

CLIMATE SMART MINING

**CRITICAL RAW MATERIAL SUPPLY FROM THE WORLD'S
LARGEST NATURAL RUTILE DEPOSIT AND ONE OF THE
LARGEST GRAPHITE RESOURCES**



SOVEREIGN
METALS LIMITED

APRIL 2022 | AIM: SVML | ASX: SVM | ABN: 71 120 833 427



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The information in this presentation that relates to Production Targets, Processing, Infrastructure and Capital and Operating Costs, is extracted from the announcement dated 16 December 2021 which is available to view on www.sovereignmetals.com.au. SVM confirms that: a) it is not aware of any new information or data that materially affects the information included in the announcement; b) all material assumptions and technical parameters underpinning the Production Target, and related forecast financial information derived from the Production Target included in the Announcement continue to apply and have not materially changed; and c) the form and context in which the relevant Competent Persons' findings are presented in this presentation have not been materially modified from the Announcement.

The information in this presentation that relates to the Mineral Resource Estimate is extracted from the announcement dated 16 December 2021 and 5 April 2022 which is available to view on www.sovereignmetals.com.au. SVM confirms that a) it is not aware of any new information or data that materially affects the information included in the announcement; b) all material assumptions included in the announcement continue to apply and have not materially changed; and c) the form and context in which the relevant Competent Persons' findings are presented in this report have not been materially changed from the announcement.

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Rutile – the world's purest natural source of titanium

Pigment (58%)



Welding (31%)



Titanium Metal (11%)



Titanium – designated a CRITICAL RAW MATERIAL by the US and EU based on “supply risk” and “economic importance”



Natural Rutile – the purest natural form of titanium



1.Titanium feedstock supply. Ilmenite includes sulphate slag production and chloride slag production; leucoxene, synthetic rutile and upgraded chloride slag ("UGS") not included. Source: TZMI

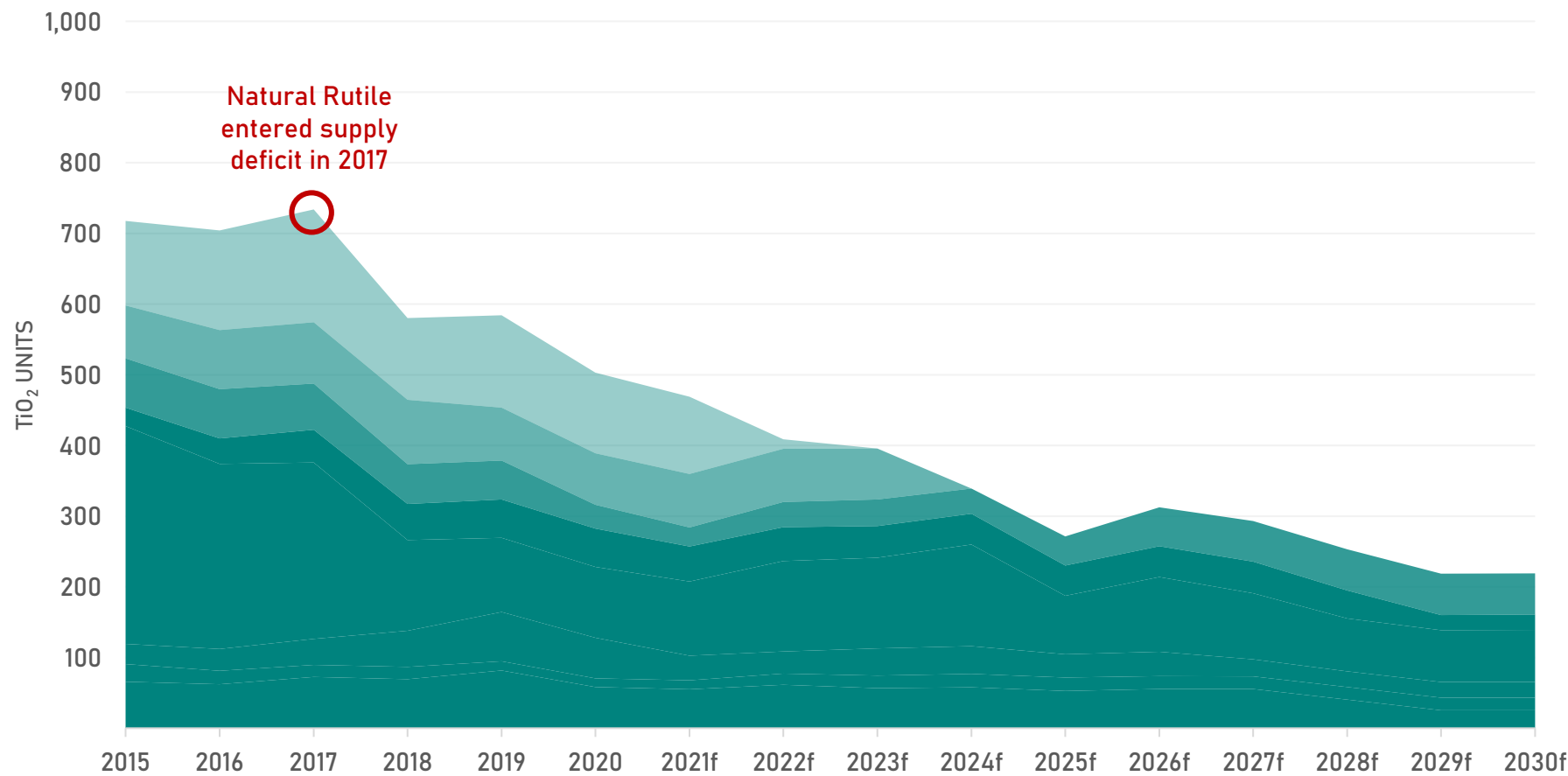
2.Rutile price: Iluka Resources Limited (ASX: ILU): December 2021 Quarterly Report (US\$1,351). Chloride Ilmenite: TZMI (US\$235)

* Spot price: Ruidow

Natural Rutile – genuinely scarce



EXPECTED GLOBAL RUTILE SUPPLY TO 2030



70%
Expected decrease in
global rutile supply from
2017 to 2030 (~515kt)



2.8Mt
Expected increase in
global TiO₂ demand from
2017 to 2030



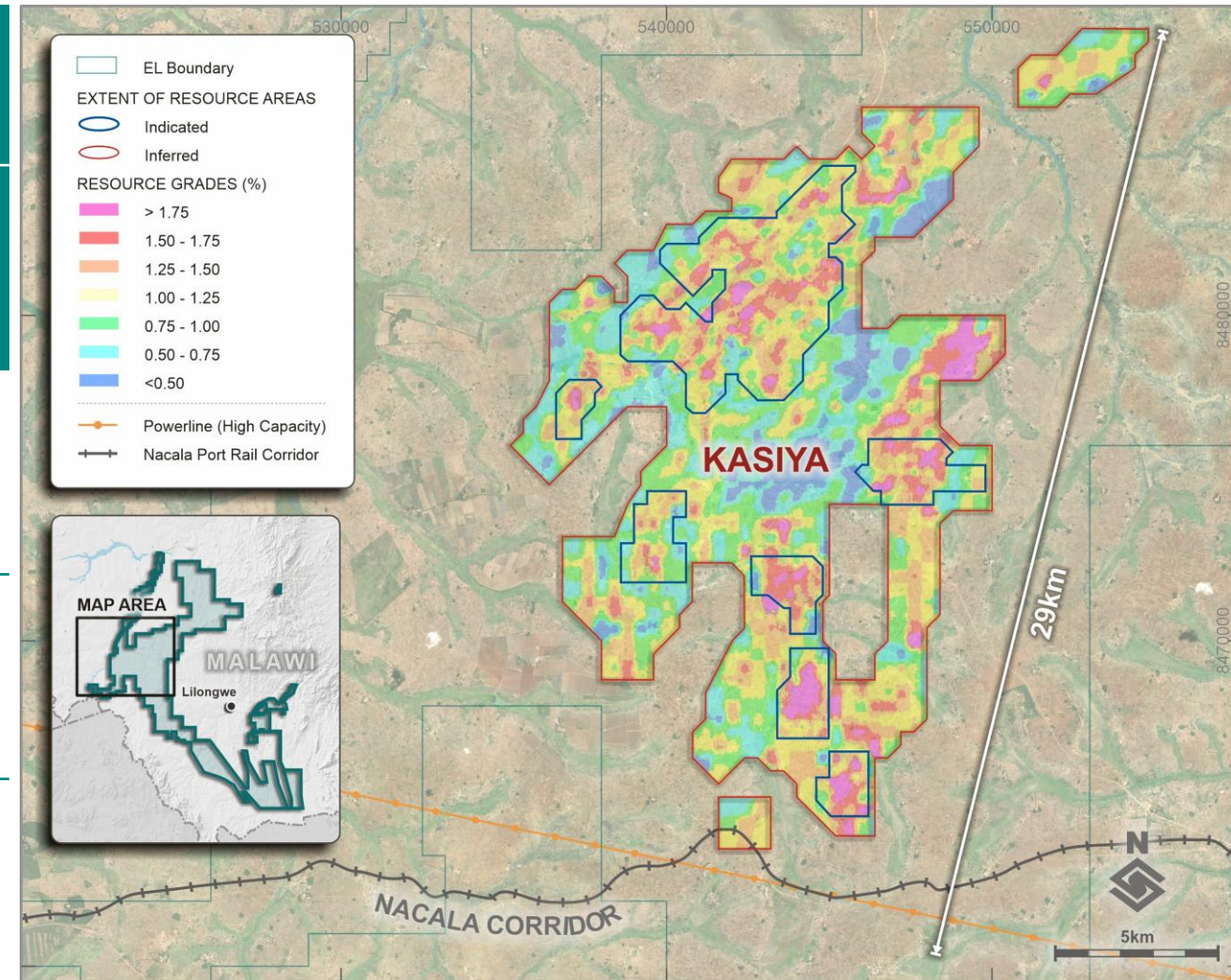
+50 Years
Since new significant,
standalone rutile-dominant
deposits discovered



Kasiya updated Mineral Resource Estimate – 1.8 Billion Tonnes

Kasiya Mineral Resource Estimate at 0.7% Rutile Cut-off

Mineral Resource Category	Material Tonnes (millions)	Rutile Grade (%)	Rutile Tonnes (millions)	TGC (%)	TGC Tonnes (millions)	RutEq. Grade ¹
Indicated	662	1.05%	6.9	1.43%	9.5	1.73%
Inferred	1,113	0.99%	11.0	1.26%	14.0	1.59%
Total	1,775	1.01%	18.0	1.32%	23.4	1.64%



