exxon is +52% on a one-year view vs Nextera & the S&P500 both +11%.

Oz: Property Insurance Disruption

'Looming market failure': KPMG warns on disaster insurance

[Liam Walsh](#) Apr 7, 2022 – AFFR



Brisbane was among regions smashed in recent flooding.

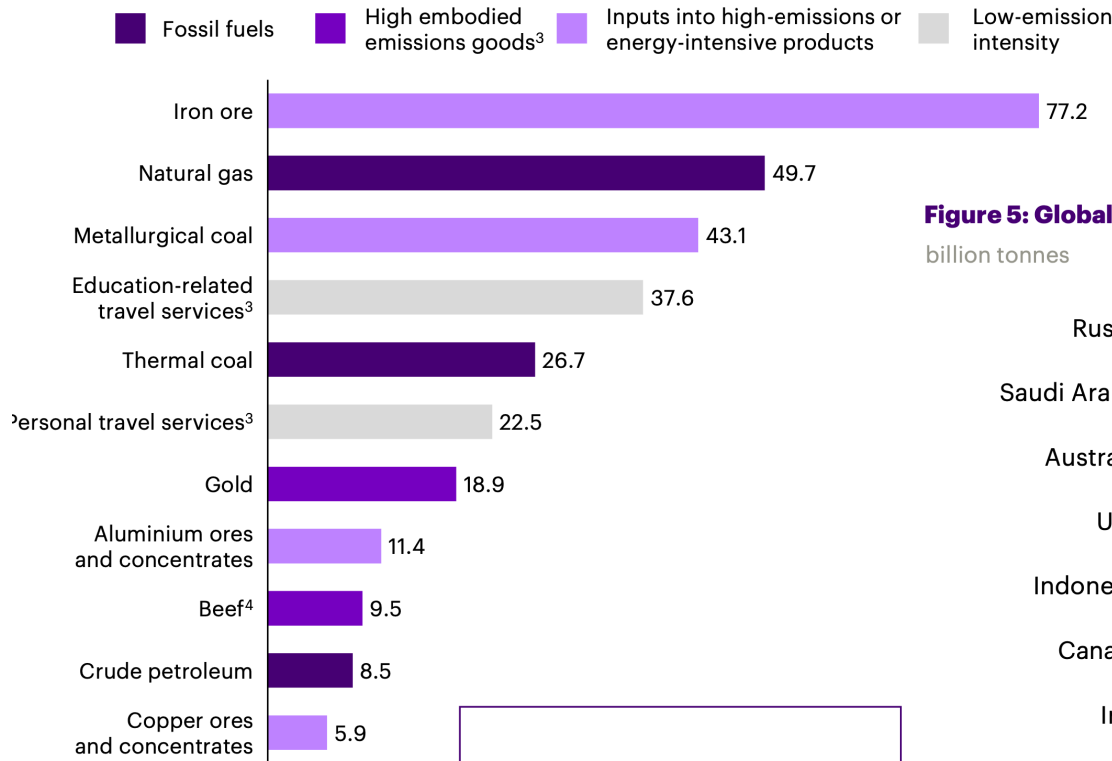
That is even with residents in inundated areas such as [Lismore](#) or [Ipswich's Goodna](#) avoiding taking out flood cover due to high premiums.

"The most recent floods have really highlighted the issues of that under insurance or ... inability to obtain insurance, profoundly," KPMG's Scott Guse, a co-author of its review, said. KPMG's report said modelling was predicting more severe events with climate change, and among industry headwinds warned of "a looming market failure and potential significant risk of underinsurance for some locations and classes of assets as natural perils become uninsurable".

Mr Guse said this was "an issue because the frequency of these events that we're having are only increasing". "The magnitude is increasing too. "We're going to see more and more people impacted more and more frequently, and therefore you're going to have major disruptions to the Australian economy, major disruptions to individual personal lives and their social circumstances. "It just has negative connotations all round."

