Niobium
Celebrating Excellence in Engineering

AGM Presentation

Globe Metals & Mining

ASX: GBE

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About Globe

Who we are

Publicly listed company working to produce superalloy materials niobium and tantalum for engineering applications in a range of industries.

Local Exchange

Australian Stock Exchange (ASX: GBE)

Project

Kanyika Project in Malawi

Office Locations

Headquarters in Perth, Western Australia
Operations in Lilongwe, Malawi

Substantial Shareholders

Apollo Metals Investment Co. (52.80%)
Ao-Zhong International Minerals (25.36%)

Key Market Statistics

Market Capitalisation: 17.239M (24-Nov-20)
52 week range: 0.0070 – 0.0390

Source: Yahoo Finance 24 November 2020 (www.au.finance.yahoo.com/quote/gbe.ax)

Board & Management

Alice Wong
Chairperson

- Apollo Nominee
- Hon. Business Administration Accounting; AICPA
- Extensive career in investment banking

Alistair Stephens
Managing Director and CEO

- Over 30 years experience as geologist and mining company executive
- Instrumental in developing Arafura Resources

Alex Ko
Non-Executive Director

- Extensive career in investment banking
- Pioneer in Chinese government and private companies listing on SEHK
- Joint Chair, CEO of SEHK listed Mason Group Holdings Limited

Bo Tan
Non-Executive Director

- MBA and CFA
- Over 15 years experience in finance and investment
- Deep understanding of the Greater China market

William Hayden
Non-Executive Director

- Co-founder and President of Ivanhoe Nickel and Platinum Ltd
- Current director of a number of ASX and TSX listed companies

Senior Management

- Michael Fry – CFO & Company Secretary
- Neville Huxham – In-Country Manager, Director – GBE Malawi Subsidiary
- Dean Lungu – Director – GBE Malawi Subsidiary

Presentation Outline

1. INDUSTRY AND THE PRODUCTS
   - ❖ Niobium and Tantalum – Strategic Appeal
   - ❖ Niobium and Tantalum Pricing
   - ❖ Competitors and New Projects Landscape
2. THE PROJECT
   - ❖ Overview
   - ❖ Project Benefits
3. MALAWI OVERVIEW
4. PATHWAY TO PRODUCTION
5. SUMMARY

Globe
Metals & Mining

Section 1
Industry and Products

Niobium – Celebrating Excellence in Engineering

Strategic Appeal of Niobium

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Commercial Niobium projects are very rare, strategic & valuable

China is the largest global consumer with no commercially viable niobium projects