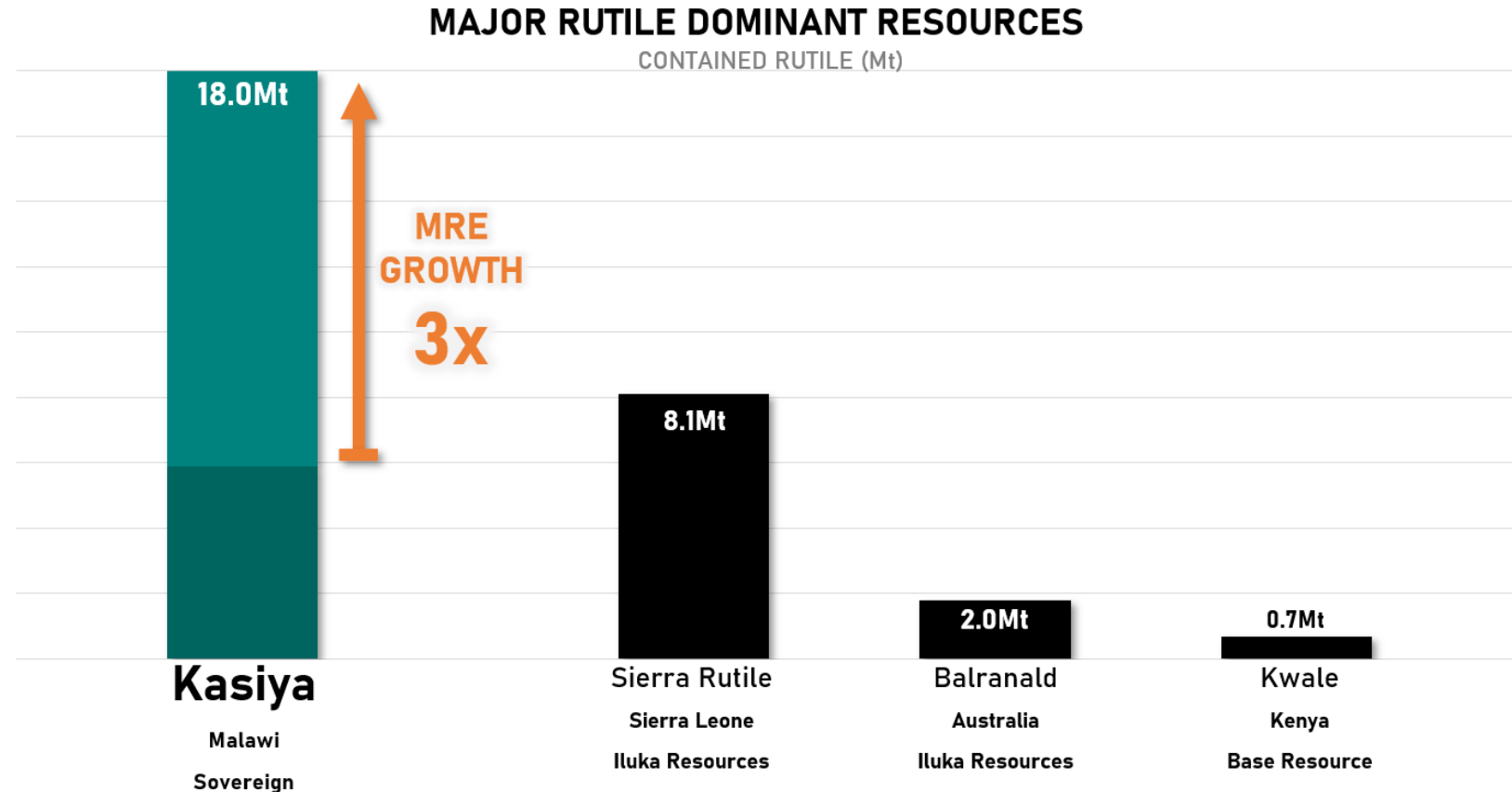
Source: Sovereign Metals

1. Rutile Grade x Recovery (97%) x Rutile Price (US\$1,346/t) + Graphite Grade x Recovery (62%) x Graphite Price (US\$1,085/t) / Rutile Price (US\$1,346/t). All assumptions taken from the Company's 2021 Scoping Study released 16 December 2021



Kasiya – the largest rutile deposit ever discovered

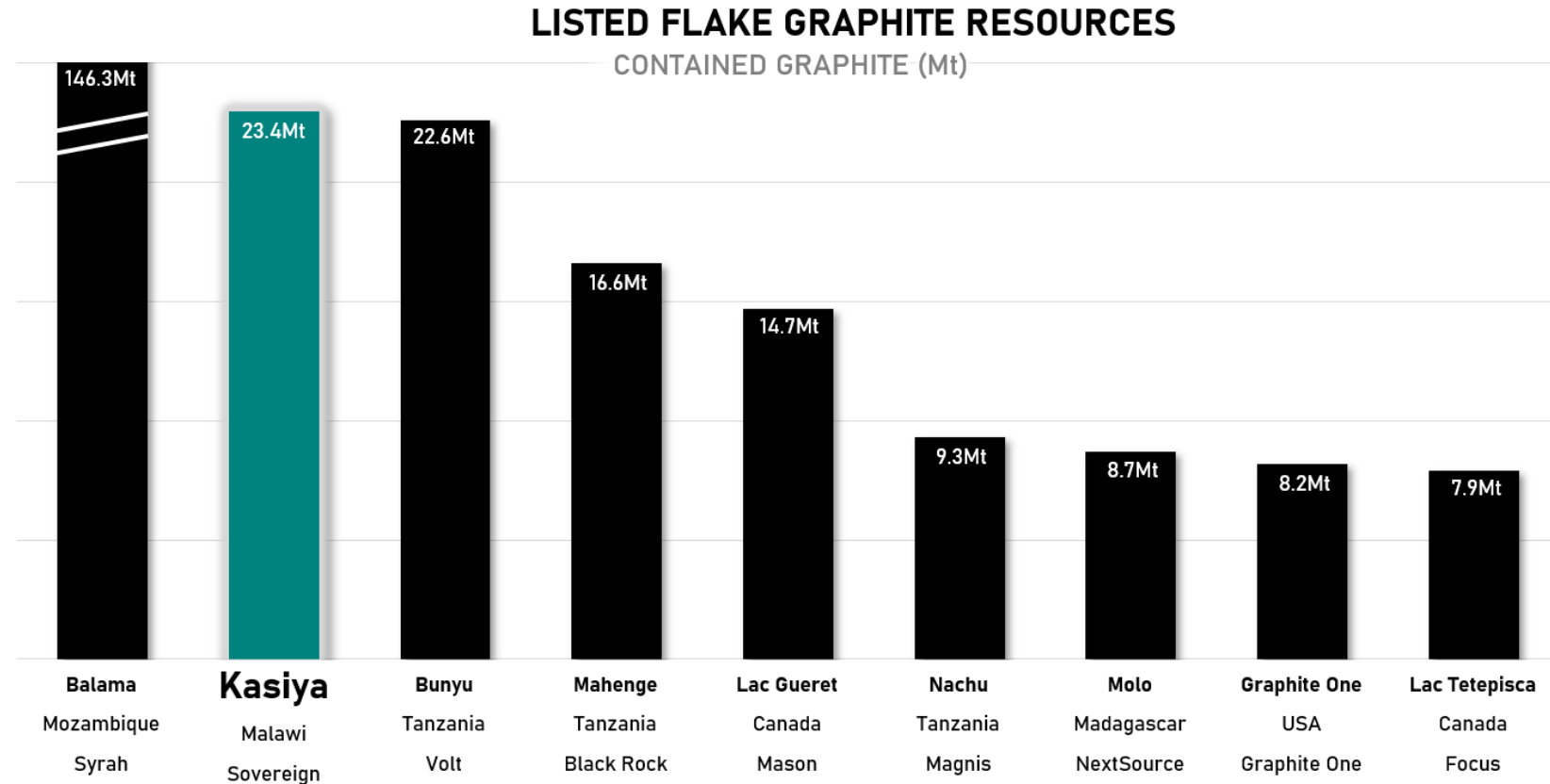
- Kasiya contains more than double the rutile resource as its nearest rutile peer, Sierra Rutile
- New MRE shows a number of new large, but generally discrete high grade rutile zones
- Discovery and delineation of these new high grade mineralised zones has been dominant factor in tripling of the resource base





Kasiya – one of the largest flake graphite resource in the world

- Graphite by-product from potential rutile production to have a very low production cost compared to graphite-only projects
- Kasiya graphite is highly crystalline and of high purity – important features required for use in lithium-ion battery anodes
- Comprehensive bulk scale metallurgy and downstream test work program developed to confirm commercial potential

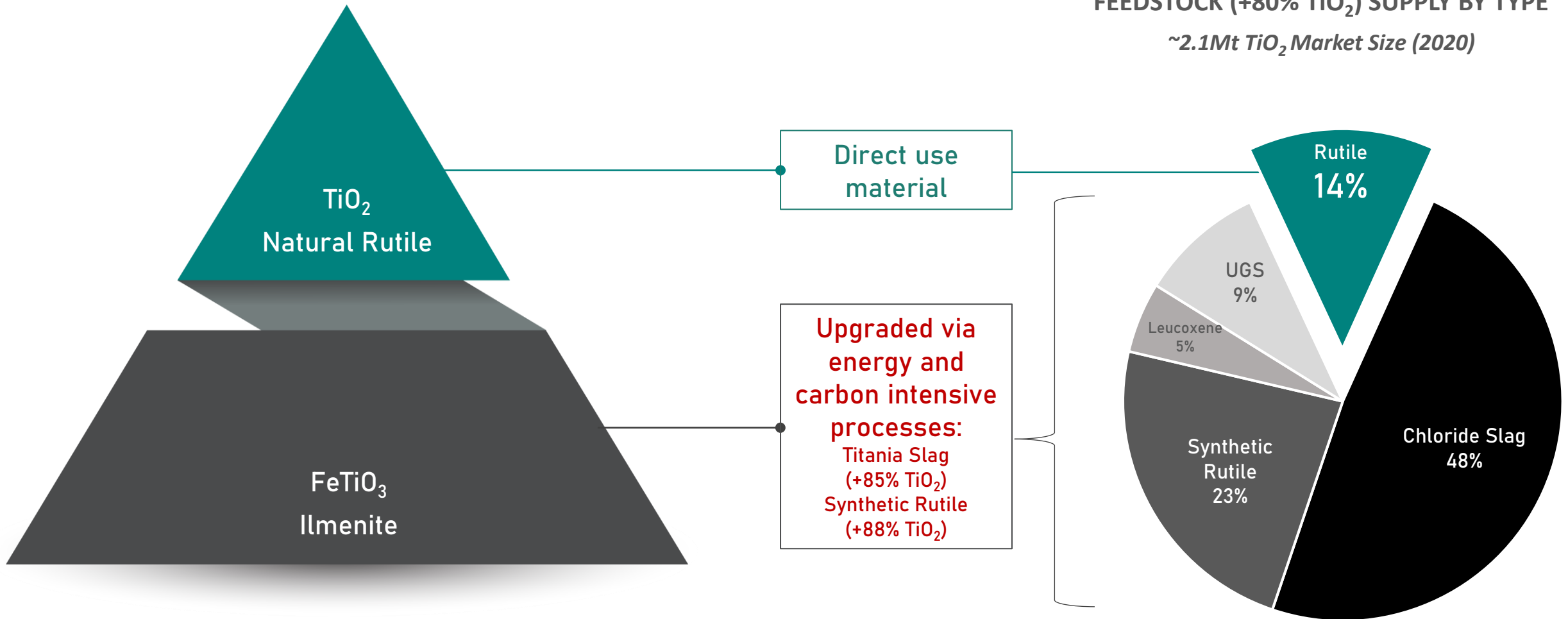


Natural rutile makes up a small percentage of the total high-grade titanium pigment feedstock market but has a much lower carbon footprint



HIGH GRADE CHLORIDE PIGMENT
FEEDSTOCK (+80% TiO_2) SUPPLY BY TYPE

~2.1Mt TiO_2 Market Size (2020)





Natural rutile – a lower carbon footprint alternative

Scope 1 & 2

Scope 3

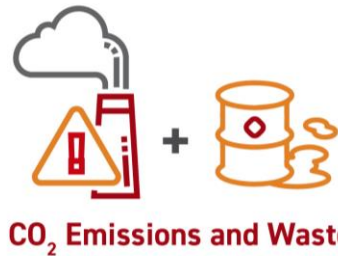
Synthetic rutile and titania slag are products of energy and carbon intensive upgrading of ilmenite prior to pigment production

MINING AND PROCESSING



Ilmenite
~50% TiO_2

ENERGY - CARBON INTENSIVE UPGRADING PROCESSES



Synthetic Rutile (+88% TiO_2)
Titania Slag (+85% TiO_2)