Australia is very Decarbonisation Exposed

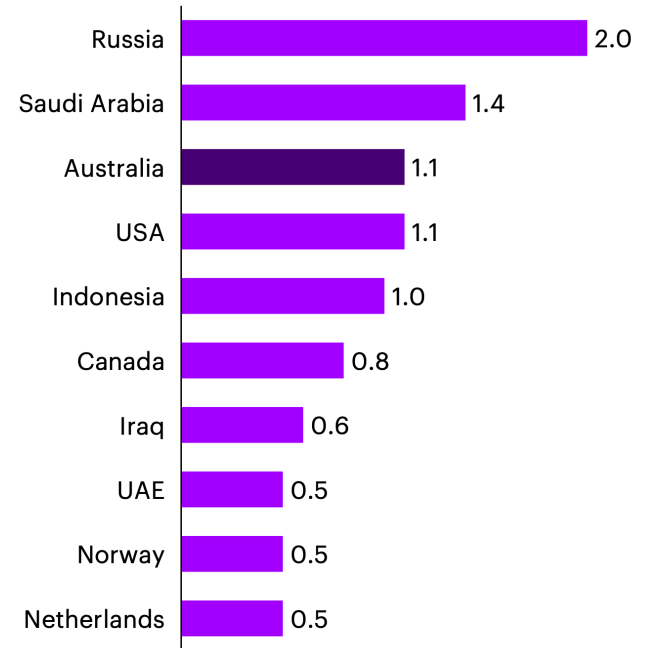
Billion dollars, 2018-19



Over 50% of Australia's total export value—\$250 billion—is exposed to the energy transition.