Niobium is a 'strategic metal' for USA, Russia and Britain

Niobium makes stronger, lighter & corrosion resistant steel products

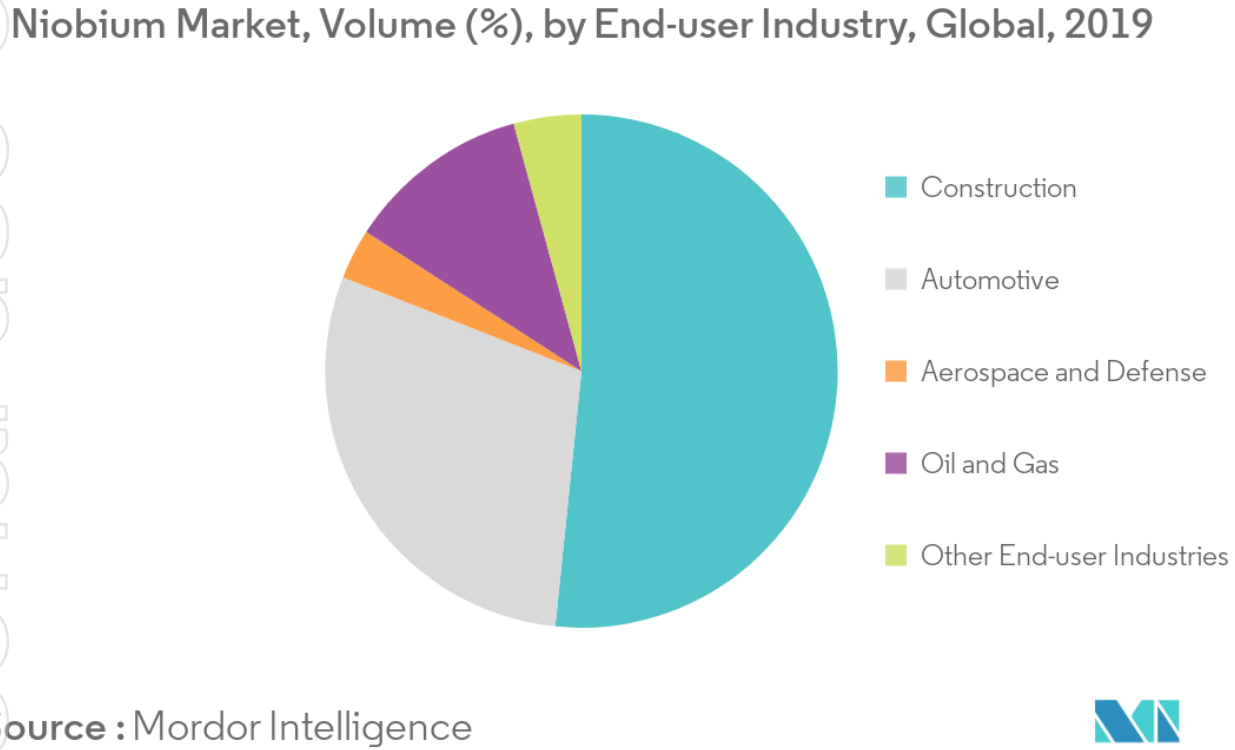
Critical in high strength low alloy (HSLA) steels for construction and automotive industries, in superalloys for aerospace and military equipment, and in various 'green' technologies such as wind turbines and rechargeable batteries

KEY ADVANTAGES

Exposure to fast growing electric vehicle market	Titanium niobium anodes expected to become standard for the next generation Lithium-Ion batteries – refer Toshiba announcement, *October 2017*
Lack of any direct substitutes	No cost effective substitutes for Niobium which match its strength characteristics
Low intensity of use	Emerging countries, especially China & India, underpin long term demand
Only 3 major niobium producers worldwide	Covers >95% of global supply