PIGMENT PRODUCTION



Mined natural rutile is extracted in a form ready for direct pigment production

MINING AND PROCESSING



Natural Rutile
~95% TiO_2

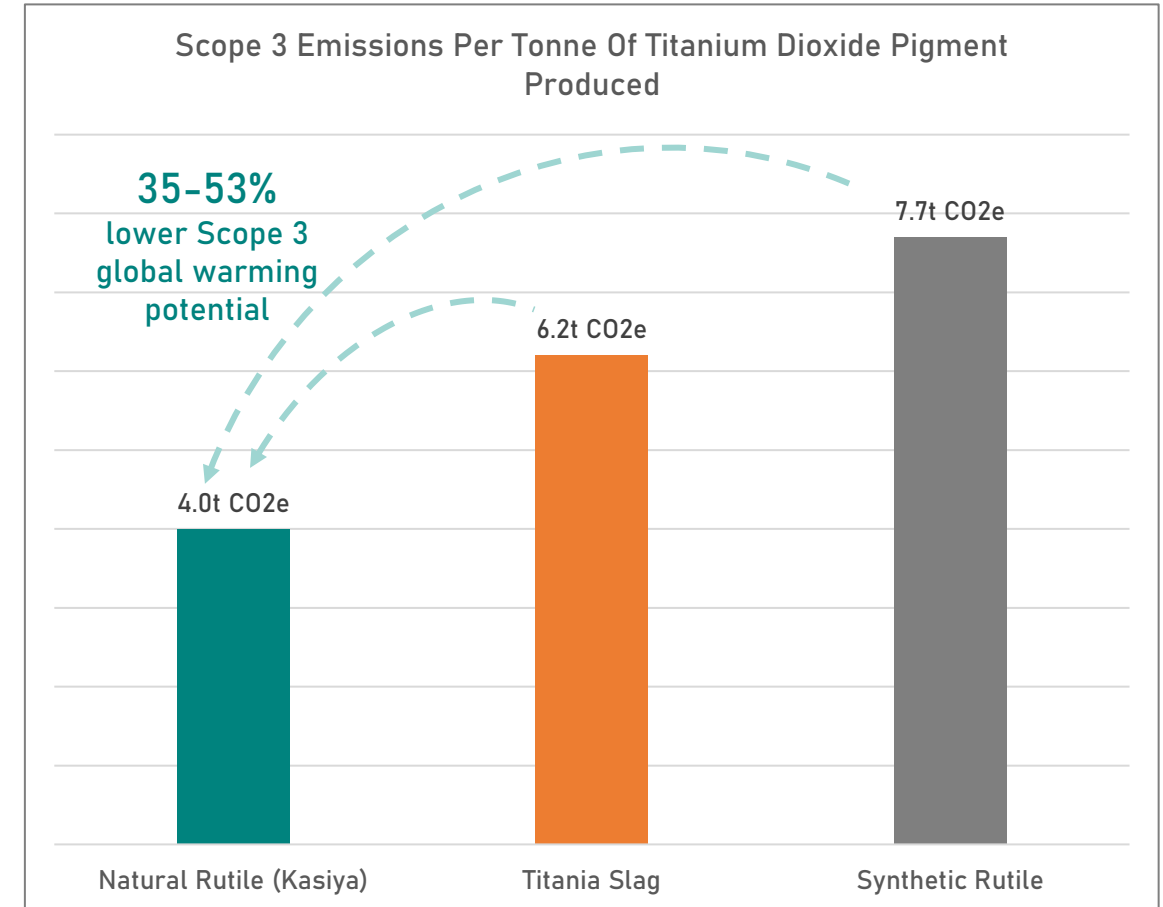
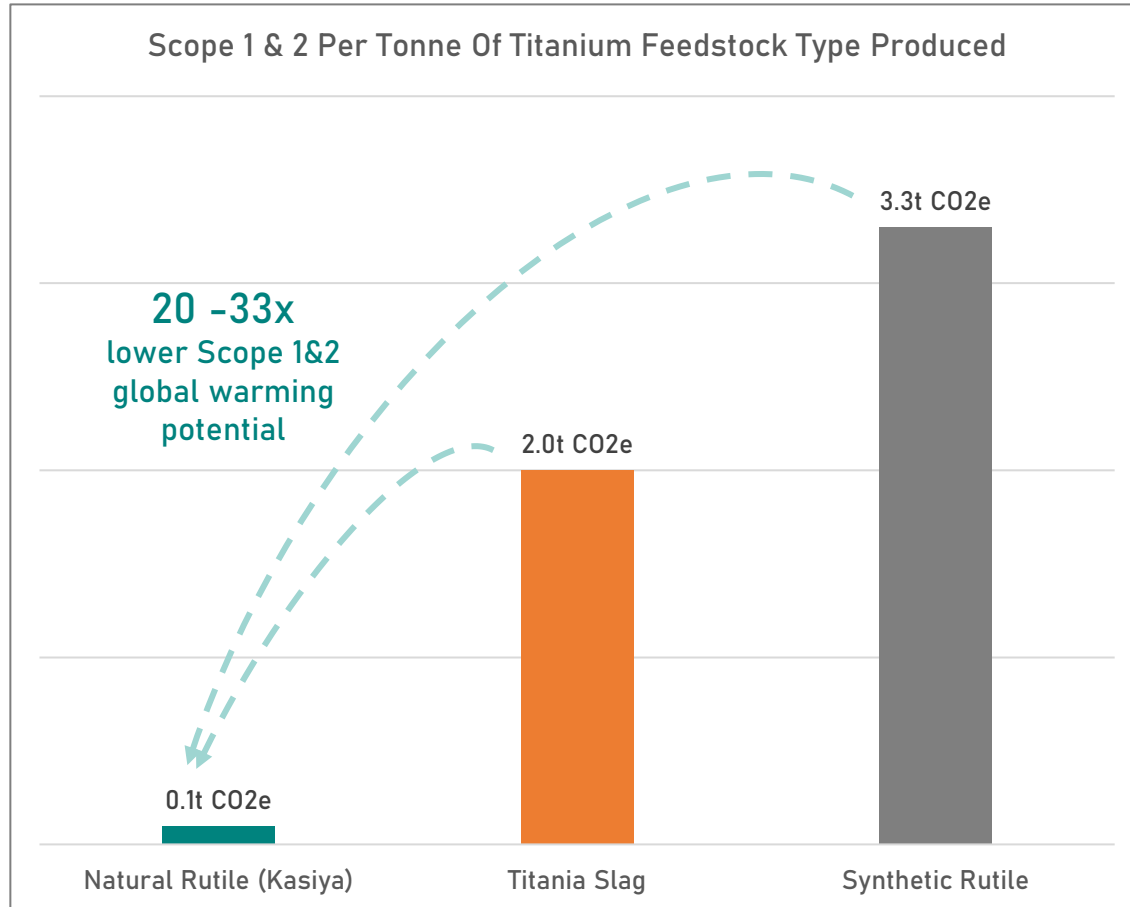
SAVING UP TO 2.8 TONNES CO_2 eq. per tonne

PIGMENT PRODUCTION





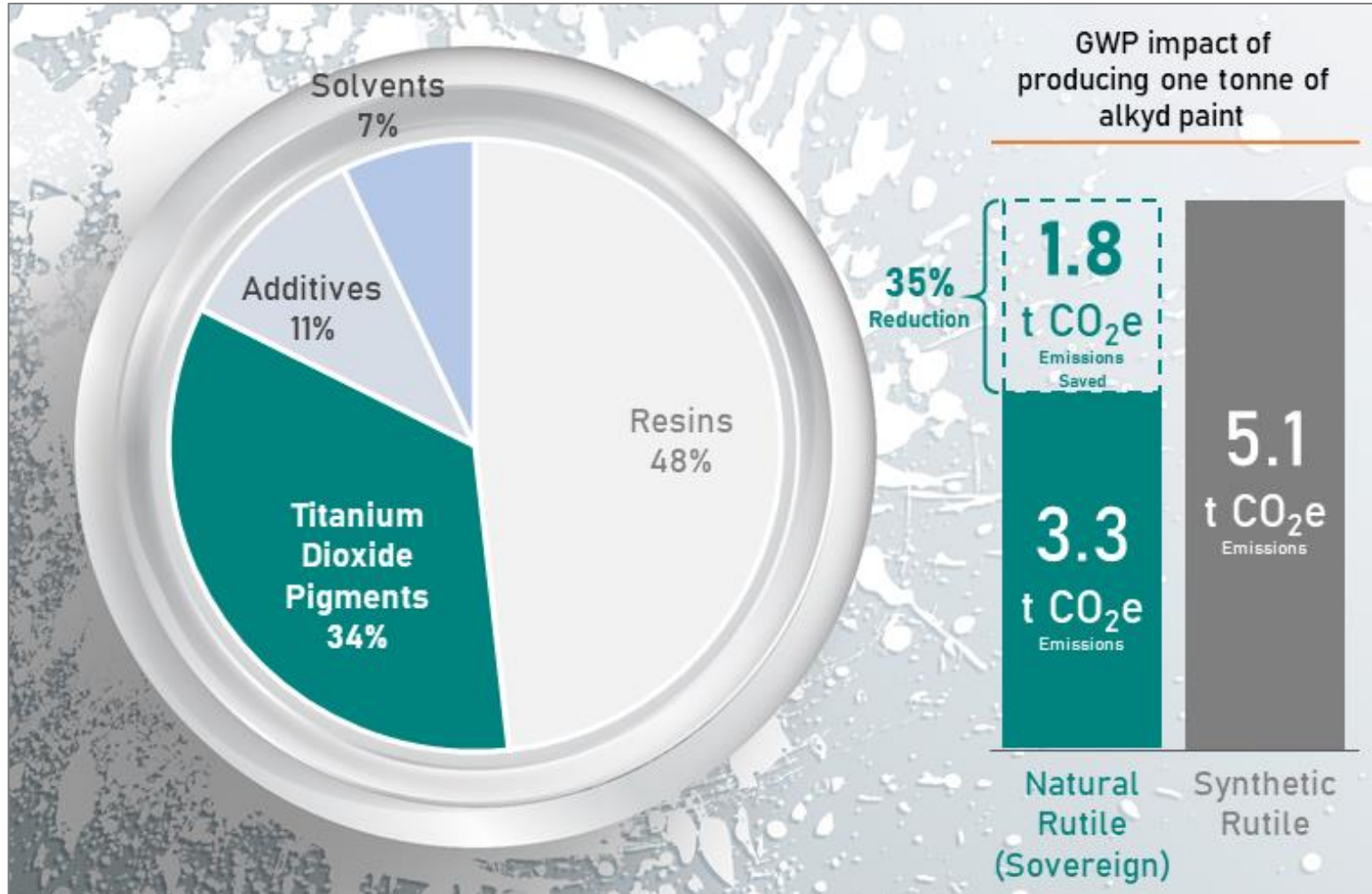
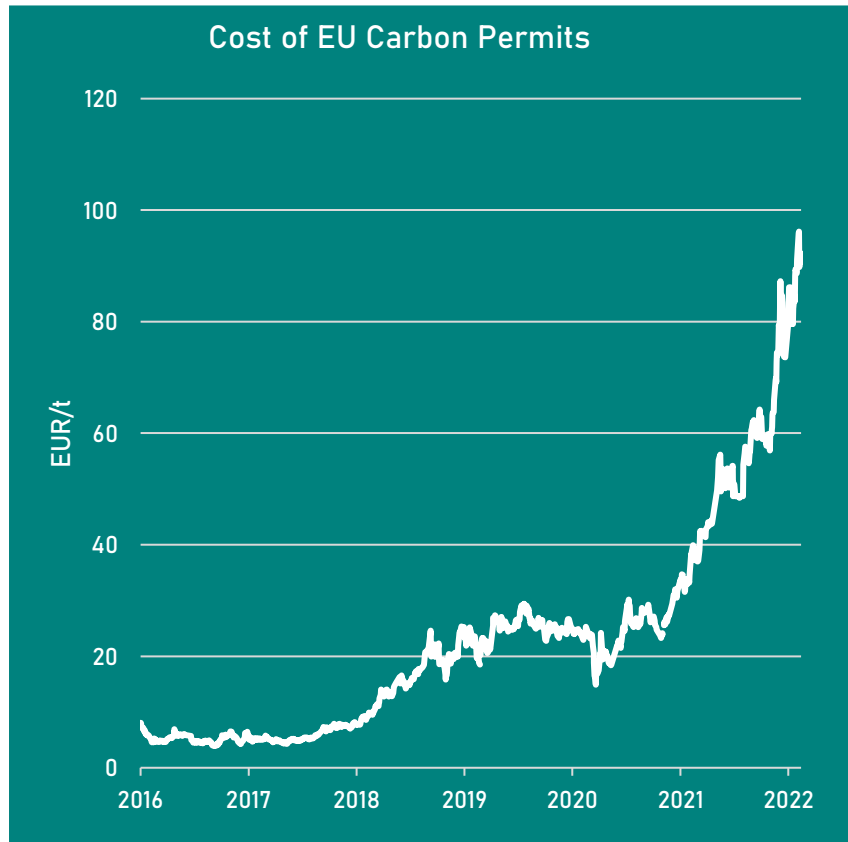
Life Cycle Assessment shows carbon emissions reduction potential



Lower carbon footprint product demand is consumer driven but also has value-in-use for manufacturers