Figure 5: Global ranking of CO₂ emissions due to fossil fuel exports⁴

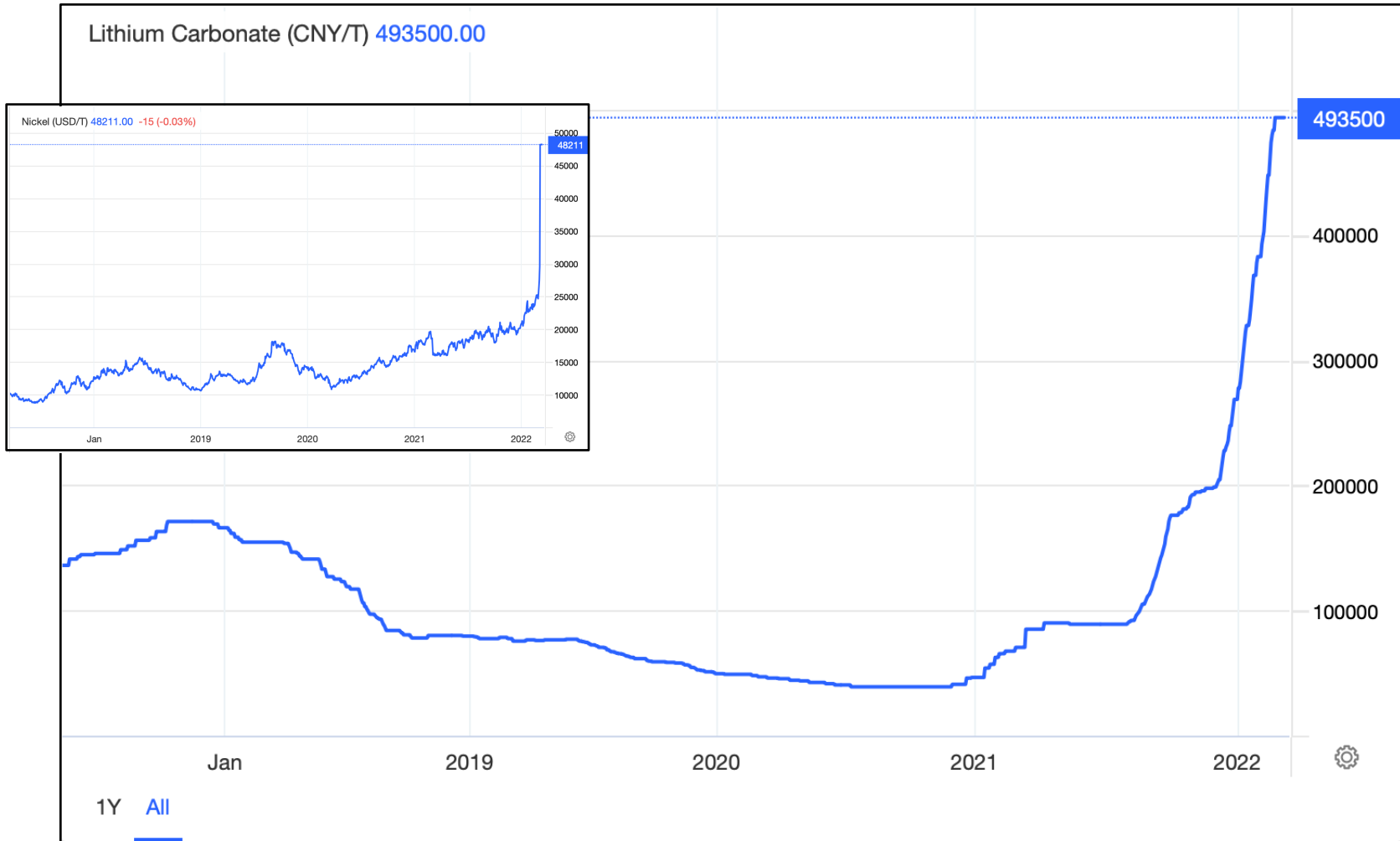
billion tonnes



Source: 1. DFAT (2020), [Trade and Investment at a Glance](#) 2. DIIS-OCE (2019), [Resources and Energy Quarterly](#)

Notes: Coal is considered a singular export by DFAT however the Department of Industry reports on thermal and metallurgical coal separately and given their distinct uses they have been presented separately here. 3. Education-related and personal travel services have experienced a significant decline in 2019-20 data. 4. Beef and other high embodied emission goods were not within the scope of this report.

Lithium (Chinese Yuan/t) (and Nickel US\$/t)

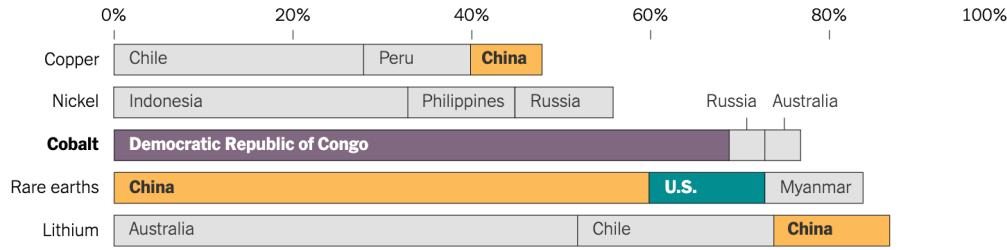


Source: [Trading Economics](#), Accessed 15 March 2022

Australia has a Huge Positive Exposure

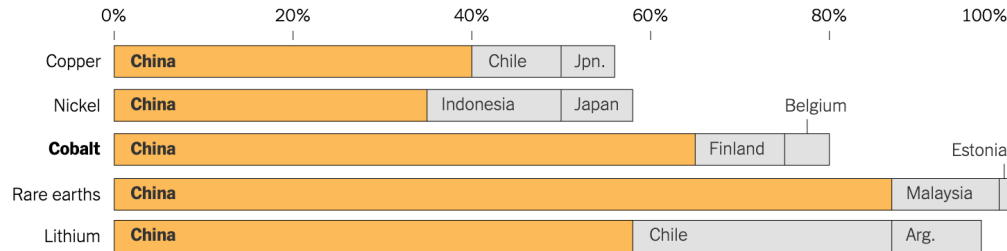
Where Clean Energy Metals Are Produced

Production of key resources is highly concentrated today. Charts show the top three producers.



