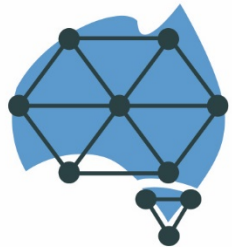


Australia's Emerging Rare Earth Ionic Clay Project

Investor Presentation - November 2021



AUSTRALIAN
RARE EARTHS

ASX: AR3

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Competent Persons Statement

The information in this presentation that relates to Exploration Results and Mineral Resources for the Koppamurra Project is based on and fairly represents, information and supporting documentation provided to and compiled by Rebecca Morgan; BSc (Hons) in Applied Geology, Post Grad Dip in Mine Engineering, and MScEng in Mine Engineering. Ms. Morgan is the sole director of REESearch and a Member of the Australasian Institute of Mining and Metallurgy and the Australian Institute of Geoscientists with over 19 years of experience. Ms. Morgan has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which she is undertaking to qualify as a Competent Person as defined in the JORC Code. Ms. Morgan consents to the inclusion in this presentation of the matters based on this information in the form and content in which it appears.

The information in this report that relates to Process Testwork Results is based on, and fairly represents, information compiled by Mr Bryn Jones, BAppSc (Chem), MEng (Mining) who is a Fellow of the Australasian Institute of Mining and Metallurgy. Mr Jones is a holder of shares and options in, and is a Director of, AREL. Mr Jones has sufficient experience, which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking, to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr Jones consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.



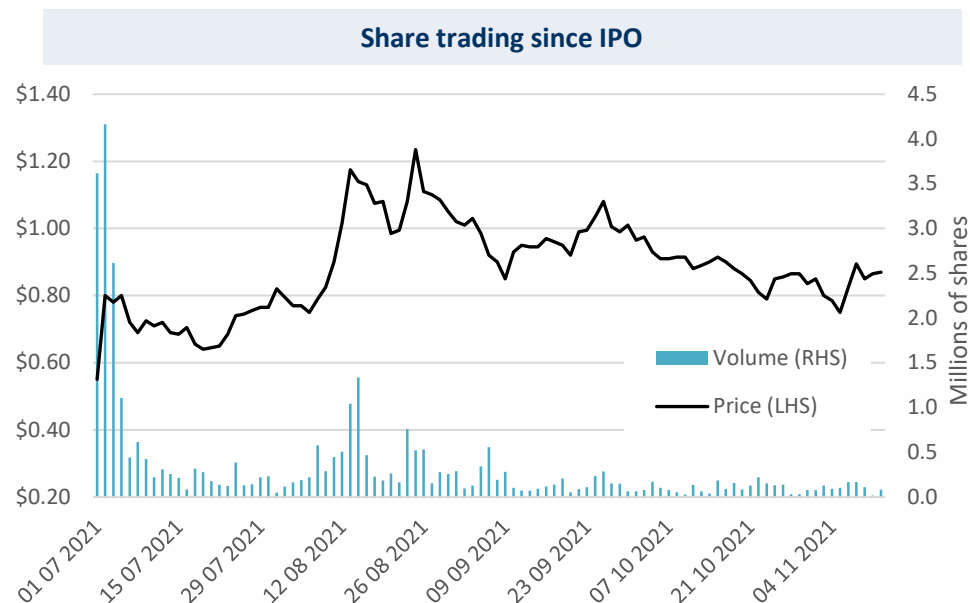
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A STRONG CORPORATE START WITH GROWING CAPABILITY

Capital Structure	Shares	110.7m
	Options	6.0m @\$0.30 6.6m @\$0.45
	Share Price (12 th November)	\$0.87
	Market Capitalisation (12 th November)	\$96m
	Cash (30 th September)	\$10.5m

Board	Professor Dudley Kingsnorth	Chairman
	Don Hyma	Managing Director
	Rick Pobjoy	Executive Director
	Bryn Jones	Non Exec Director
	Pauline Carr	Non Exec Director

Major Shareholders	ACORN CAPITAL LTD	14%
	TOO UP HOLDINGS PTY LTD	13%
	BEECHCREST INVESTMENTS PTY LTD	13%



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LED BY A HIGHLY EXPERIENCED AND DIVERSIFIED TEAM



Don Hyma
Managing Director

- **35 years in global nickel, copper and iron ore resources industry**
- Extensive experience in development of large and/or innovative capital projects
- Former senior management at Fortescue Metals Group, Mitsui, Rio Tinto, and Falconbridge
- Joined AR3 in October 2021