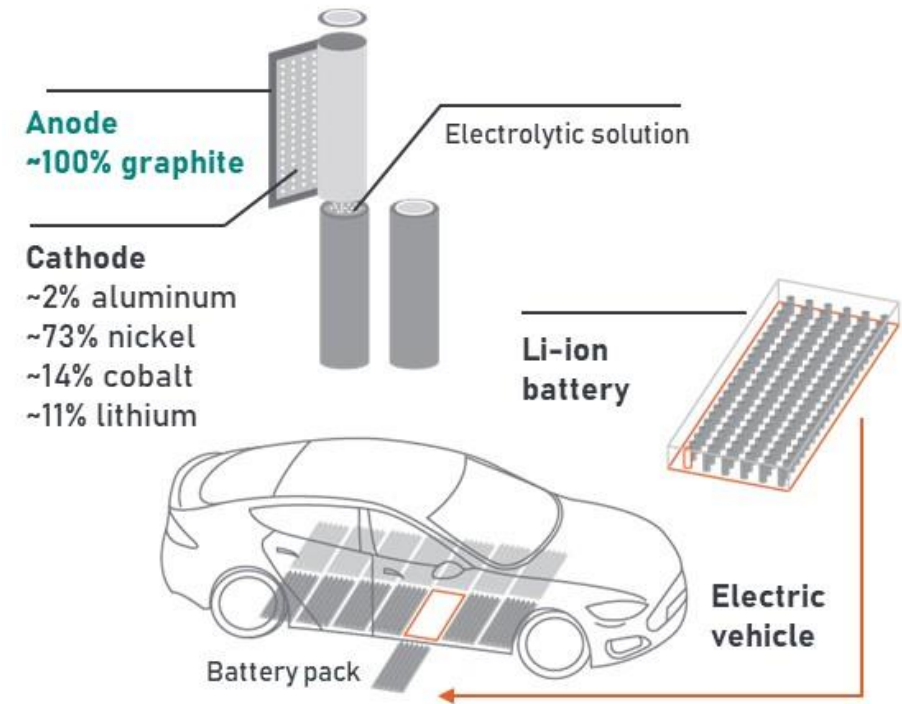
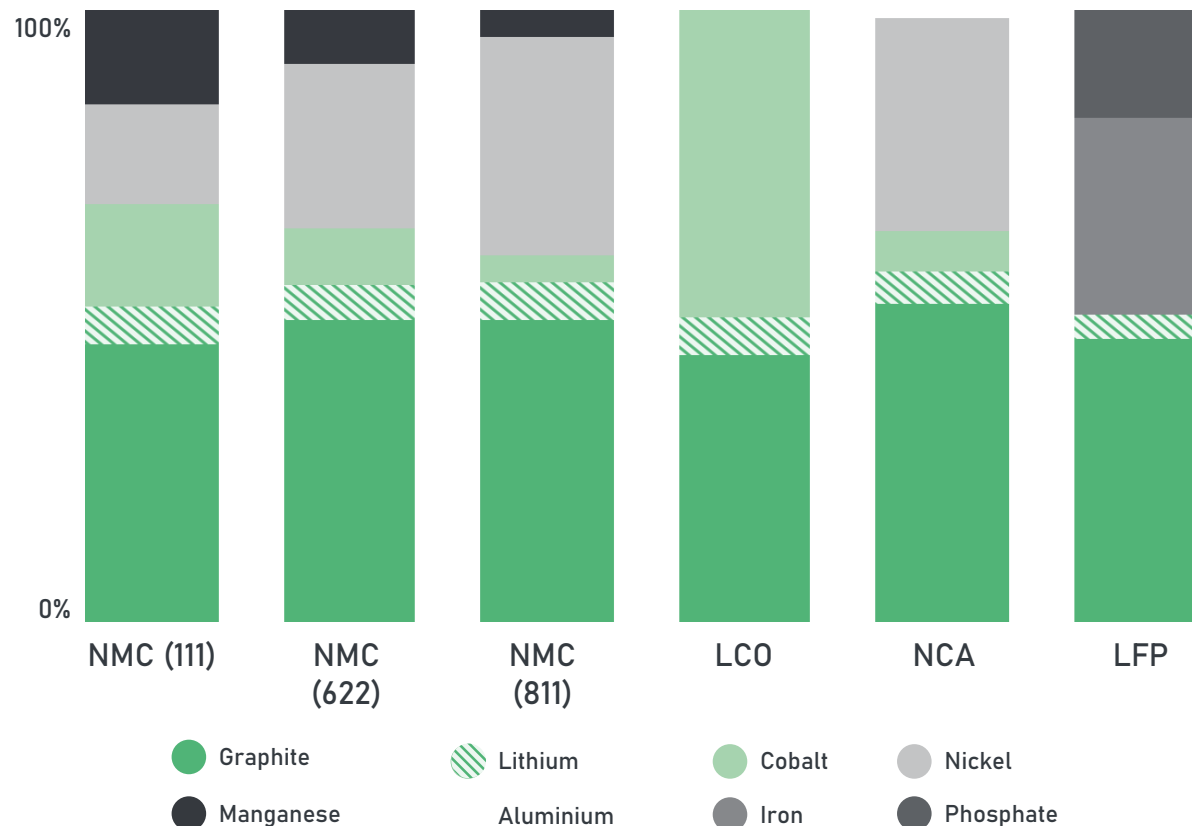
Industrial plants in the EU must pay for carbon emissions under the EU's Emissions Trading System





Not one, but two raw materials critical for a sustainable future

Graphite is the major active material in lithium-ion batteries by volume



Our battery should be called Nickel-Graphite

Elon Musk (Tesla Battery Day 2016)

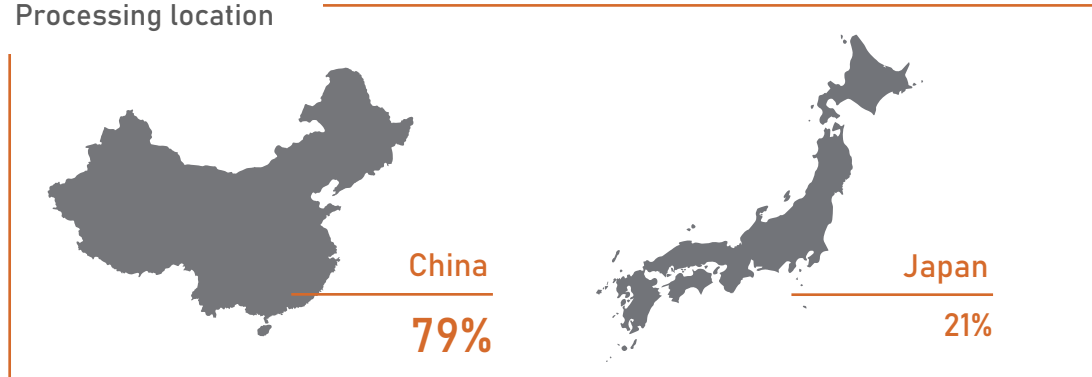


Chinese graphite dominance threatens electric vehicle ambitions

Synthetic Graphite

Produced from needle coke via graphitization process.

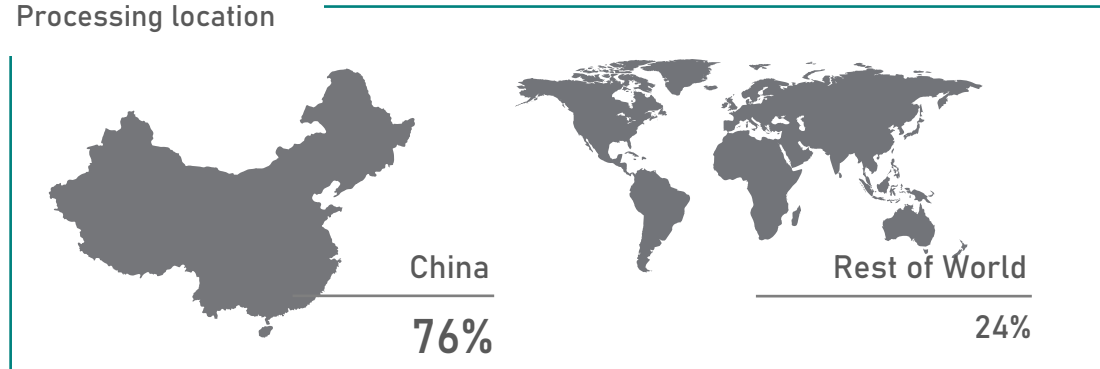
Processing location



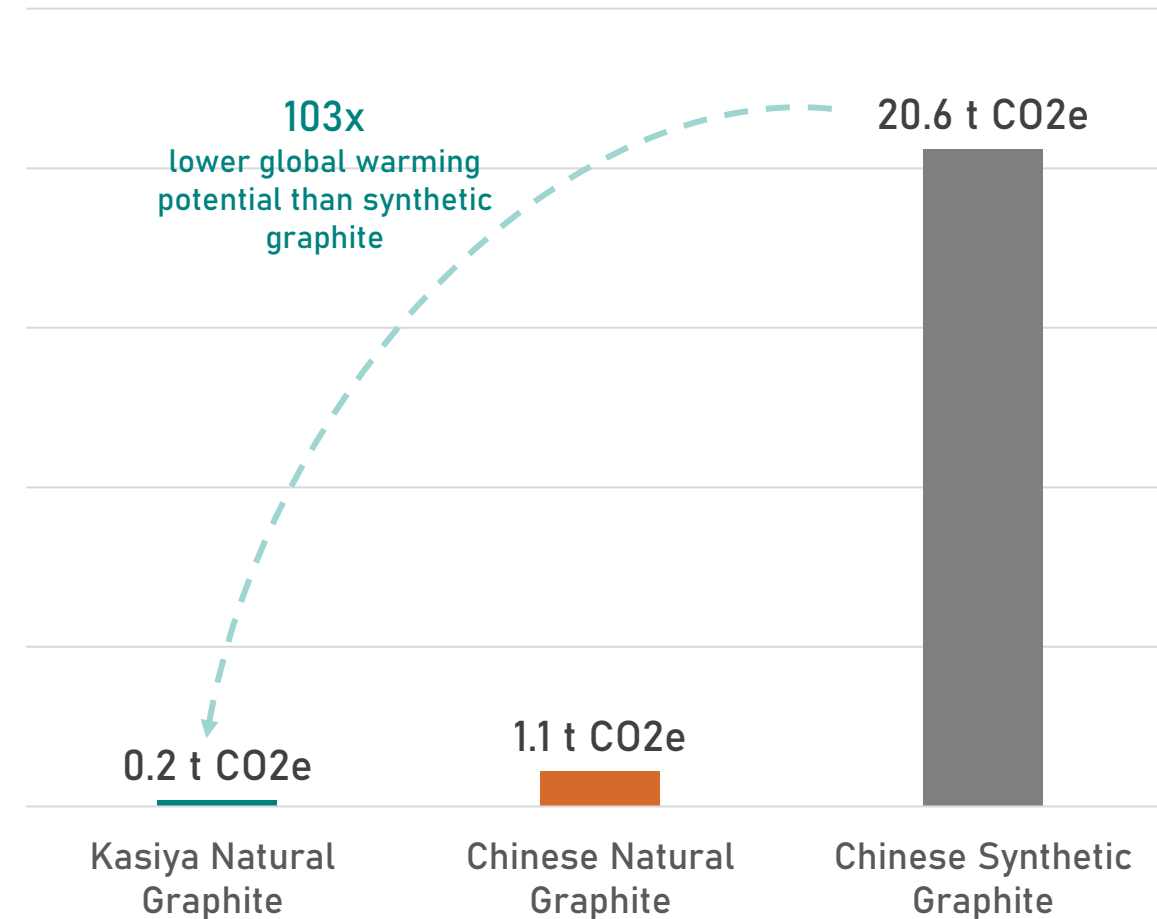
Natural Graphite

Extracted from mining (natural graphitization occurred over time) and purified.

