

# Minbos Resources

## Ambato Rare Earths Project

MADAGASCAR

June 2018

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*The information in this Presentation that relates to Exploration Results and Data Quality is based on, and fairly represents, information and supporting documentation prepared by Rebecca Morgan, who is a member of the Australian Institute of Geoscientists. Miss Morgan was previously a fulltime employee of Minbos (until February 2018) and is a consultant to Minbos. Miss Morgan has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity she 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’. Miss Morgan consents to the inclusion in this Presentation of the matters based on her information in the form and context in which it appears.*

*The information in this release that relates to mineralogy and metallurgy results as provided to Minbos by the Australian Nuclear Science and Technology Organisation (ANSTO), has been reviewed by Mr Gavin Beer who is a Member of The Australasian Institute of Mining and Metallurgy and a Chartered Professional. Mr Beer is a Consulting Metallurgist with sufficient experience relevant to the activity which he is undertaking to be recognised a Competent Person as defined in the 2012 Edition of the “Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves” and as a “Qualified Person” under National Instrument 43-101 – Standards of Disclosure for Mineral Projects (“NI 43-101”). Mr Beer consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.*

# Rare Earths – Why Invest?

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**Clean Cities need Rare Earths.** Rare Earths are essential for EV transportation and the generation and storage of clean energy.

**Geopolitical Premium.** China's dominant supply position presents a great risk to the rest of the world and incentive to develop alternate supplies.

**Long Strike Length\*** The Ankazohambo prospect has outcropping rare earth mineralisation over a 2.4km strike length.

**High Grades\*** Twenty-eight rockchip samples in 2010 returned grades of between 0.14% and 40.8% TREO with a median grade of 3.95%.

**Clean Mineralogy\*\*** Coarse bastnasite presents as the dominant REE in mineral characterisation indicating the composition is favourable for beneficiation.

\*ASX Announcement 29 March 2018 Minbos enters option to purchase Rare Earths Project. Grades are expressed as Total Rare Earth Oxides TREO. The Company confirms that it is not aware of any new information or data that materially affects these exploration results and that no material change in the results has occurred.

\*\*ASX Announcement 4<sup>th</sup> May 2018: Encouraging Mineralogy Results at Ambato.



# Rare Earths – What are they?

## Rare Earths are not rare

Rare earth elements (REE) are always found together but rarely in commercial quantities.

H																			He
Li	Be											B	C	N	O	F	Ne		
Na	Mg											Al	Si	P	S	Cl	Ar		
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr		
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe		
Cs	Ba	La-Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn		
Fr	Ra	Ac-Lr	Rf	Db	Sg	Bh	Hs	Mt											

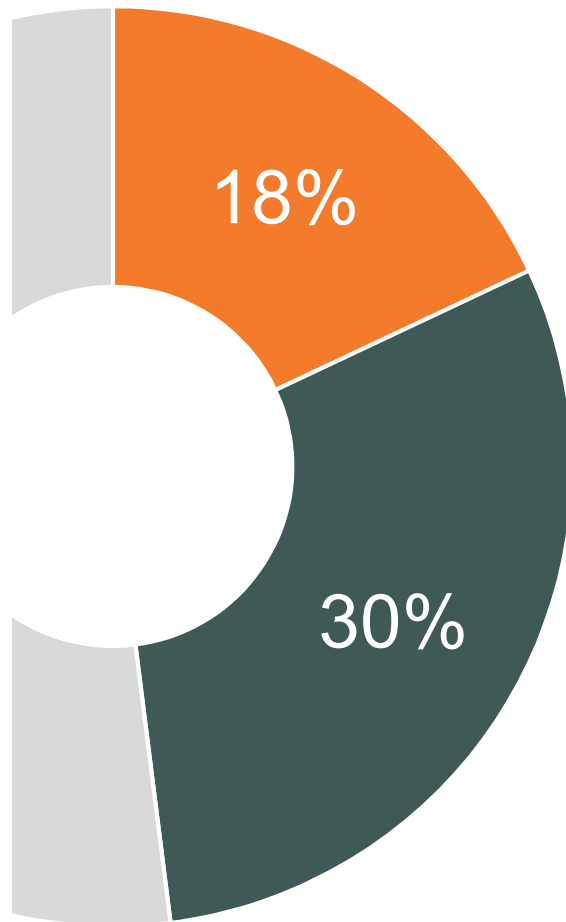
lanthanide series 

La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
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actinide series 

Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr
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# Rare Earths – What are they used for?