Dudley Kingsnorth
Non-exec Chairman

- **50 years experience** in operations, project development and marketing
- **Internationally recognised market expert on the rare earths industry**, providing advice to producers, end users and government entities
- Former Project Manager, Mt Weld Rare Earths Project and Non-Exec Director of Boss Energy Ltd



Rick Pobjoy
Executive Director

- **Geologist with over 25 years experience** in minerals exploration
- **Specialist in sedimentary hosted deposits**, from definition to development
- Founding shareholder of AR3



Bryn Jones
Non-exec Director

- **Industrial Chemist** with extensive evaluation, development and operational experience
- **Specialises in development of extractive metallurgical solutions**
- Founding shareholder of AR3



Pauline Carr
Non-exec Director

- Highly experienced director with over **30 years experience in the resources industry**
- **Complimentary expertise in compliance and governance**
- Joined AR3 in October 2021



Damien Connor
Company Secretary and CFO

- **20 years finance and accounting experience** Company Secretary and CFO to a number of ASX listed companies





Jacqui Owen
Manager Community and Land

- **15 years' experience** in oil & gas exploration and production across Australia.
- Specializes in **stakeholder engagement, environmental and regulatory compliance.**



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THE KOPPAMURRA PROJECT IS A UNIQUE OPPORTUNITY

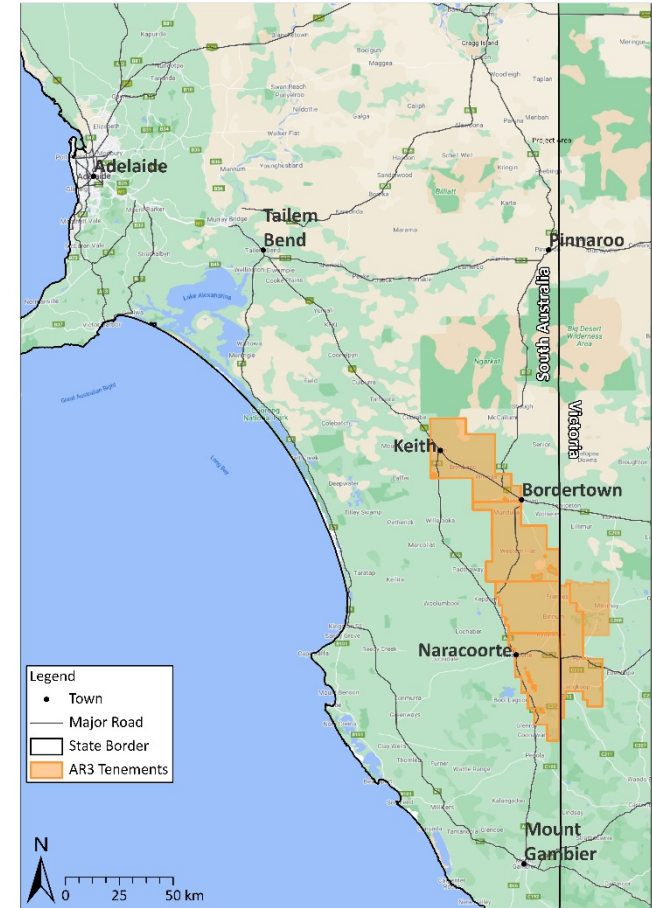
		The Market	AR3
	Resource	Rare earth elements hosted in ionic adsorption clays are extremely rare outside China and Myanmar	Only listed rare earth ionic clay project located in Australia , South Australia is a Tier 1 mining jurisdiction
	Location	China dominates world supply , processing over 90% of rare earth oxides as well as controlling the majority of mine output	Potential for Koppamurra to become globally significant , current resource defined from ~2% of >4,000km² tenement package
	Demand	Demand for rare earth permanent magnets for electric vehicles, in wind turbine drives and household appliances will require new supplies of Praseodymium, Neodymium, Terbium, Dysprosium	Koppamurra Resource contains relatively high proportions of Praseodymium, Neodymium, Terbium, and Dysprosium
	Downstream	China dominates the rare earth permanent magnet supply chain through government supported vertical integration	AR3 is assessing the merits of pursuing downstream partnerships with participants in an integrated rest of world supply chain
	Community	Projects that fail to engage the community often encounter disruption and sub-optimal results	Early community engagement and local presence with open communication
	Team	Rare earth projects are notoriously difficult to commercialise	Management team with proven technical, development, operational/marketing and governance capability