Processing location



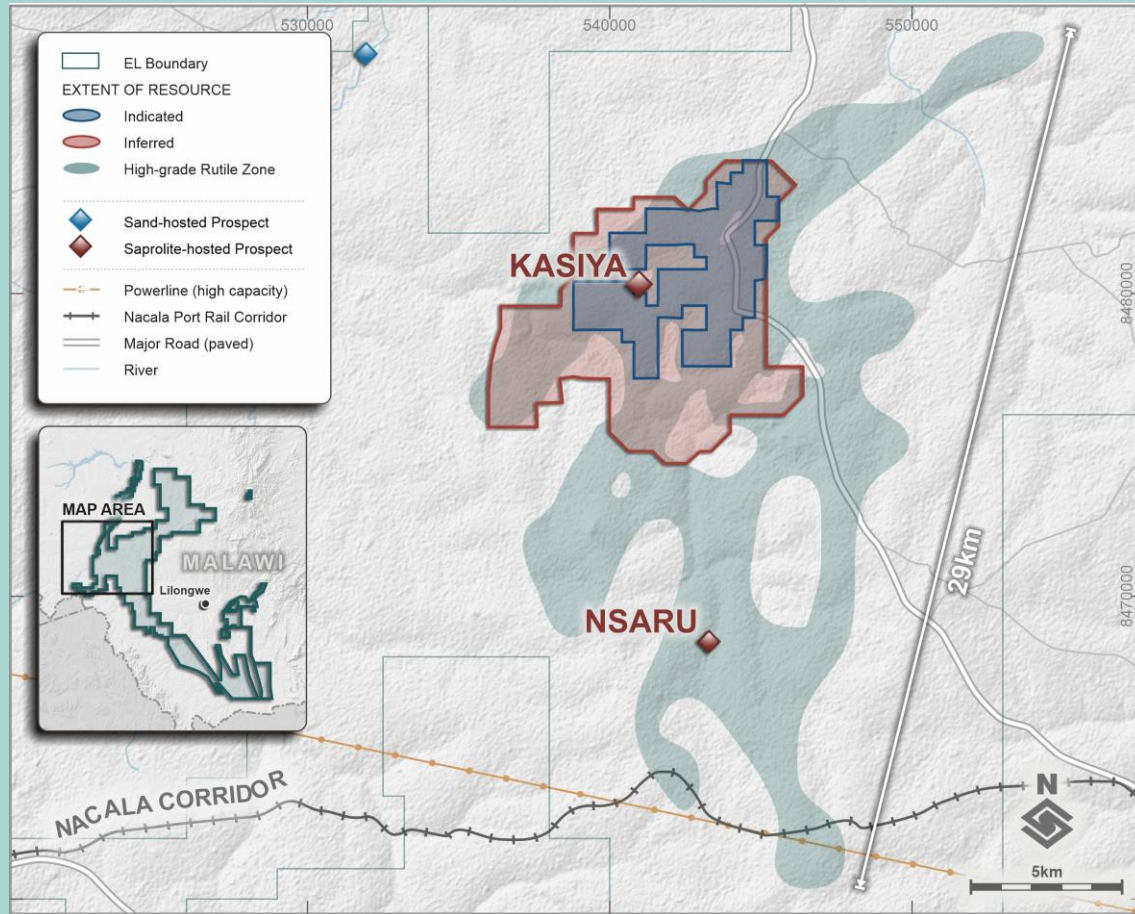
Global Warming Potential of Producing One Tonne of Graphite



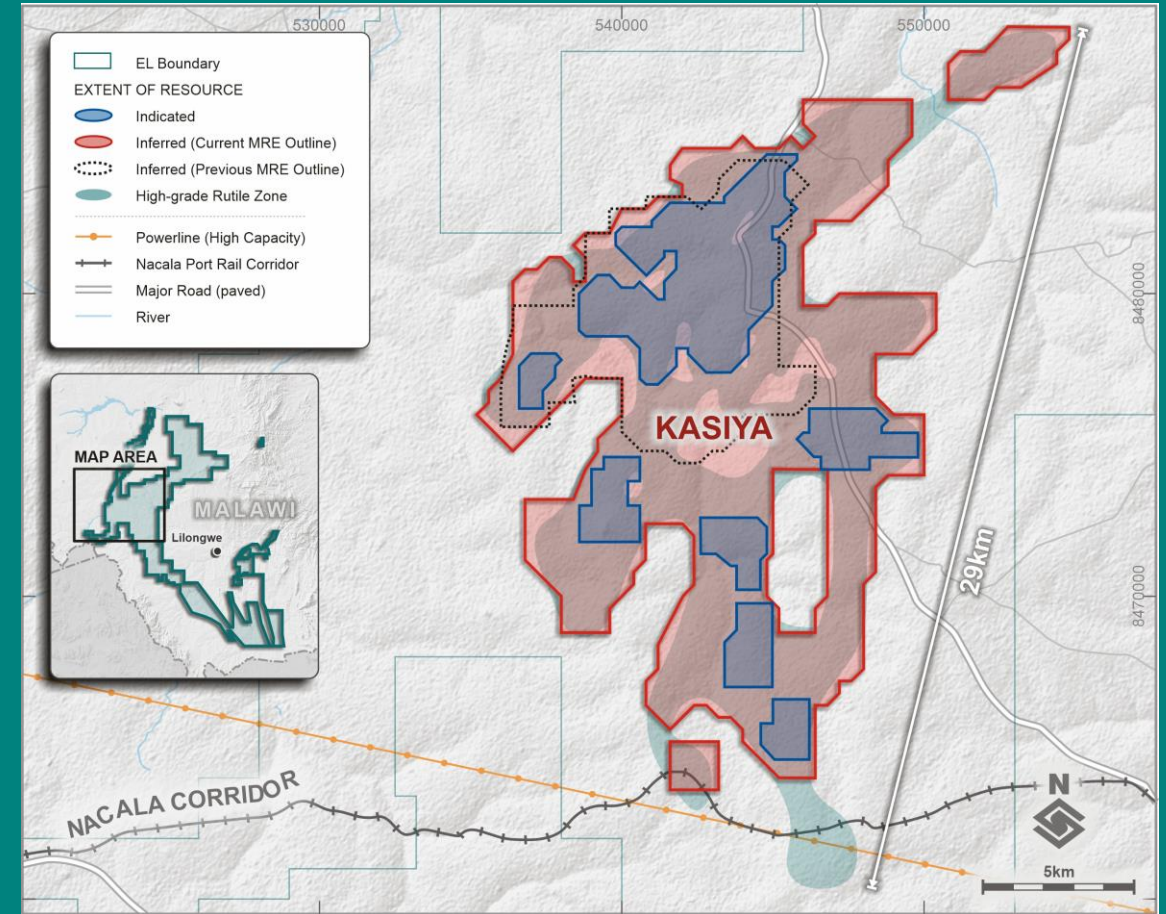
Initial Scoping Study based on only 30% of total-drill defined mineralisation



December 2021



April 2022





Initial Scoping Study results: rutile and by-product graphite

Mine life	25 years
Annual throughput	12,000,000 tonnes
Annual production – rutile	122,000 tonnes
Annual production – graphite	80,000 tonnes

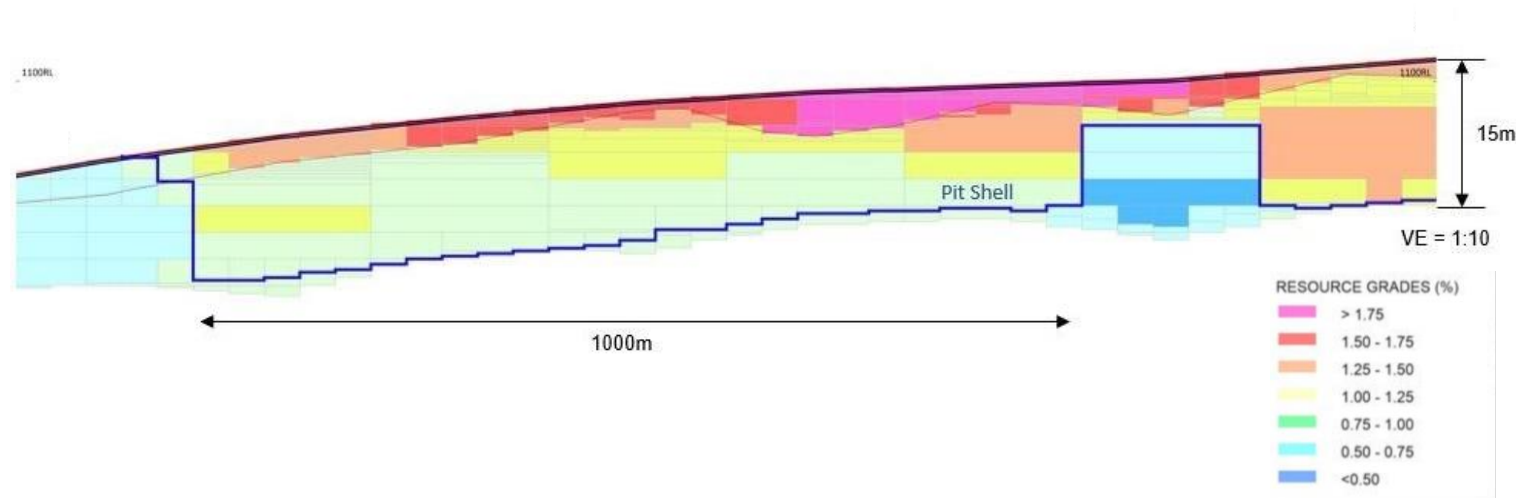
NPV ₈ (real post-tax)	IRR (after-tax)	Payback
US\$861m	36%	2.5 years
Total Revenue (LoM)	Revenue (annual average LoM)	EBITDA (annual average LoM)
\$6,266m	US\$251m	US\$161m
Total Capital Cost	Operating Costs (FOB per tonne product)	NPV ₈ /CAPEX
US\$332m	US\$352/t	2.6

- Multi-decade mine concept to provide stable, sustainable supply of environmentally-friendlier rutile and graphite
- Very significant contribution to the economy of Malawi and creating over 480 direct jobs and well over 3,000 indirect jobs
- Highly strategic in a rutile market experiencing extreme supply deficit

Simple geology

High grade rutile mineralisation from surface

- Rutile mineralisation lies in laterally extensive flat “blanket” style bodies
- All mineralisation occurs in a single, large, and coherent deposit with much of the high-grade material occurring within the top ~5 metres from surface
- Several high-grade mineralised corridors strike NE – SW providing significant exploration targets at depth



Simple mining

Hydro-mining a proven mining technique



- Long history of successful hydro-mining of heavy mineral deposits across southern Africa
- Numerous African heavy minerals operations use hybrid hydro / dozer mining methods that provide significant operational flexibility

Homogenous, soft, friable saprolite

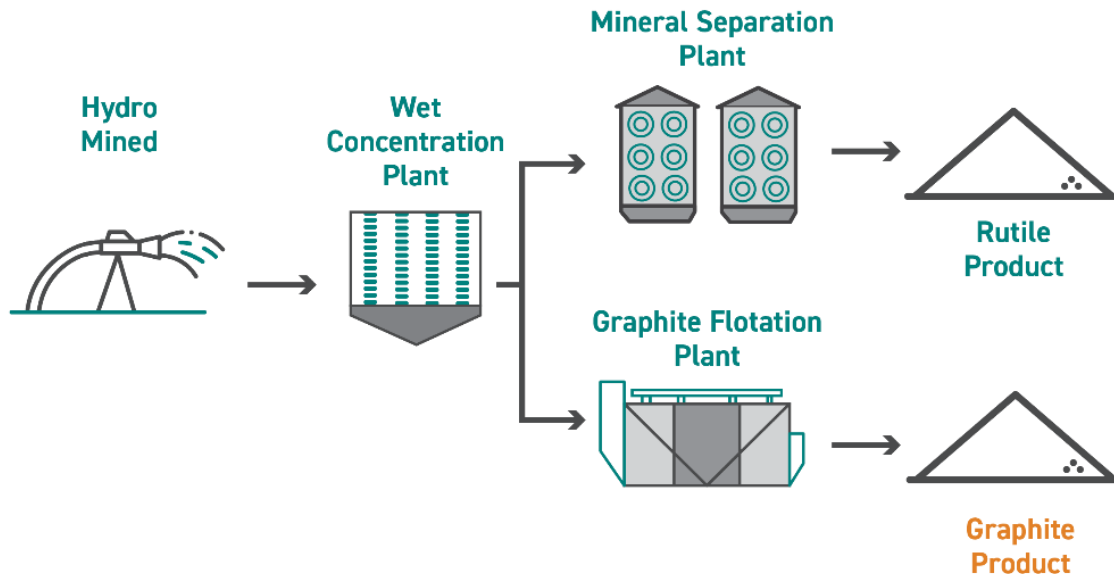




Simple processing

Premium-grade rutile produced via conventional flowsheet

- Robust metallurgy now confirmed from two distinct bulk test work programs
- Significant interest from Tier 1 rutile off-takers
 - First rutile offtake MoU signed with US-based welding product distributor Hascor International
- Conventional graphite flotation plant at marginal incremental cost