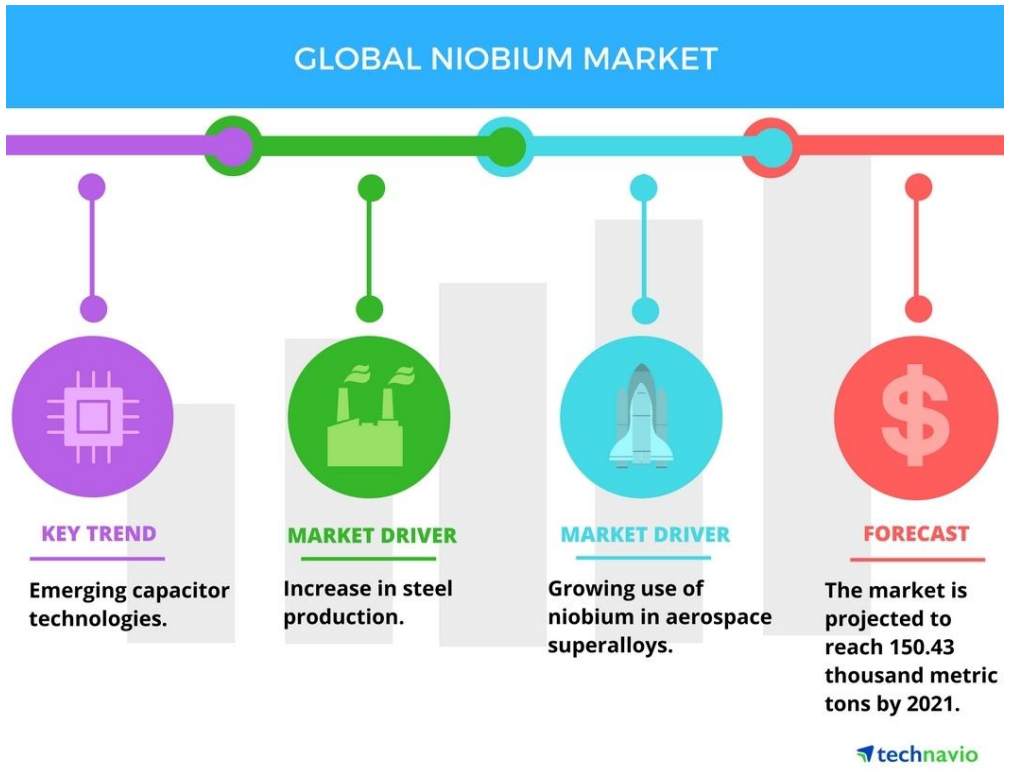
Niobium: Conventional Use - by Industry

Current



Source: Mordor Intelligence (www.mordorintelligence.com/industry-reports/niobium-market)

Future Trends



Source: businesswire (www.businesswire.com/news/home/20171116005924)

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Niobium: Conventional Use - Applications


High-Rise Construction


Automobile


Super & Master Alloys

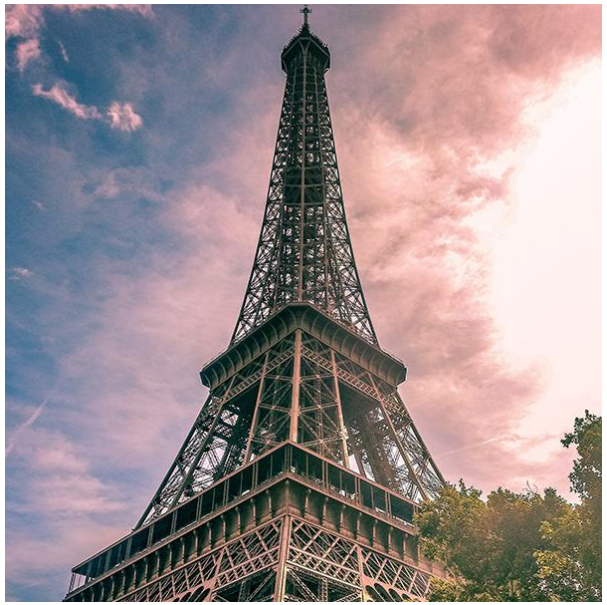

Oil and Gas Pipeline


Military & Aerospace

Conventional Use - Example Applications

The Millau Viaduct in southern France was constructed using HSLA Steel containing 0.025% niobium; reducing the weight of steel and concrete by 60%

Source: www.aris.empr.gov.bc.ca



Construction of the Eiffel Tower in Paris used 7,300t of wrought iron. Today it could be built using only 2,000t of HSLA steel

Source: www.tanb.org

Most of the world's 3.5m kms of high pressure gas and oil pipelines contain niobium to make them safer, lighter and able to transport large volumes of hydrocarbons at higher pressures.