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TIER 1 PROSPECTIVE AND DEVELOPMENT JURISDICTION

- **~4,000km² of prospective tenure** in South Australia and Victoria
- **Historic drilling data was used** to demonstrate regional extent of the mineralisation
- Rare earths **found in the shallow clay layer** deposited onto a limestone base
- **Skilled workforce and excellent infrastructure**
- **Supportive community** and opportunity for jobs and regional investment
- **South Australia ranked as a Top 10 global jurisdiction** for resources investment



A MAIDEN RESOURCE WITH EXTENSIVE UPSIDE POTENTIAL

Koppamurra Mineral Resource Estimate - April 2021

Prospect	Tonnes Mt	TREO ppm	Magnet Rare Earths							
			Pr ₆ O ₁₁		Nd ₂ O ₃		Tb ₄ O ₇		Dy ₂ O ₃	
			ppm	% TREO	ppm	% TREO	ppm	% TREO	ppm	% TREO
Inferred										
Yellow Tail	10.0	903	39.8	4.4%	156.9	17.4%	4.3	0.5%	23.9	2.6%
Red Tail	29.5	668	29.5	4.4%	114.1	17.1%	3.2	0.5%	17.7	2.6%
Red Tail	0.4	520	23.5	4.5%	89.1	17.1%	2.4	0.5%	13.3	2.6%
Total	39.9	725	32.0	4.4%	124.6	17.2%	3.5	0.5%	19.2	2.6%

Source: Independent Geologist's Report, 28 April 2021, included in AR3 Prospectus available on ASX

Notes: (1) Totals may not sum due to rounding

(2) MRE reported at a cut-off grade of 325 ppm TREO-Ce

- Inferred Mineral Resource of **39.9Mt @ 725ppm TREO**
- **470 aircore, auger and push tube drill holes** completed in January 2021
- **Terbium and Dysprosium** included in the high value rare earth assemblage
- Resource has been **defined from less than 2%** of the Koppamurra landholding



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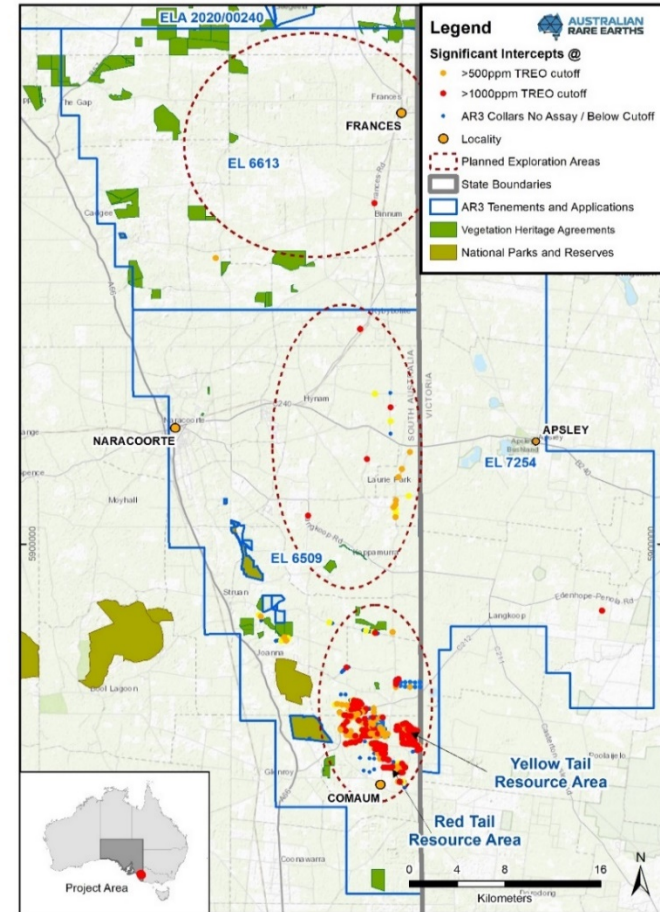
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CONTINUED DRILLING IS BUILDING CONFIDENCE IN THE RESOURCE