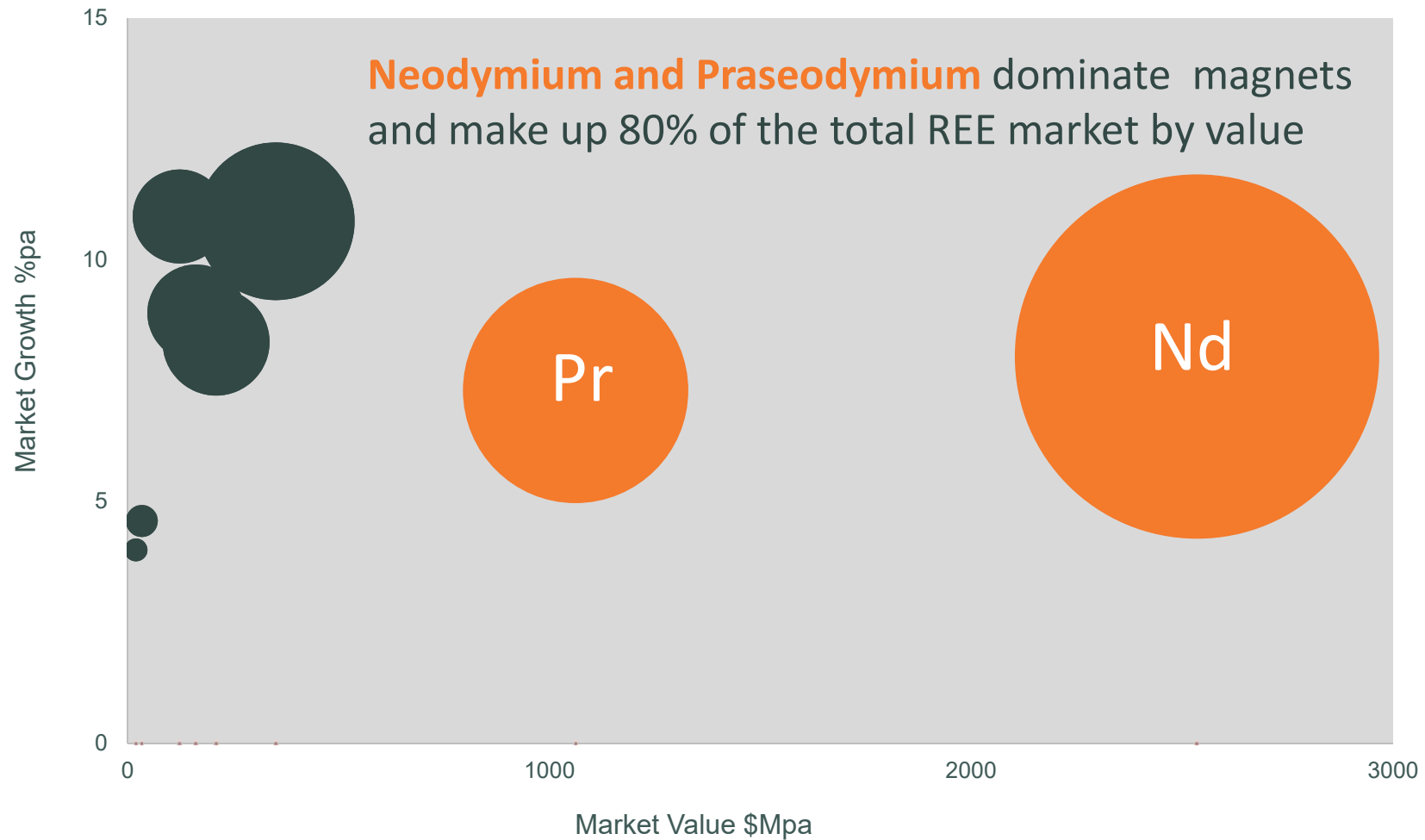
**Metal Alloys** are used in the fast growing hydrogen storage sector.

**Permanent Magnets** are used in electric motors and wind turbines offering, size, weight and efficiency advantages over conventional induction motors. Tesla has announced it is shifting to rare earth permanent magnet motors.