94%-100%

Stand-out Rutile Metallurgical Recoveries

95.0%-97.2% TiO₂

Premium Specification Rutile

96% TGC

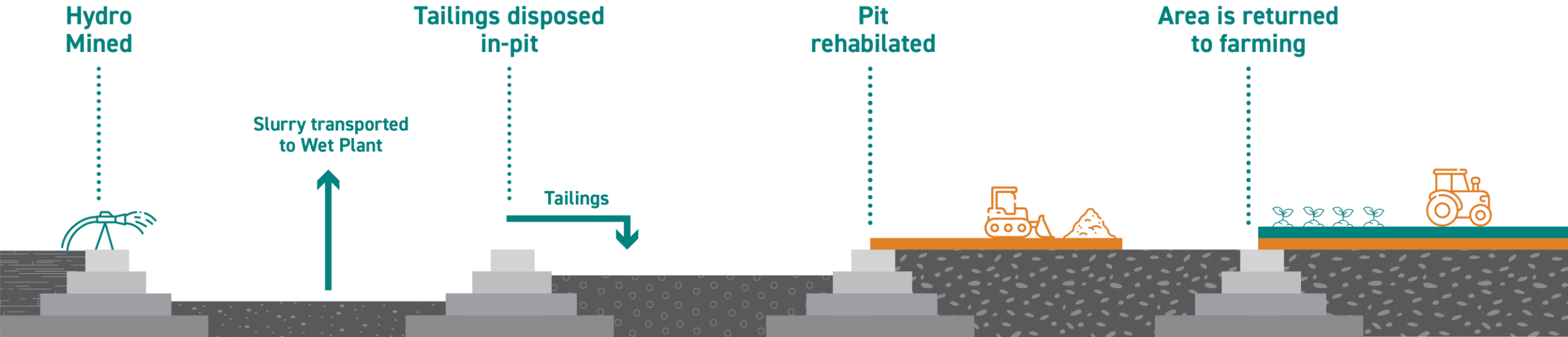
Coarse Flake High-grade Graphite

Final rutile product from test work



Simple progressive rehabilitation

Socially responsible and sustainable



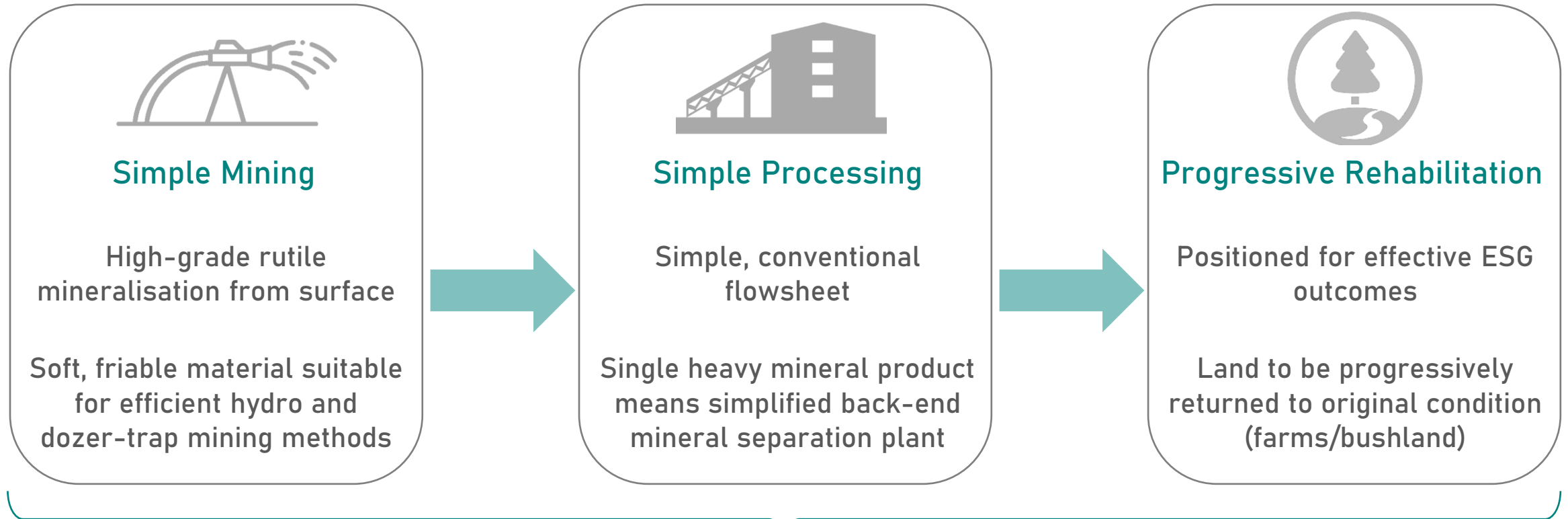
- In-pit disposal minimises disturbance
- Progressive returning of land to communities
- Efficient closure campaign at end of mine life

Example of progressive rehabilitation of a mineral sands mine





Low-risk and low carbon-footprint operation



Malawi

Stable, Transparent Jurisdiction



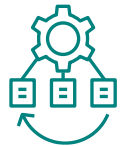
Member country of the Commonwealth



Attracting significant investment

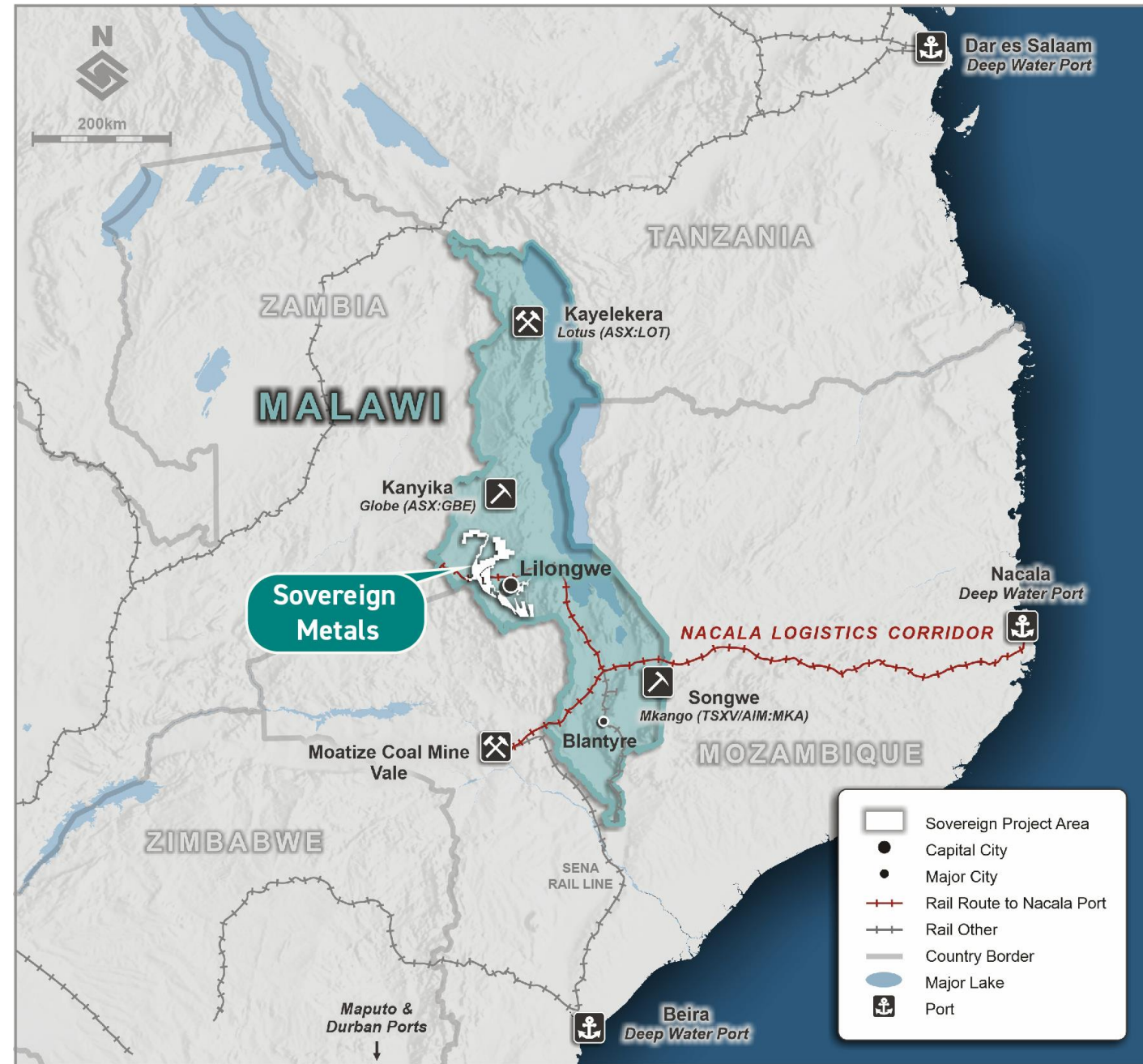


Demonstrable aspiration for mining

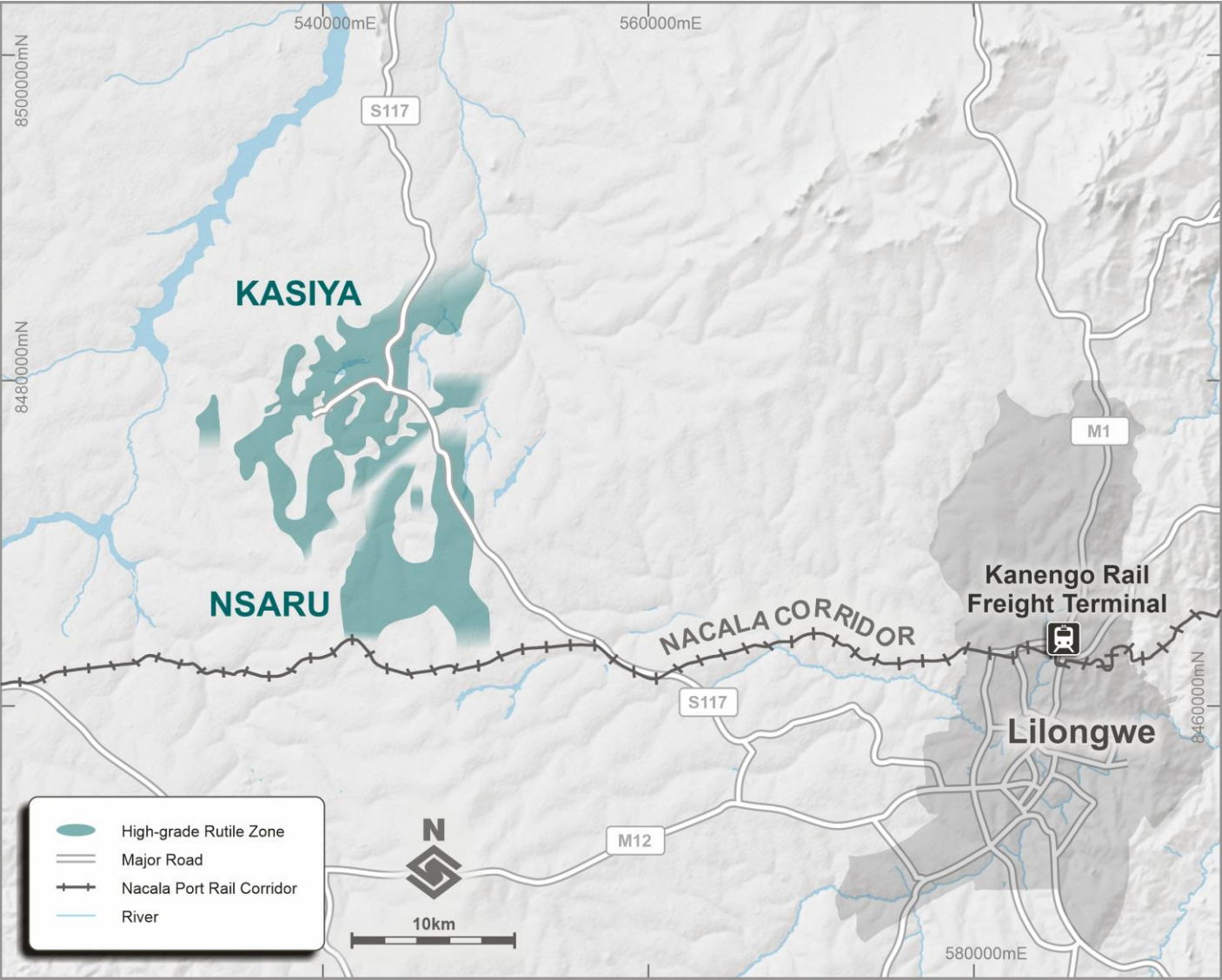


Excellent operating infrastructure

**The
Economist**
2020 Country of the Year



Operation-ready infrastructure



Upcoming news flow



Updated Scoping Study based on new resource – *H1 2022*



Commencement of Pre-Feasibility Study and ESIA baseline surveys



Ongoing rutile offtake discussions



Kasiya graphite characterisation work program

CAPITAL STRUCTURE

441,089,255

Shares on Issue¹

10,875,000

Unlisted Options¹
(\$0.14 to \$0.18)