Source: www.wprldscience.org

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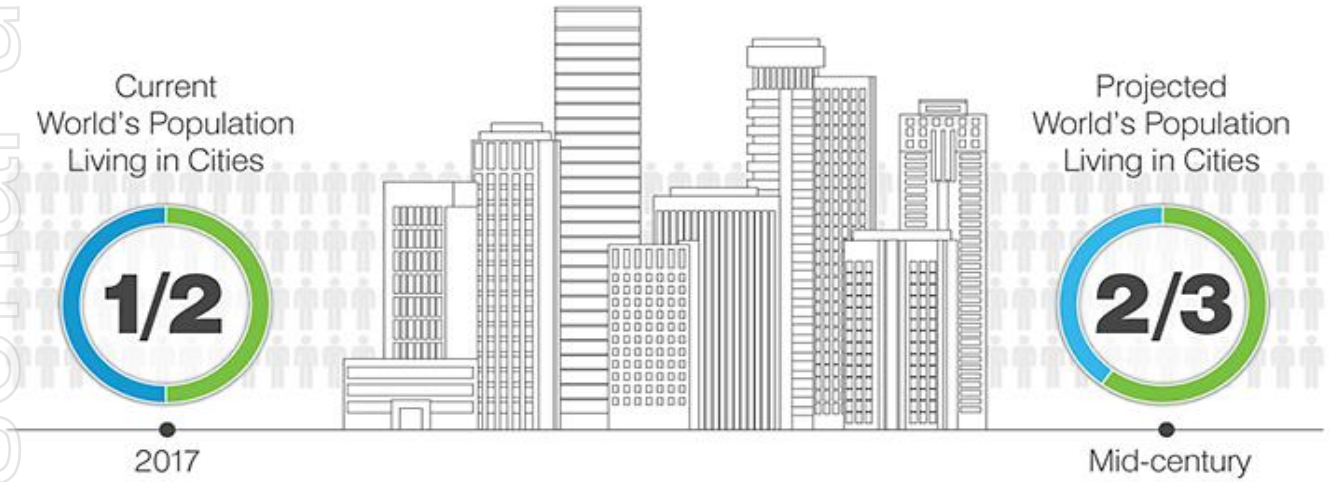
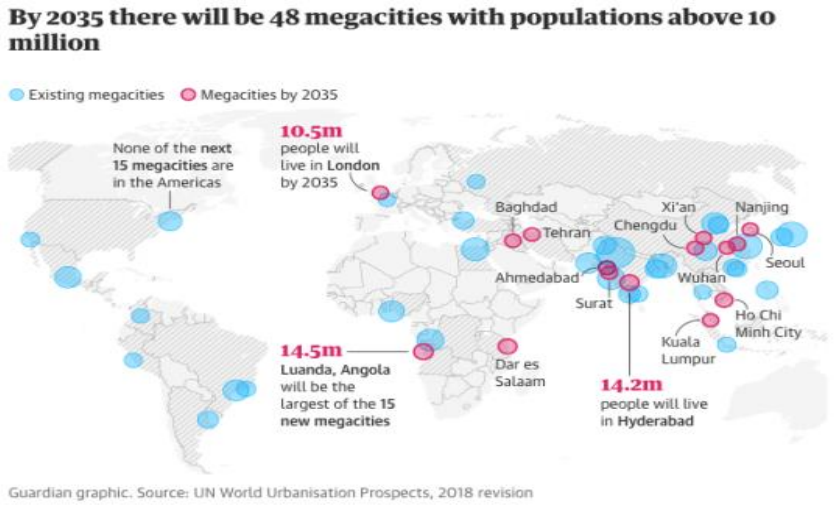
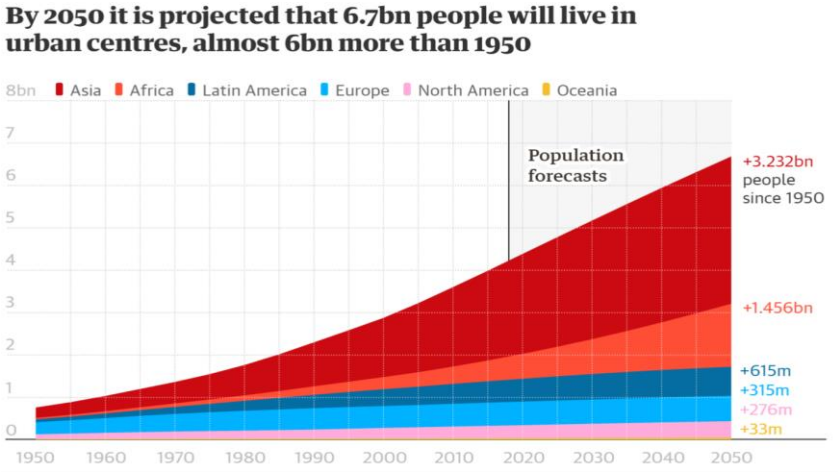
Conventional Use – Structural Steel

Use of niobium for structural steel is forecast to continue to grow due to increasing rate of urbanisation and the expected growth in the number of cities, with HSLA steels integral to high-rise construction People will need somewhere to live.