**Green and Clean** sectors are driving the value and growth in rare earths

■ Metal Alloys ■ Magnets ■ Other

# Rare Earths – Where is the value?

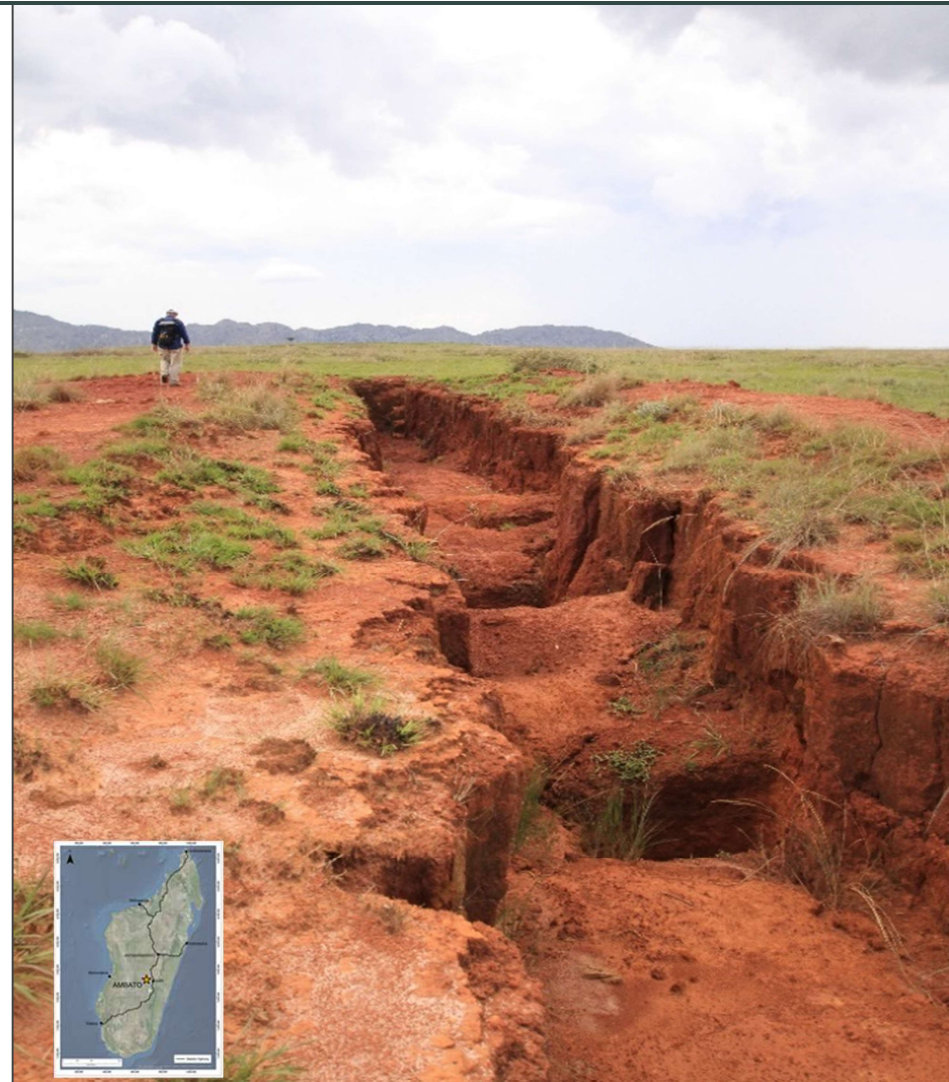


# Ambato – A rare opportunity

Located in Central Madagascar the project hosts multiple occurrences outcropping at surface. All undrilled.

The Ankazohambo prospect has been sampled over 2.4km strike length returning rock chip samples up to 41% TREO\* of predominantly bastnasite with low uranium and thorium.