- **8000m drilling program commenced on 6th October** to confirm regional prospectively and confidence level of existing Resource, working towards the estimation of an Indicated Mineral Resource
- 270 holes completed for ~4,000m of program **on track for completion by December**
- **Significant thickness of host clay material** has been visually identified in many drillholes
- **1,600 samples** have been collected and **submitted for assay**



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


A POSITIVE START TO COMMUNITY PRESENCE AND COMMUNICATION

- **Permanent Naracoorte Office and Warehouse established** to foster ongoing community information sharing and support
- **Planning with the community to improve drainage on agricultural land** during progressive rehabilitation
- Koppamurra has the **potential to diversify Naracoorte's current industry** by extracting rare earth elements, thereby contributing to the global transition to a greener economy



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IONIC CLAY RARE EARTH PROJECTS ARE INHERENTLY LOWER RISK AND VALUE ACCRETIVE

	Ionic Clays (incl'g AR3)	Hard Rock
 Location	<ul style="list-style-type: none"> • Dominated by China and Myanmar 	<ul style="list-style-type: none"> • Majority in China, other projects in USA and Australia
 Rare Earth Assemblage	<ul style="list-style-type: none"> • Contains both light (Pr, Nd) and heavy (Tb, Dy) rare earths 	<ul style="list-style-type: none"> • Contains predominantly light (Pr, Nd) rare earths
 Capital Intensity	<ul style="list-style-type: none"> • Low – typically ~US\$15/kg TREO annual output¹ 	<ul style="list-style-type: none"> • High – typically ~US\$150/kg TREO annual output²
 Exploration	<ul style="list-style-type: none"> • Quick, inexpensive – aircore drilling, soft sedimentary 	<ul style="list-style-type: none"> • Lengthy, costly – diamond drilling, hard rock
 Mining	<ul style="list-style-type: none"> • Shallow deposit, progressive mining and rehabilitation 	<ul style="list-style-type: none"> • Large open pit with significant fleet and extensive closure
 Processing	<ul style="list-style-type: none"> • Proven metallurgy with inert tailings to may improve soil conditions for farming 	<ul style="list-style-type: none"> • Complex metallurgy at high temperature and pressure with radioactive tailings
 Risk / Economics	Fast to drill and develop, low capex and high value product	Expensive and slow to develop, lower value product



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Source: (1) Hochschild Mining plc, Capital Markets Presentation, September 2021
(2) Arafura Resources Limited, Nolans Project Update, May 2021

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APPENDICES



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WHY INVEST IN AUSTRALIAN RARE EARTHS?



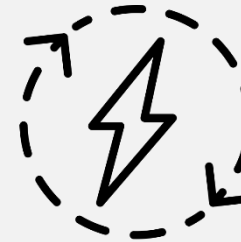
Unique asset with significant growth upside, located in a strategic Tier 1 mining jurisdiction



Low-cost exploration, well-funded to increase the volume and quality of the Resource



Partnering with the community in a responsible, transparent, environmentally sustainable manner



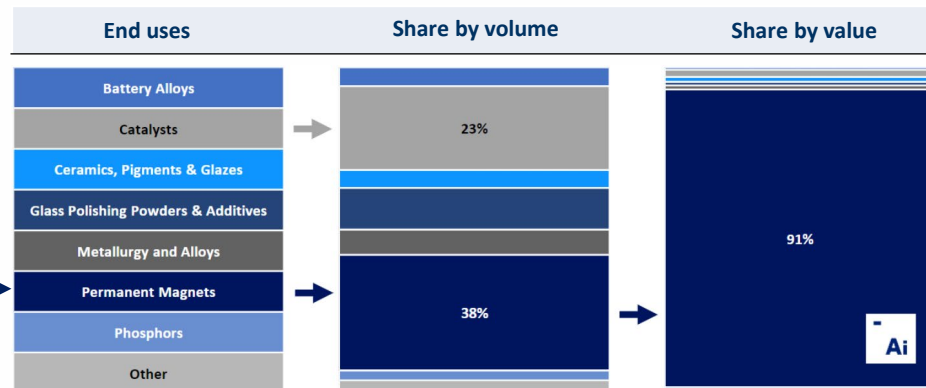
Low development capex opportunity to participate in an integrated rest of world supply chain