Source of Images: UN Worldwide Urbanisation Prospects (www.theguardian.com/cities)

Conventional Use – Structural Steel

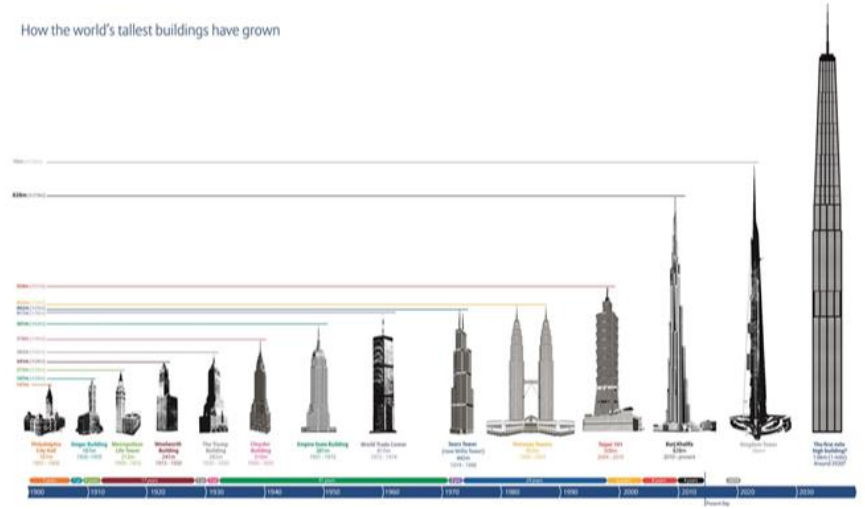
Cities are not only increasing in number they are getting larger and taller.

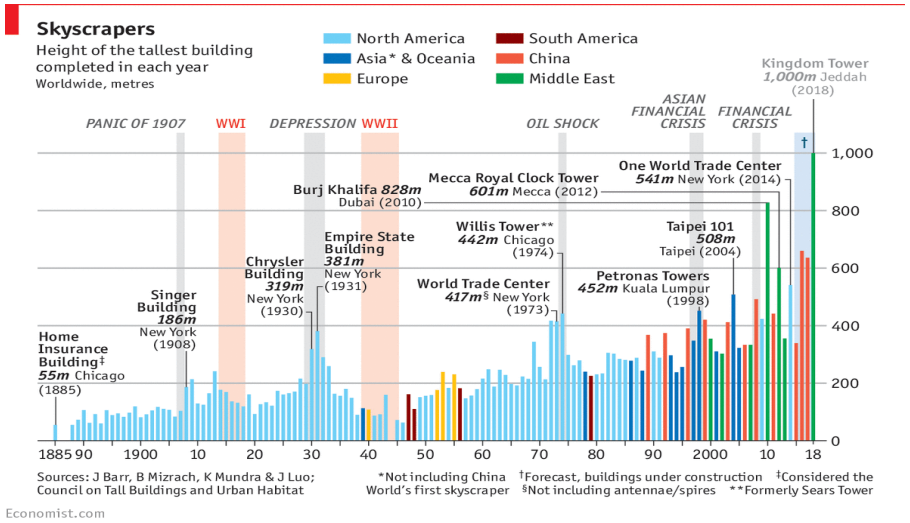
2017 was a record year for skyscraper construction with 144 built. Over half were built in China.

The Burj Khalifa is the tallest building in the world today boasting more than 160 stories and standing over 828 metres.

It is estimated that there will be 30 cities the size of New York city built between 2020 and 2050.

And by 2100, Lagos (Nigeria) is predicted to be the world's largest city with a population of between 85 and 100 million people.





Source of Images: Top: www.theconstructionindex.co.uk; Bottom: www.economist.com/graphic-detail/2015/04/24/constructive-one-upmanship