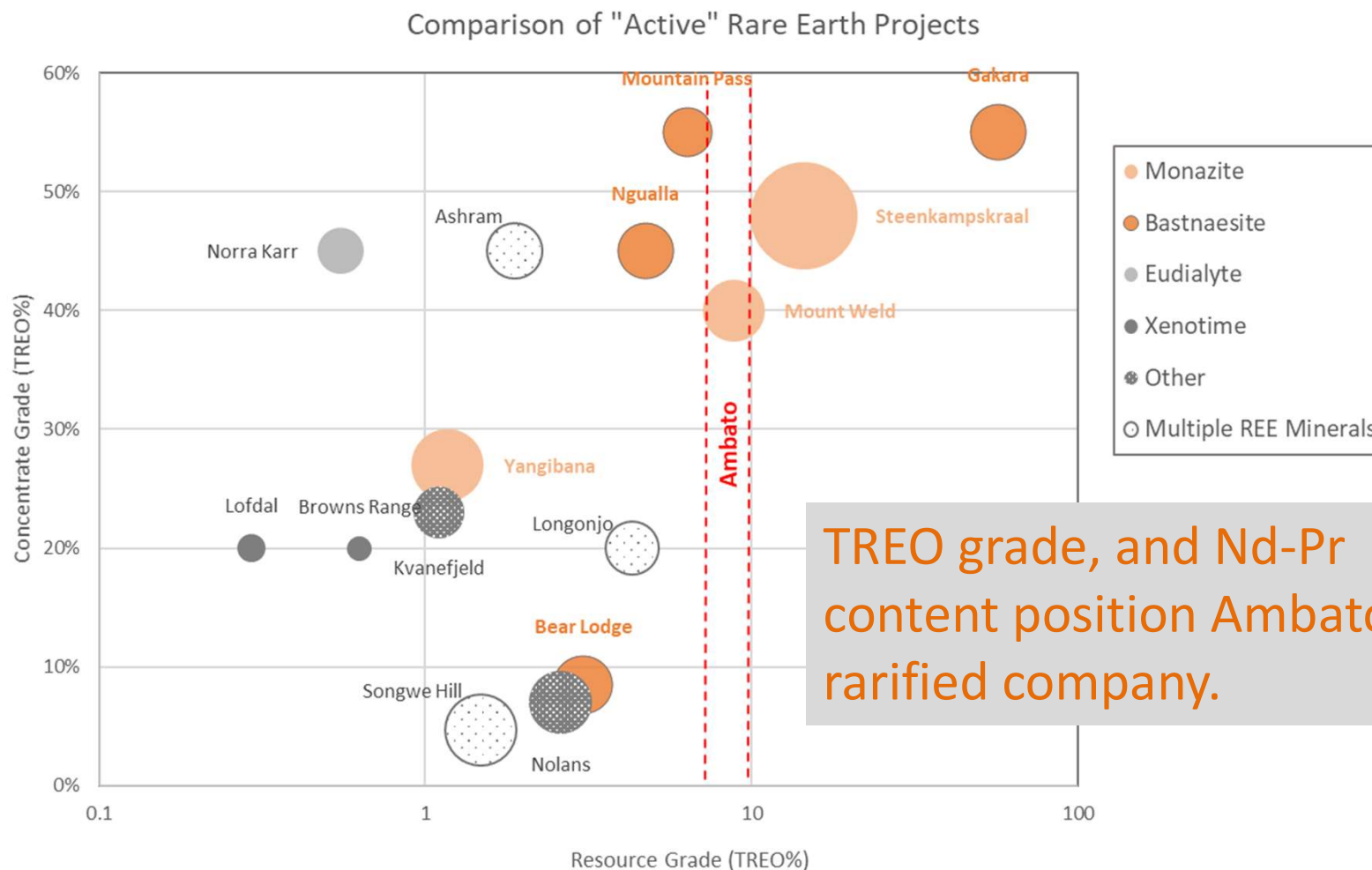
**Potential to be a high-grade world class rare earth deposit.**



\*ASX Announcement 29 March 2018 Minbos enters option to purchase Rare Earths Project. Grades are expressed as Total Rare Earth Oxides TREO. The Company confirms that it is not aware of any new information or data that materially affects these exploration results and that no material change in the results has occurred.