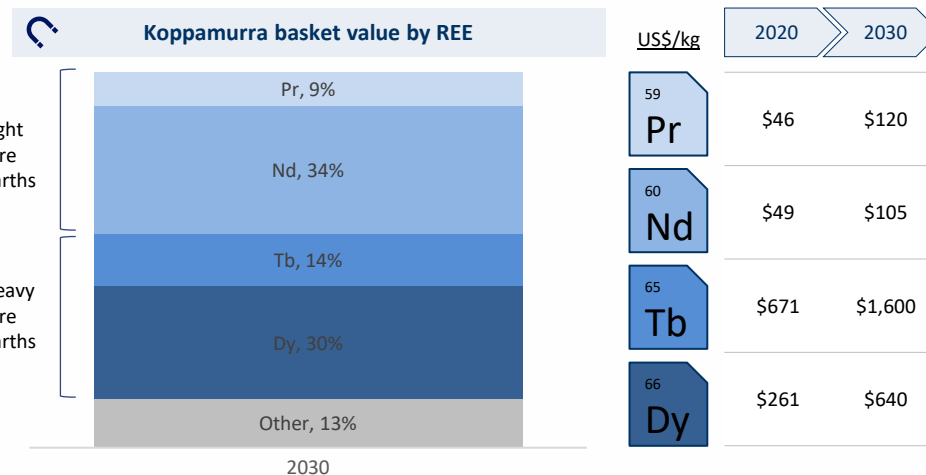
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FOUR RARE EARTH ELEMENTS REPRESENT 90% OF THE MARKET VALUE

- Rare earth elements include the 15 lanthanides plus scandium and yttrium
- REEs are used in many high tech applications, generally in small volumes but critical to performance
- Demand for Neodymium Iron Boron (**NdFeB**) permanent magnets, used in electric vehicles and wind turbines, will support prices for Praseodymium (**Pr**), Neodymium (**Nd**), Terbium (**Tb**), and Dysprosium (**Dy**) in which Koppamurra is well endowed



Periodic table showing the 17 rare earth elements (Scandium to Lutetium) highlighted in yellow. The table includes element symbols, atomic numbers, and names. The rare earth elements are: Sc (21), Y (39), La (57), Ce (58), Pr (59), Nd (60), Pm (61), Sm (62), Eu (63), Gd (64), Tb (65), Dy (66), Ho (67), Er (68), Tm (69), Yb (70), and Lu (71).



Source: Adamas Intelligence market report Q2 2021 ('Scenario 1'). Oxide prices are China domestic (including VAT), converted to USD at average exchange rates for each year and expressed in real 2020 dollars

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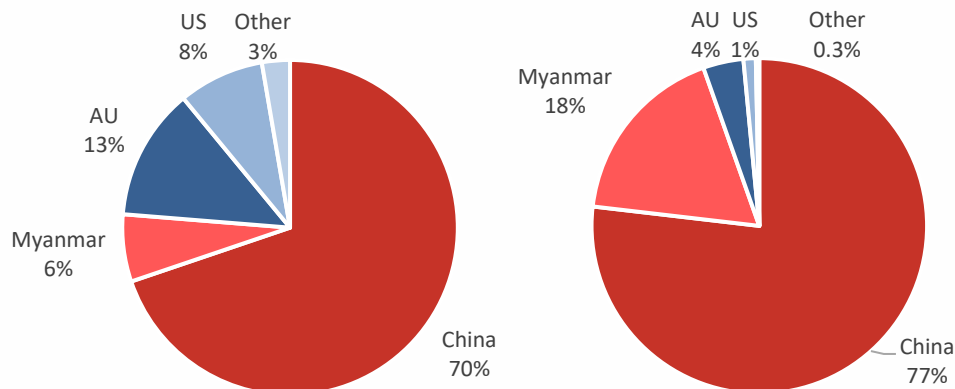
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EFFECTIVELY ALL TERBIUM AND DYSPROSIUM IS SUPPLIED FROM CHINA