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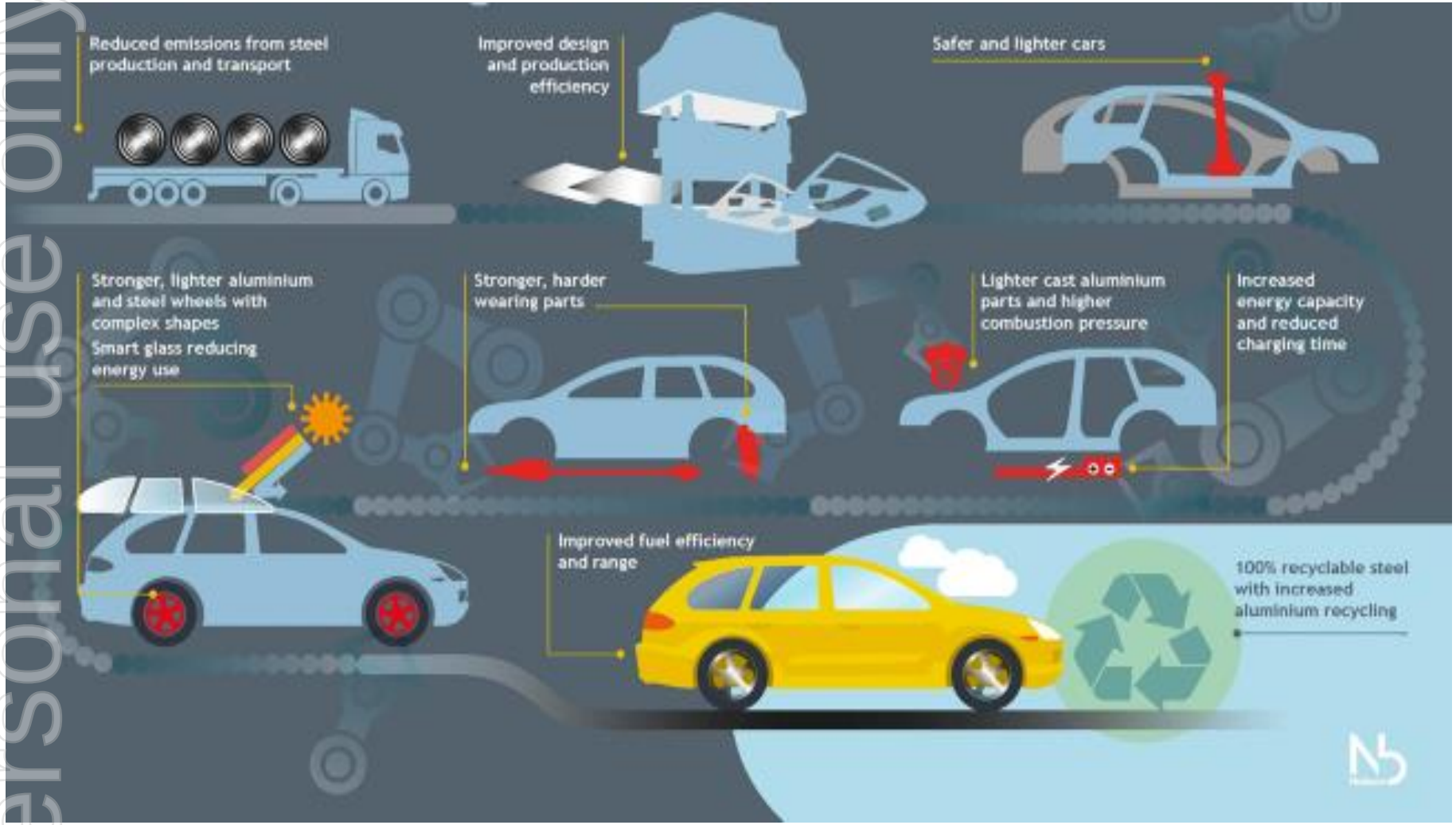
Conventional Use – Automotive



The use of niobium to create stronger and lighter vehicles has and continues to change the face of the automobile industry.

$9 of Niobium added to a mid-sized automobile reduces its weight by 100kg, increasing fuel efficiency by 5%.