# Ambato – High Grades?



Bubble size representative of the proportion of NdPr of deposit TREO% grade (Source: ASX and TSX publicly available data)

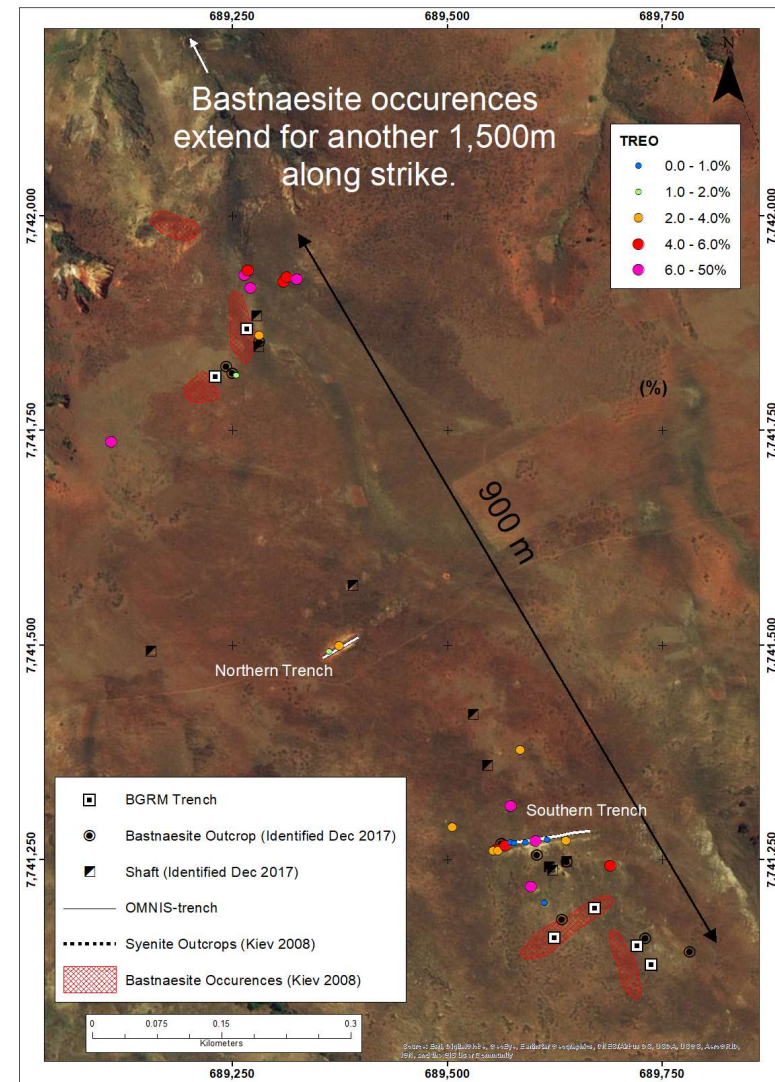


# Ambato – Long strike length?

Located in Central Madagascar the licenses host multiple REE occurrences outcropping at surface. All the prospects are undrilled.

The Ankazohambo prospect has been sampled intermittently over 2.4km of strike returning rock chip samples up to 41% TREO\* and mineralized widths of up to 50m in trenches.

**Large tonnage potential from surface.**



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# Ambato – Easy beneficiation?

90% of the REE in surface samples is contained in the mineral Bastnasite with low levels of the radioactive elements uranium and thorium. The majority of the gangue mineral is silica.