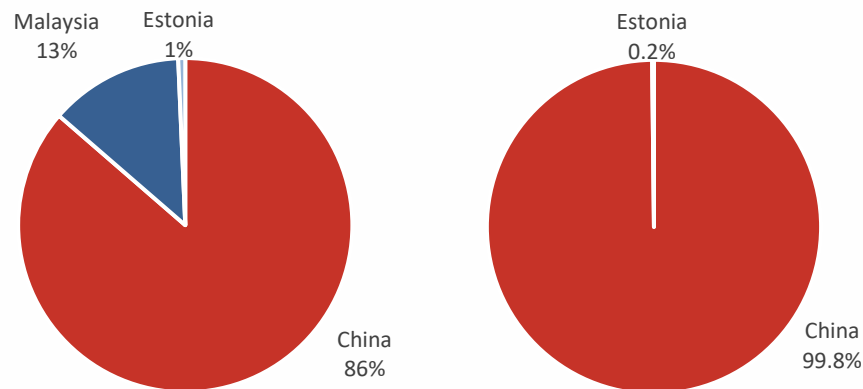
- Neodymium and Praseodymium is mined from multiple global sources, **Terbium and Dysprosium is sourced almost entirely from ionic clays in China and Myanmar**
- **Chinese reserves are depleting**, with downstream producers turning to Myanmar and rest-of-world mixed rare-earth hard rock suppliers

- **Dysprosium is considered highly critical** by the US and European governments
- **An ionic clay deposit in Australia with relatively high proportions of Dysprosium would be strategically significant**

Historical mine production by country: NdPr (LHS) and TbDy (RHS)



Historical refined (oxide) production by country: Nd (LHS) and Dy (RHS)



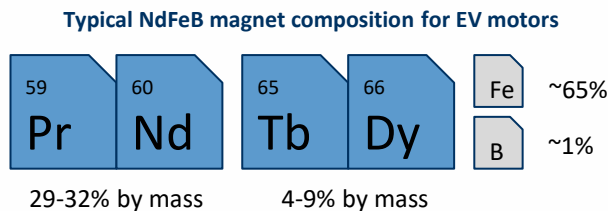
Source: Adamas Intelligence



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WHILE DEMAND FOR RARE EARTHS IS EXPECTED TO DOUBLE BY 2030

- Neodymium iron boron (**NdFeB**) is the strongest **permanent magnet commercially available** (energy product /m³) - crucial for weight-sensitive applications such as electric motors
- NdFeB alloys contain minor concentrations of Pr, Dy, Tb, as well as Cu, Co, Nb and other metals, to optimise physical properties for specific applications
- Adamas forecast shortages of NdFeB as soon as 2023, with **demand increasing from ~200,000tpa in 2021 to over 400,000tpa by 2030**



Source: Pavel et al. 2017

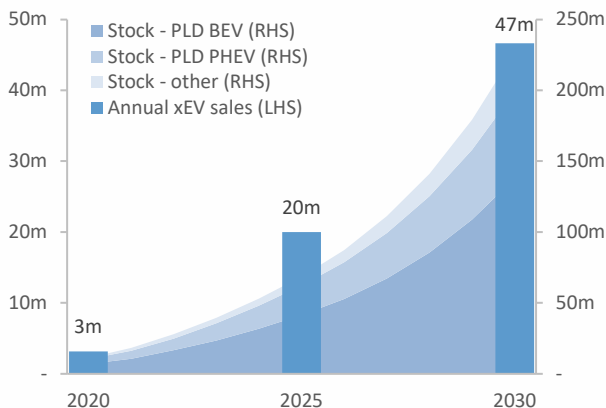
The addition of small amounts of **Terbium and/or Dysprosium** increases the **maximum operating temperature of the magnet** from ~60°C to up to 240°C, which is crucial for EV traction motors



EV

Electric vehicles use **between 1-2kg of NdFeB**, mainly in the motor but also various electronics

EV sales to grow at 31% CAGR to 2030



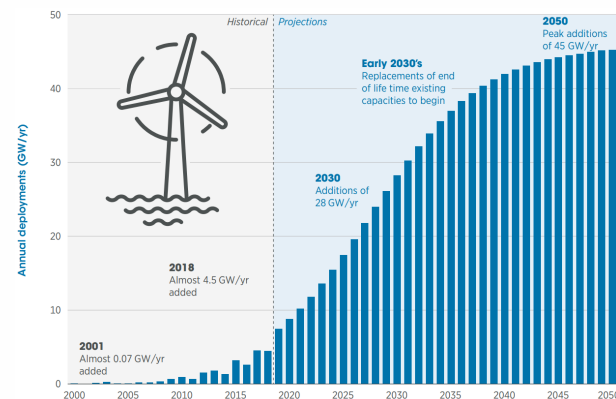
Source: International Energy Agency - April 2021 'Sustainable development scenario'
PLD = Passenger light-duty vehicle, BEV = Battery EV, PHEV = Plug-in hybrid EV