12,440,000

Performance Rights
(milestone vesting
conditions)

A\$322m / £175m

Un-Diluted Market
Capitalisation
@A\$0.73 / 39.80p^{1,2}

~A\$6.5m

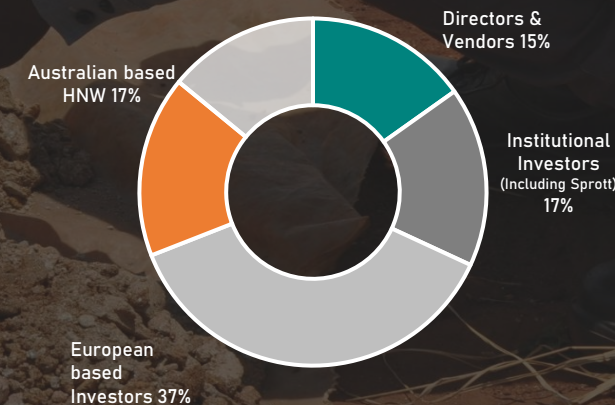
Cash^{1,3}

1. Shares on issue, unlisted options and cash adjusted for firm commitments received for 50c option exercise (8.7m shares for net A\$4.3m)

2. Closing price and equities as at 7 April 2022

3. Cash at Bank as of 11 April 2022 including A\$4.3m for 50c option exercise

REGISTER BREAK-DOWN



Estimate as at April 2022

Unlocking the next major source of natural rutile and natural graphite

- Largest natural rutile deposit in the world
- One of the largest graphite resources in the world
- Two commodities with low carbon footprint compared to current alternatives
- Critical minerals for the US and EU based on supply risk and economic importance
- Strong relationships with government and other stakeholders to support the development of Kasiya





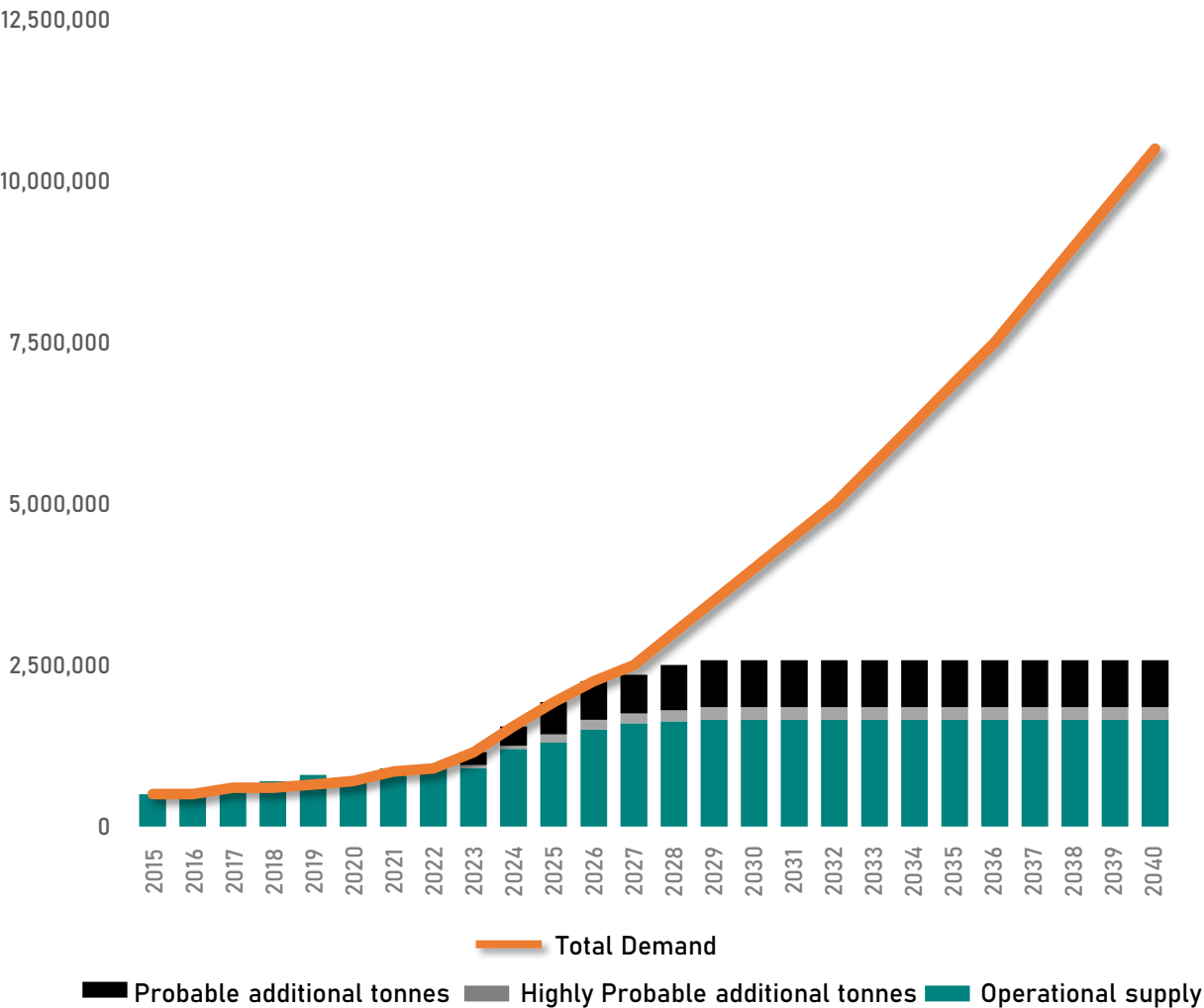
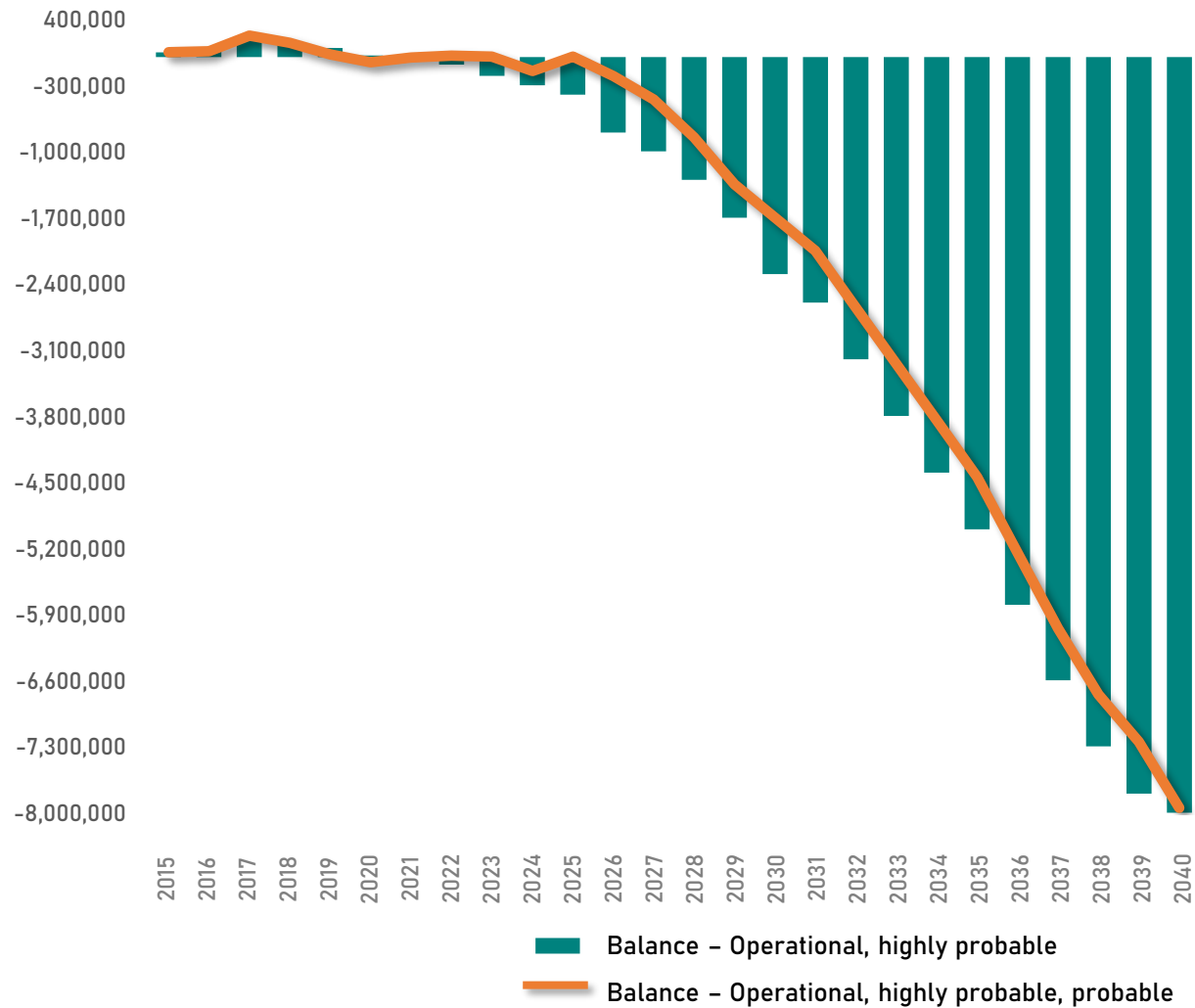
SOVEREIGN
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Thank you

Appendix I: Graphite forecasted to be in extreme deficit



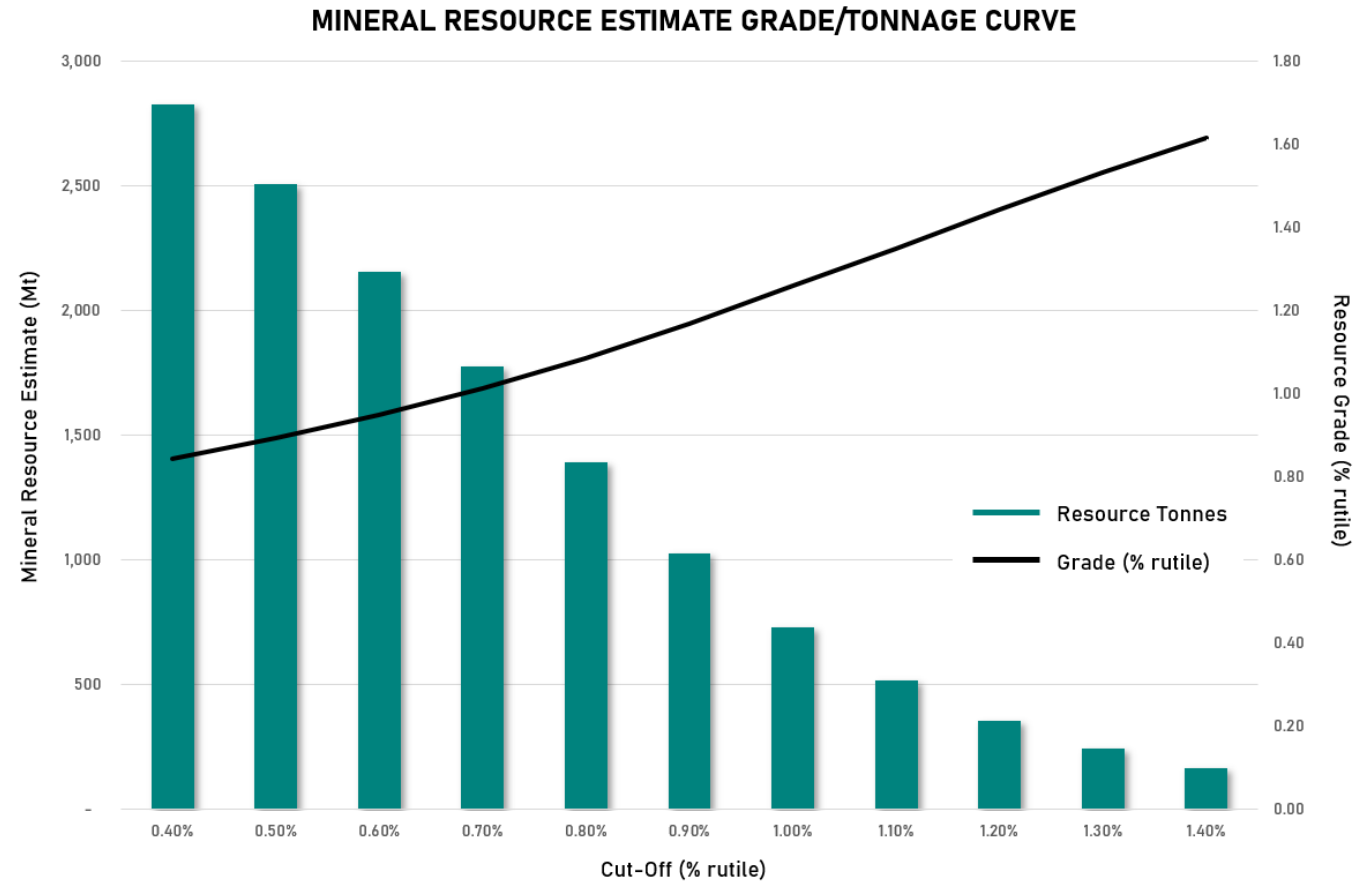
FORECASTED GRAPHITE MARKET BALANCE



Appendix II: Kasiya Total Indicated + Inferred Mineral Resource Estimate at various rutile cut-offs