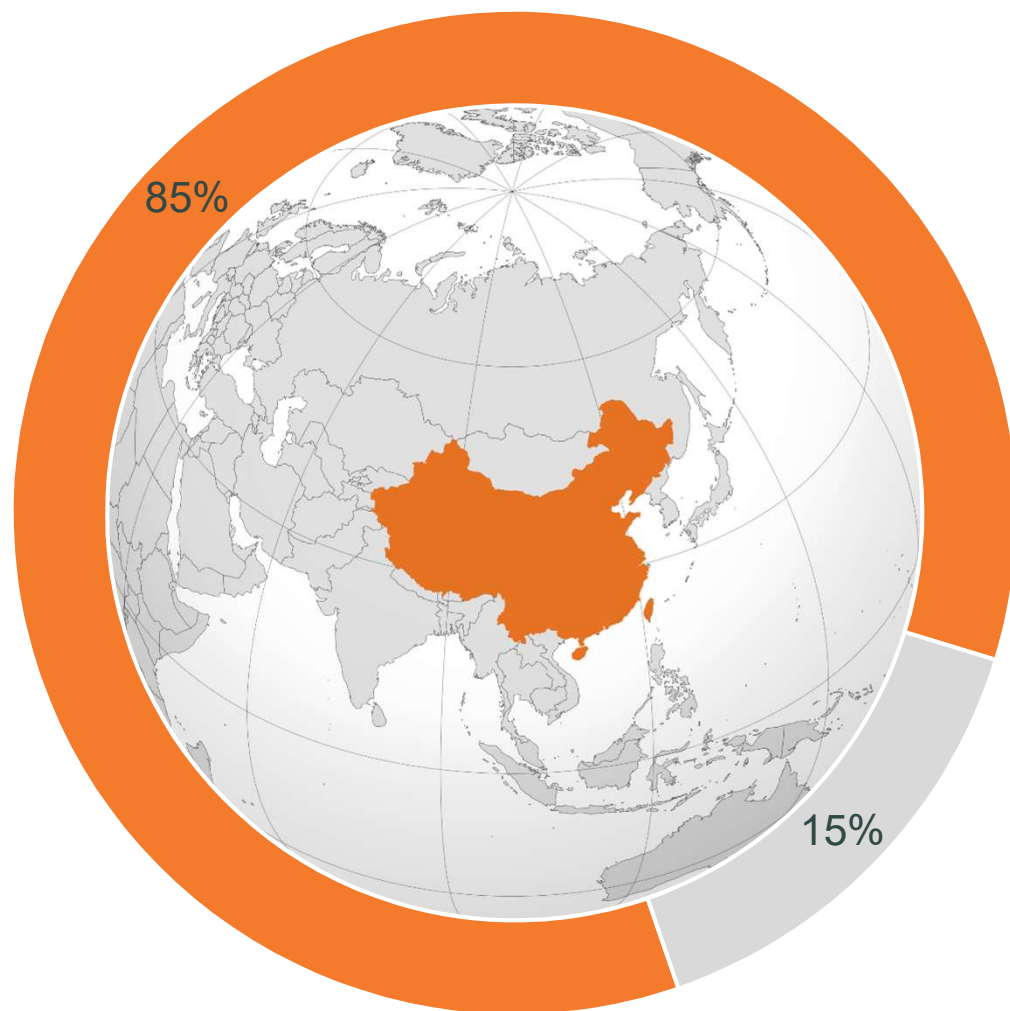
ANSTO mineralogical examination identified three quarters of the Bastnasite grains are highly or fully liberated (80 -100%) which is consistent with the coarse grains visually observed in the samples.