(***Source: World Steel Association***)

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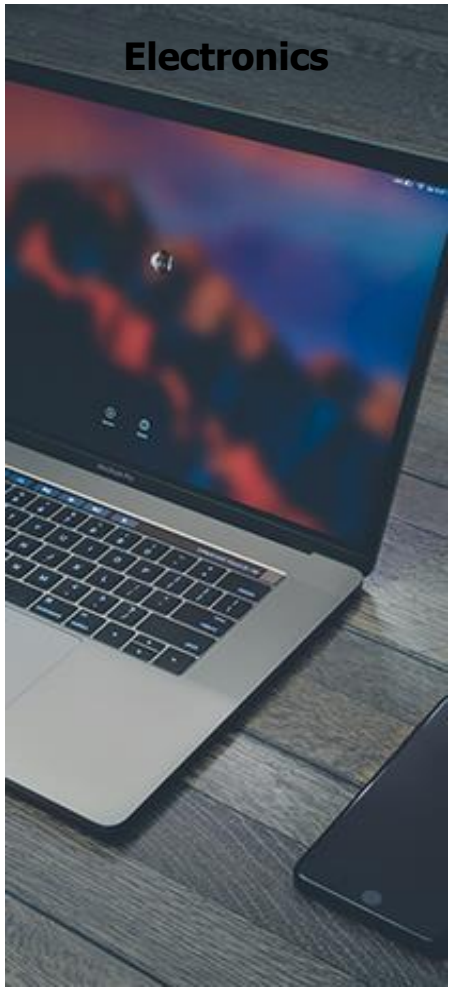
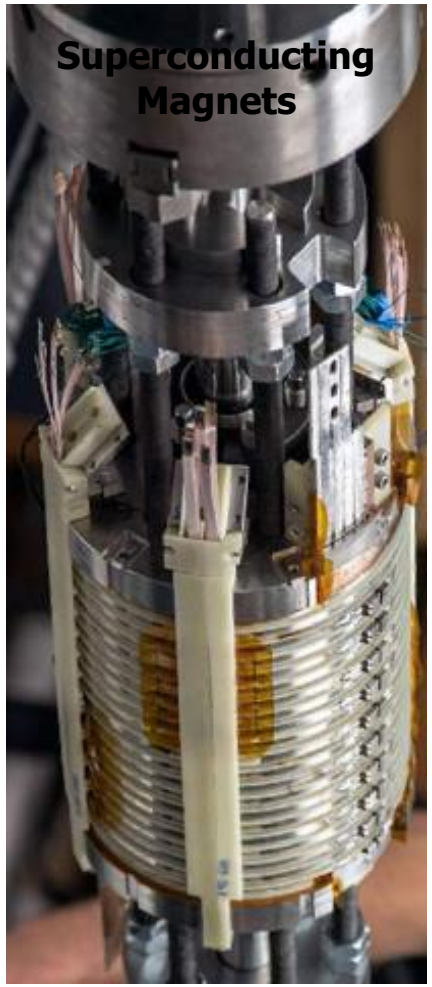
Emerging Uses for Niobium





Emerging Use – Electric Vehicle Batteries

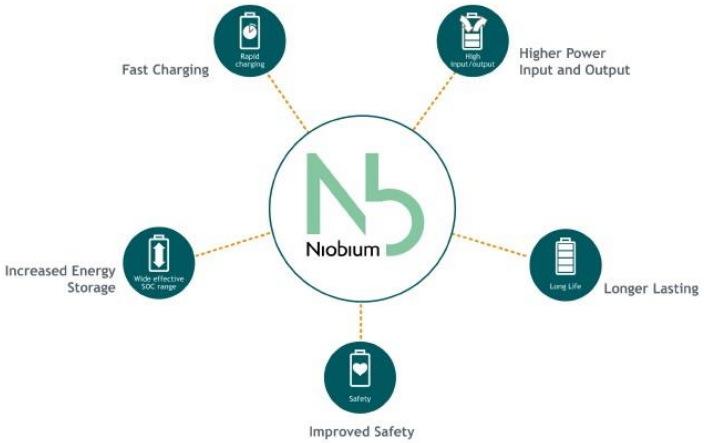
Globe Metals & Mining

Niobium addresses almost all of the major barriers to electric vehicle adoption.

Why is Niobium important for LIB development?