Wind turbines

Permanent magnet **direct-drive** wind turbines require upwards of **600kg of NdFeB per MW**

Hundreds of GW deployed per year to 2050



Source: International Renewable Energy Agency (IRENA) 2019

Other applications:



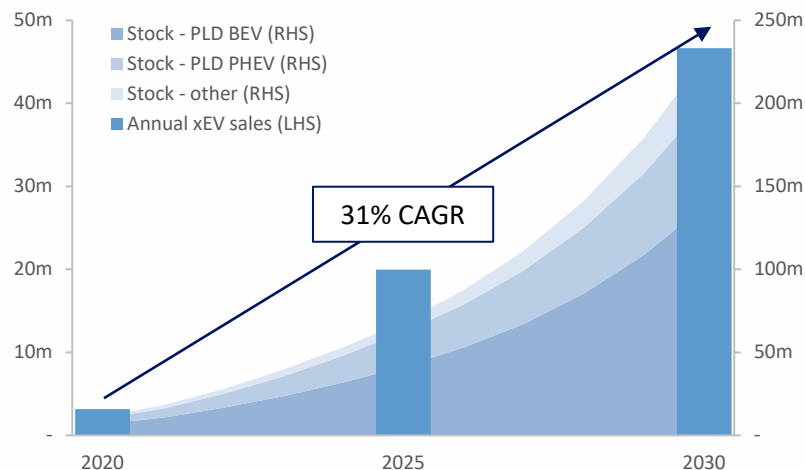
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RARE EARTH PERMANENT MAGNETS ARE VITAL FOR ELECTRIC VEHICLES

Magnet rare earth prices are leveraged to the EV thematic – each passenger EV requires 1-2kg of NdFeB

Adamas estimate 6,500 tonnes of NdFeB magnets were used in 5 million new EV traction motors sold in 2020, as well as in audio speakers, transmission, power steering and electronic sensors

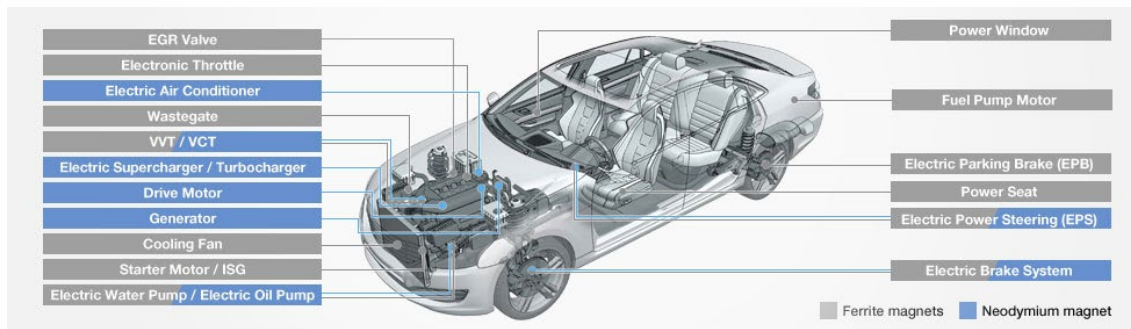
Global EV uptake – IEA 'Sustainable Development Scenario'



Source: International Energy Agency - April 2021

PLD = Passenger light-duty vehicle, BEV = Battery EV, PHEV = Plug-in hybrid EV

- In the push for net zero, many developed countries are implementing bans on new sales of internal combustion engine (ICE) vehicles, some as soon as 2025
- EVs are expected to account for 50% of new vehicle sales on or around 2030
- By 2030, Adams forecast a supply deficit of 48,000 tonnes of NdFeB, the equivalent of ~30 million EV traction motors