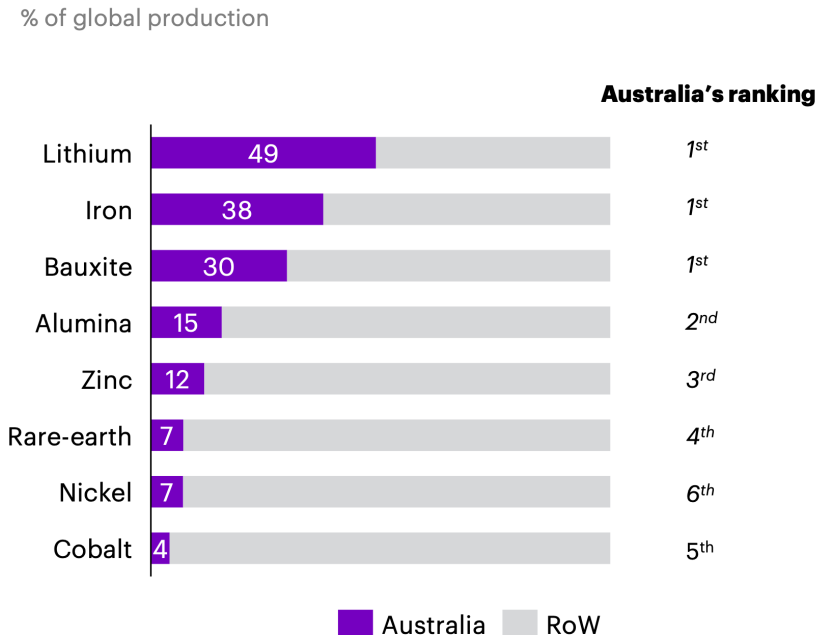
And Where They Are Processed

China dominates the refining and processing of key metals.



Source: International Energy Agency • By The New York Times

Figure 10: Australia's production of select metals and minerals essential for the energy transition³



Source: [RACE TO THE FUTURE](#): A Power Struggle Over Cobalt Rattles the Clean Energy Revolution, New York Times, 20 November 2021

Oz: A Zero Emissions Mining Superpower

Iluka says bipartisan funding wave looms for critical minerals

[Peter Ker](#) Apr 7, 2022 – AFR

More Australian miners are expected to secure financial support from governments in coming weeks and Iluka Resources chief Tom O’Leary says there is now bipartisan support for the trend in many nations.

[Iluka secured \\$1.2 billion worth of support](#) for a domestic rare [earths](#) refinery on Monday from the federal government’s **Export Finance Australia**, a loan that dwarfs the \$719m in total loans, guarantees and bonds issued by the same agency last financial year.

Australia’s major defence partners in the US, Britain and [Japan](#) have also shown interest in securing their supply chains by lending or assisting Australian producers of “critical minerals”, and at least two Australian miners are understood to be close to winning funds from foreign governments. The US government has named 50 minerals it considers “critical” to national security and economic growth, including lithium, nickel, antimony and cobalt to name a few, and President Joe Biden last week enacted wartime powers that make it easier for his government to directly invest in critical minerals projects.

Iluka’s refinery will be Australia’s first domestic rare earths separation facility, producing the raw materials needed to make the industrial magnets required for wind turbines and EV. “What the government is doing here is recognising that to achieve ambitions around reduction of carbon emissions, you have got to take these sorts of very deliberate steps and that is the journey we have been on with government for the past two years,” O’Leary says.

Aside from decarbonisation infrastructure, rare earths are also needed for many defence industry applications such as drones, and China’s control of 80% of the separated rare earths industry has made the industry geopolitically sensitive at a time of deteriorating relations between China and Australia’s defence partners in the US and Britain.

Oz: A Renewable Energy Superpower

‘Freedom energy’: Forrest offers hydrogen to Russia-dependent Germany

[Hans van Leeuwen](#) Mar 30, 2022 – Australian Financial Review



[E.ON COO Patrick Lammers](#) signs the H2 deal with Fortescue's Andrew Forrest

5Mtpa GH₂ is 28Mtpa of ammonia worth A\$30bn annually.

Mining magnate Andrew Forrest has offered a major slice of Fortescue's planned future supply of GH₂ to Germany, branding it "freedom energy" that will help Europe's largest economy cut its dependency on Russian gas. Mr Forrest signed a memo with Germany-based [E.ON](#), one of Europe's largest energy network operators, to underpin a potential future supply of up to 5 Mtpa of hydrogen from renewable sources by 2030.

"We all know there is so much which we cannot yet fully answer. But as people of honour, we will be able to solve it simply through the agreement of our word. We trust each other, the corporations trust each other, and emphatically and most importantly, our two countries trust each other. They're based on the principle of democracy – the absolute, unadulterated necessity of human freedom." "On both sides, it will be like a duck swimming," he said. The two firms' executives would be "really calm", but "underneath, our organisations will be going like crazy because for us it's a \$50bn expenditure".

According to Fortescue, a 5-Mtpa supply of green hydrogen by 2030 would account for one-third of Germany's calorific energy imports from Russia.