Kasiya Total Indicated + Inferred Mineral Resource Estimate at various rutile cut-offs					
Cut-off (rutile)	Resource (Mt)	Rutile Grade (%)	Contained Rutile (Mt)	Graphite Grade (%)	Contained Graphite (Mt)
0.40%	2,825	0.84%	23.8	1.26%	35.5
0.50%	2,503	0.89%	22.4	1.30%	32.5
0.60%	2,155	0.95%	20.4	1.33%	28.6
0.70%	1,775	1.01%	18.0	1.32%	23.4
0.80%	1,391	1.09%	15.1	1.24%	17.3
0.90%	1,024	1.17%	12.0	1.09%	11.2
1.00%	727	1.26%	9.2	0.92%	6.7
1.10%	516	1.35%	7.0	0.76%	3.9
1.20%	352	1.44%	5.1	0.55%	1.9
1.30%	241	1.53%	3.7	0.46%	1.1
1.40%	165	1.62%	2.7	0.43%	0.7

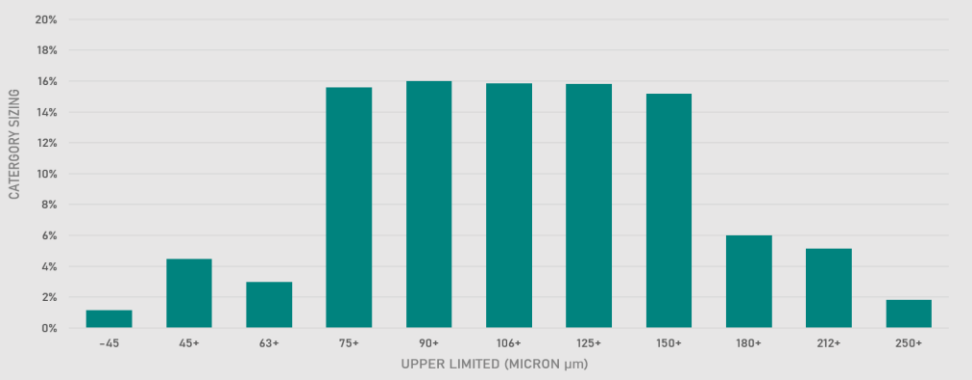




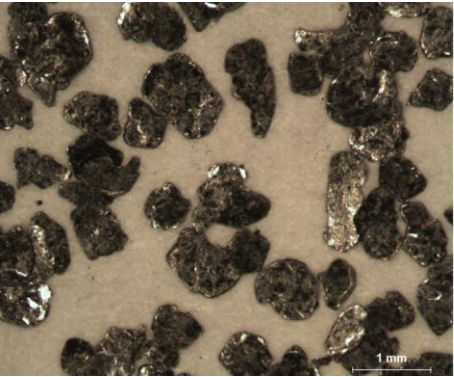
Appendix III: Premium product specifications

Constituent		Kasiya Products		Peer Comparisons	
		100% Recovery Product	94% Recovery Product	Sierra Rutile (Iluka)	Base Resources (Kwale)
TiO ₂	%	95.0	97.2	96.3	96.2
ZrO ₂ +HfO ₂	%	0.20	0.21	0.78	0.72
SiO ₂	%	0.67	0.61	0.62	0.94
Fe ₂ O ₃	%	0.99	0.42	0.38	1.25
Al ₂ O ₃	%	0.45	0.38	0.31	0.23
Cr ₂ O ₃	%	0.13	0.13	0.19	0.17
V ₂ O ₅	%	0.67	0.70	0.58	0.52
Nb ₂ O ₅	%	0.37	0.39	0.15	-
P ₂ O ₅	%	0.01	0.001	0.01	0.00
MnO	%	0.02	0.01	0.01	0.03
MgO	%	0.003	b/d	0.01	0.10
CaO	%	0.003	0.001	0.01	0.04
S	%	0.01	0.01	<0.01	-
U+Th	ppm	31	23	26	53

KASIYA RUTILE PARTICLE SIZE DISTRIBUTION



Particle Size		Carbon	Weight Distribution	Flake Category
Tyler Mesh	Micron (μ)	(%)	(% w/w)	
+32	+500	96.0	5.4	Super Jumbo
-32 +48	-500 +300	96.6	25.1	Jumbo
-48 +80	-300 +180	96.7	30.9	Large
-80 +100	-180 +150	96.8	10.9	Medium
-100 +150	-150 +106	96.11	14.4	Small/Medium
-150 +200	-106 +75	95.8	7.5	Small
-200	-75	93.8	5.8	Amorphous
Total		96.3	100	



Appendix IV: Commodity price deck



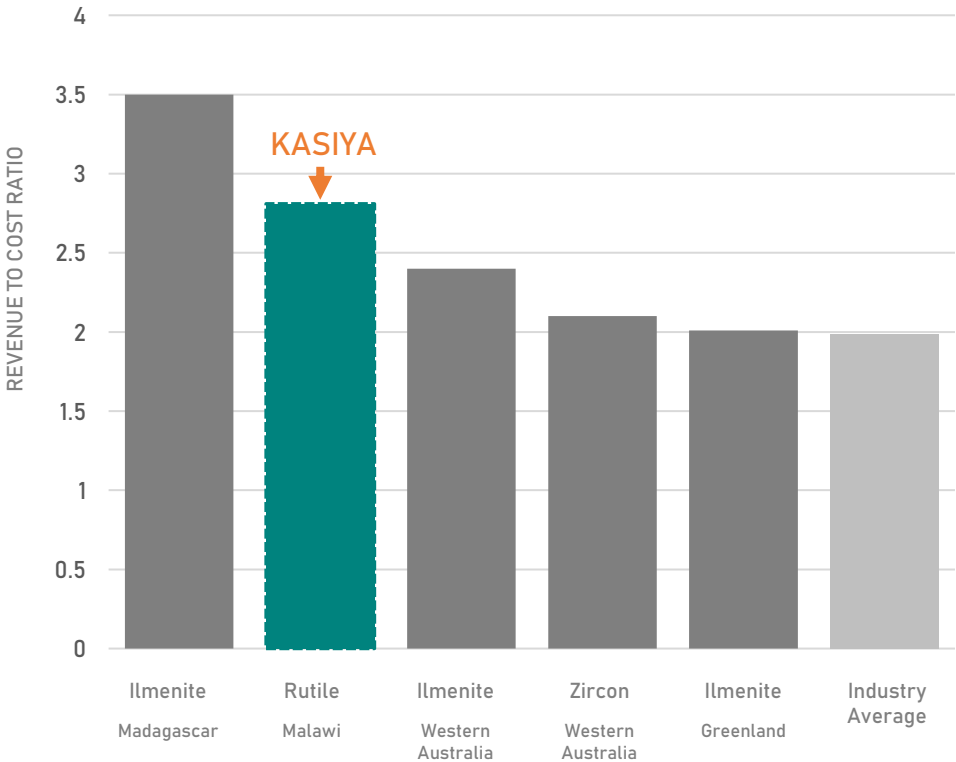
Rutile Price Assumption												
	Sales Mix	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	Long- term
TZMI Forecast Price –Base (real)		\$1,336	\$1,334	\$1,314	\$1,336	\$1,328	\$1,311	\$1,287	\$1,255	\$1,221	\$1,180	\$1,180
Bulk sales (pigment inducement price)	60%	\$1,336	\$1,334	\$1,314	\$1,336	\$1,328	\$1,311	\$1,287	\$1,255	\$1,221	\$1,180	\$1,180
Bagged sales (25% premium)	40%	\$1,670	\$1,667	\$1,642	\$1,670	\$1,660	\$1,639	\$1,609	\$1,569	\$1,526	\$1,475	\$1,475
Weighted Price		\$1,470	\$1,467	\$1,445	\$1,470	\$1,461	\$1,442	\$1,416	\$1,381	\$1,343	\$1,298	1,298
LoM Average												\$1,346

Graphite Price Assumption				
Flake Category	Micron (µm)	Distribution (% w/w)	Forecast Price US\$/t	Contribution US\$/t
Super Jumbo	+500	5.4	\$2,100	\$114
Jumbo	-500 +300	25.1	\$1,600	\$402
Large	-300 +180	30.9	\$1,085	\$335
Medium	-180 +150	10.9	\$775	\$86
Medium/Small	-150 +106	14.4	\$605	\$87
Small	-106 +75	7.5	\$515	\$38
Amorphous	-75	5.8	\$425	\$24
Total		100	-	\$1,085

Appendix V: One of the world's best undeveloped mineral sands projects

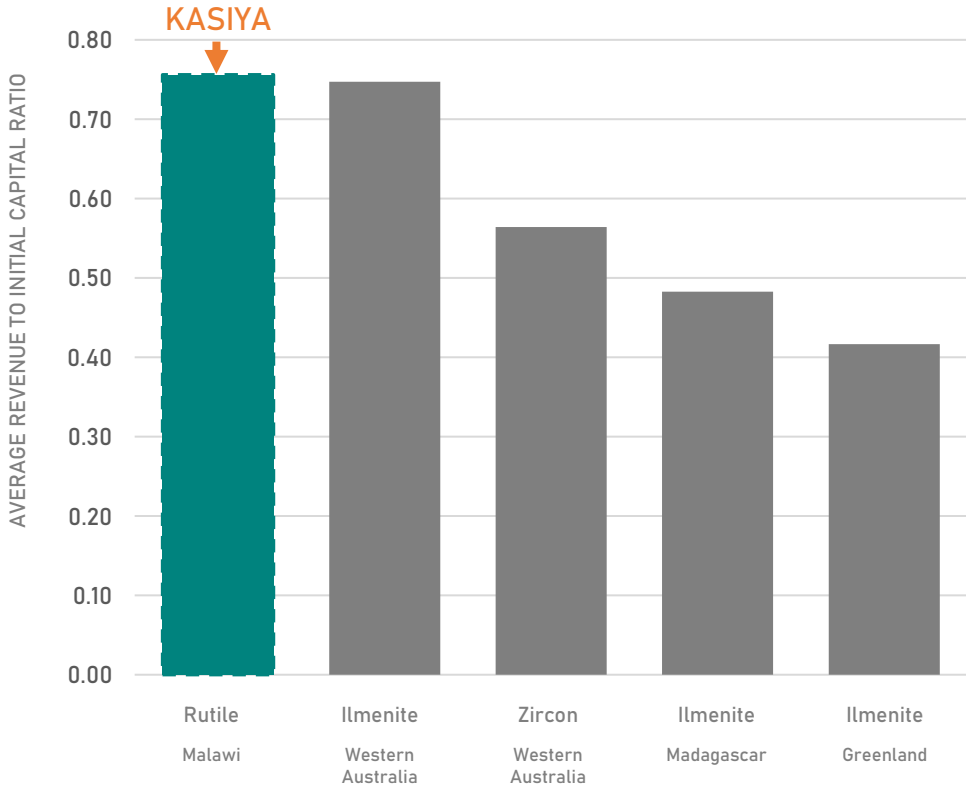


REVENUE TO COST RATIO UNDEVELOPED PROJECTS



*Revenue based on average life of mine & costs = operating cost plus royalties
Industry Average: TZMI 2022 Estimate

UNDEVELOPED MINERAL SANDS PROJECT PIPELINE
ANNUAL AVERAGE REVENUE TO CAPEX



*Average Revenue based on average life of mine revenue
Capital costs: Initial capital costs disclosed in study. Total capital used for phased developments