**Potential for easy beneficiation and high recovery to saleable concentrate**



*Coarse Bastnasite Grains*

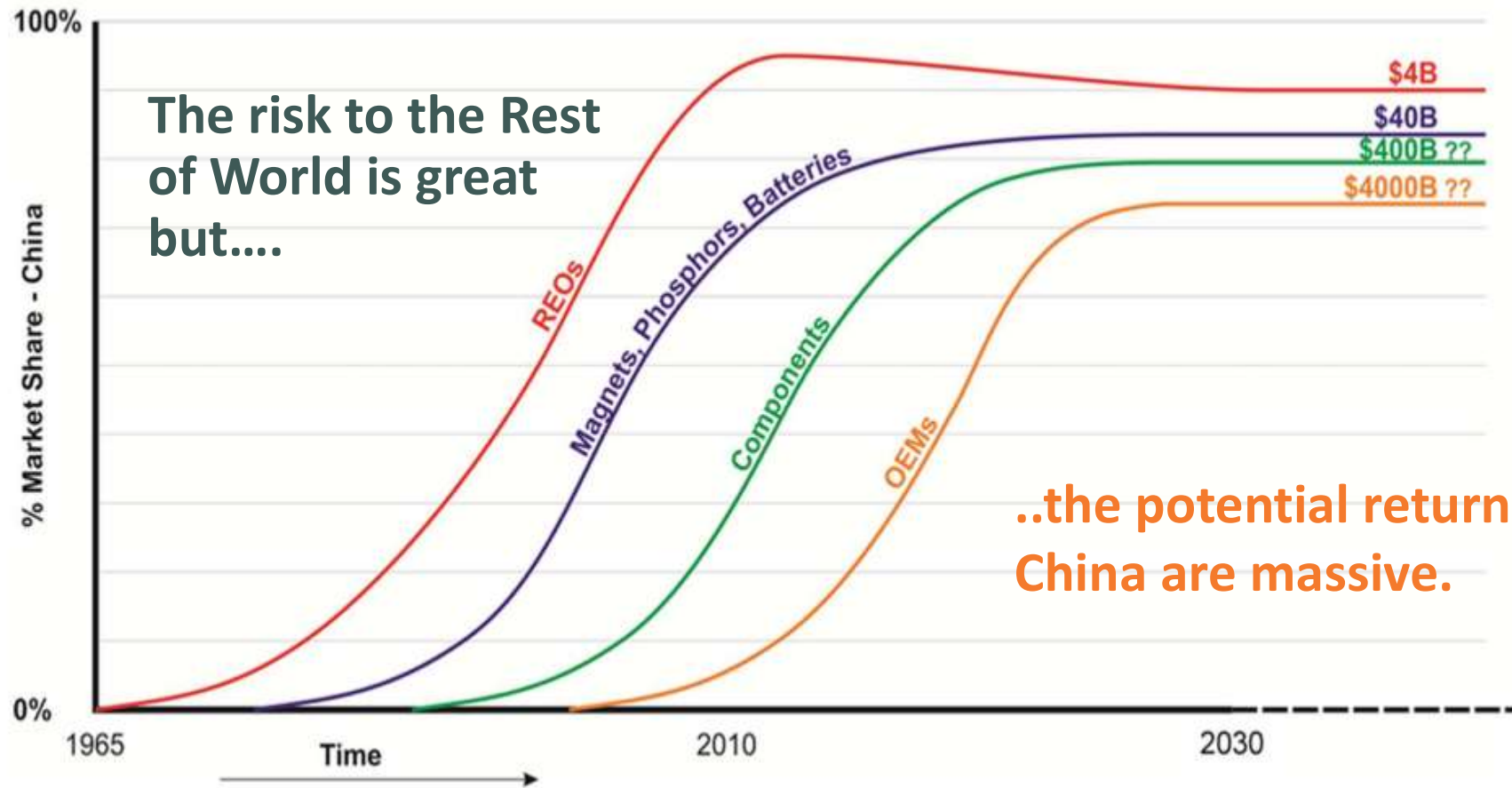
# Rare Earths - China Controls Supply?



**China** controls 85% of the world's REE supply. Approximately half of this production is from two producers, Northern Group and Chinalco.

**Rest of World** production is dominated by Lynas Corporation (>70%) from its Mount Weld mine.

# Rare Earths - China 2025 Value Chain?



*This figure is adapted from a presentation made by Professor K.G. van den Boogaart at the SME Critical Minerals Conference in Denver in August 2014.*



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# Rare Earths – USA Critical Minerals?

Chart of the Week

## THE 35 MINERALS CRITICAL TO U.S. NATIONAL SECURITY

This draft list of minerals deemed essential to the economic and national security was released Feb 16, 2018

China Export Quotas in 2011 caused a spike in the price of rare earths.

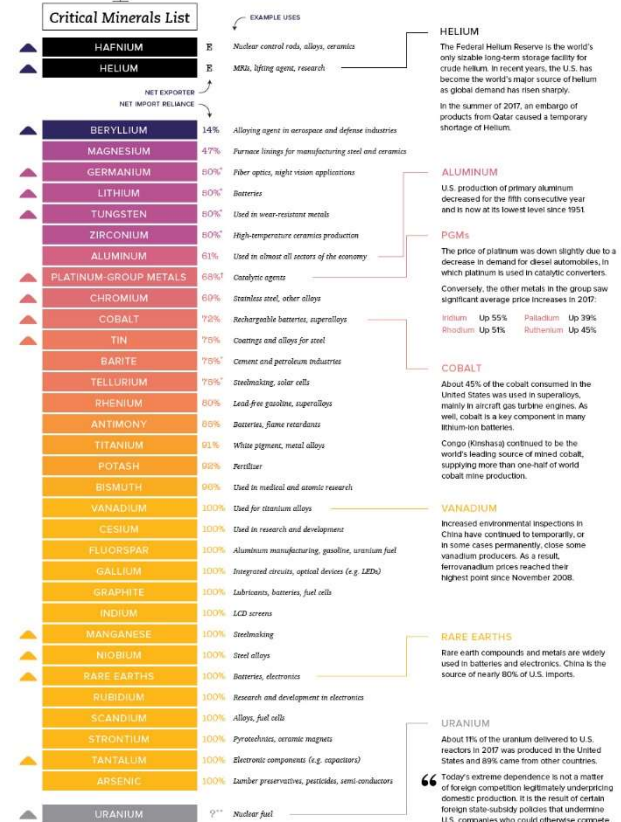
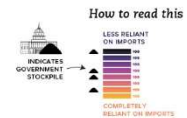
## USA strategic minerals 2018

National Security Presidential Directive  
The USGS has designated Rare Earths as strategic minerals critical to U.S. national security.