Source: TDK Corporation



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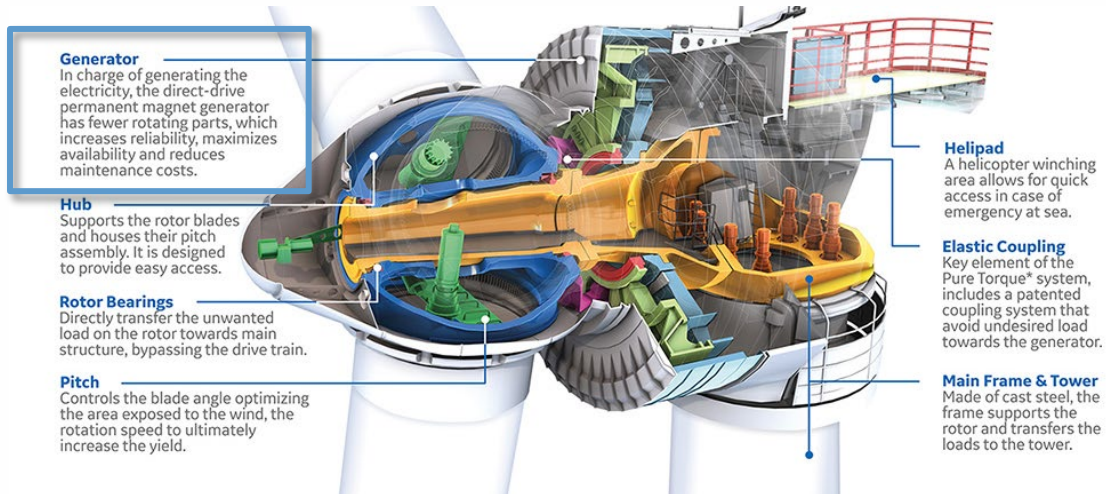
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RARE EARTH PERMANENT MAGNETS ARE VITAL FOR WIND TURBINES

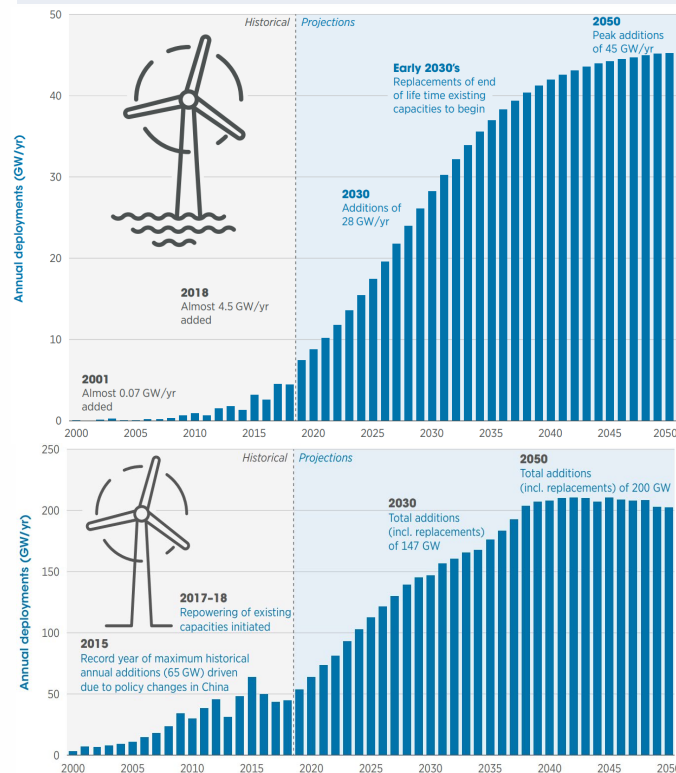
Magnet rare earth prices are also leveraged to increasing deployment of wind power

- NdFeB magnets are increasingly used in wind generators due to power-density properties
- Permanent magnet direct-drive wind turbines can require upwards of 600kg of NdFeB magnets per MW, containing over 1,000kg of neodymium and 100-200kg of dysprosium for a 6MW turbine
-European Commission, Raw materials demand for wind and solar PV technologies in the transition toward and decarbonised energy system, 2020
- IRENA forecast several million MW of new wind energy capacity will be deployed over the coming decades



Source: GE Renewable Energy website

Forecast new wind energy deployments (GW)



Source: International Renewable Energy Agency (IRENA) 2019



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