Rare Earths will feature at the sharp end of a Trade War



“our nation’s mission [is] to reduce our vulnerability to disruptions in the supply of critical minerals. Any shortage of these resources constitutes a strategic vulnerability for the security and prosperity of the United States.”  
—Dr. Tim Potts, Assistant Secretary of the Interior for Water and Science



SOURCE: U.S. Department of Interior, Bureau of Land Management  
\*Estimate    \*\*Net import reliance list for platinum specifically    \*\*\*No data available

# Ambato – Exclusive Option to Acquire 90%



Minbos has entered into an option with Tana Minerals Ltd to acquire 90% of the shares in MRE Mining (Mauritius) Limited. MRE's sole asset is a wholly owned subsidiary which holds two exploration permits in central Madagascar covering 440 square kilometres.

Deal Milestone	Consideration
Exclusive Option to acquire 90% of MRE from Tana Minerals	\$10k
Committed Minimum Exploration Program	\$320k
Extension of Exclusive Option post drilling program	\$25k
Consideration Shares on renewal of MRE Licenses	250 million
Incentive Shares on achieving JORC Resource 200kt at > 3% TREO	250 million
Assume Licence Renewal Liabilities	TBA

# Rare Earths – ASX Comparatives

Code	Company	Project	% Int	Location	TREO	MCap
MNB	Minbos Resources Ltd	Ambato	90%	Madagascar	3.85%*	\$17M**
ARU	Arafura Resources Ltd	Nolans	100%	NT	56Mt @ 2.6%	\$54M
HAS	Hastings Technology	Yangibana	92%	WA	21Mt @1.17%	\$156M
PEK	Peak Resources Ltd	Ngualla	75%	Tanzania	214.4 @ 2.15%	\$26M
NTU	Northern Minerals Limited	Browns Range	100%	WA	9Mt @ 0.6%	\$94M
LYC	Lynas Corporation Limited	Mt Weld	100%	WA	23.2Mt @7.4%	\$1.6B
GGG	Greenland Minerals	Kvanefjeld	100%	Greenland	1.01Bt @ 1.1%	\$81M

Source: ASX (current as at 20 June 2018)

\* Twenty eight rockchip samples returned grades between 0.14 and 40.8% with a median grade of 3.85% TREO – refer to ASX release dated 29 March 2018.

\*\* Market Capitalisation used is based on the pro-forma fully diluted number of shares on issue post the current rights issue and placement – refer to ASX release dated 10 May 2018.

# Capital Structure and Top Shareholders

<b>Capital Structure</b>	<b>Millions</b>
Current Shares on Issue	5,655
<b>Market Cap (0.3cps)</b>	<b>A\$17M</b>
Cash post placement and entitlement issue	A\$4M

<b>Current Top Shareholders</b>	<b>%</b>
Green Services Innovations Ltd	40
Directors and Management	11
Dave Reeves	5
Celtic Capital Pty Ltd	3
TOP 50	90





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# Madagascar

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Madagascar is an island nation located off the east coast of Southern Africa.

The western side of the island is sedimentary and hosts Rio Tinto's QMM mineral sands mine and Base Resources' Toliara project.

The eastern two thirds of the island is underlain by Precambrian, Archean and Proterozoic rocks and hosts the Ambatovy mine which is aiming to become the largest laterite nickel project in the world.

**Despite its prospectivity and established regulatory framework Madagascar is underexplored**



# Work Programs

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**Drill Program** site inspections are currently underway with the preferred contractor for a diamond drill program at Ankazohambo REE prospect.

**Metallurgical Testwork** regimes are being prepared to fast track core samples into process flowsheet design for beneficiation to REE concentrate.

**Angola:** The company continues to work with the government to capture value from the Cabinda Phosphate project for all stakeholders.

**Funding:** The company has completed a placement to new investors and a rights issue supported by all the major shareholders to fund these programs

**Updates are expected on all programs in the next month.**