Niobium addresses almost all of the major barriers to EV adoption

Barriers to EV adoption		Niobum's Role
RANGE ANXIETY		
Consumers worry that an EV will not travel as far as an ICE vehicle and that performance will vary		**Niobium** helps increase the energy density of batteries, giving more power and increased range, and improves performance at low temperatures
CHARGING TIME		
Charging times can vary significantly depending upon the car and charging station but can take several hours		**Niobium** materials can increase the rate with which batteries charge and discharge
PERFORMANCE/LONGEVITY		
Batteries have a relatively short operating life as materials degrade during charge/recharge cycle		**Niobium** increases the stability of the battery so it can withstand more charging cycles
COSTS		
Even with subsidies, BEVs are more expensive than equivalent ICE vehicles	$	**Niobium** is readily available and cost effective compared to other battery materials
CHOICE		
There are few BEVs on the market		This is changing rapidly



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BUSINESS

Is niobium superbater coming?

Brazilian CBMM invested US $ 7 million in a pilot plant in partnership with Japanese conglomerate Toshiba to develop electric car batteries

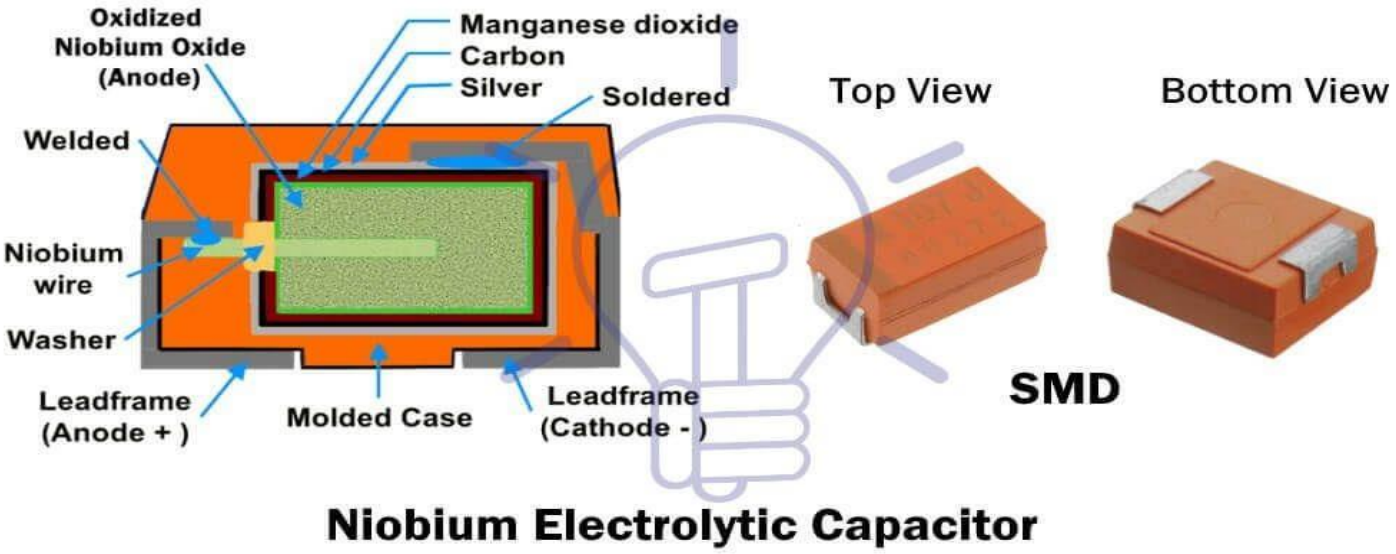
By Lucas Amorim

Electric car: innovation allows charging in 6 minutes and autonomy of 350 kilometers (Ivan Ribeiro / Folhapress)

Source: www.deq.ufv.br/arquivos_internos/eventos/NbinLiBFinalnb.tech.pdf

Emerging Use – Superconducting Magnets

Niobium's unique combination of physical and chemical elements makes it a material of choice in a myriad of challenging high technology electronic applications



Source: www.apogeeweb.net

Source: www.apogeeweb.net

Applications of Niobium

Niobium's unique combination of physical and chemical elements makes it a material of choice in a myriad of challenging high technology applications such as electronics, optics and superalloys. It demonstrates superconducting properties at very low temperatures, which make it suitable for use in particle accelerator construction. Niobium carbide improves operating efficiency of hard metal cutting tools by increasing their stability.

Niobium not only imparts anti-reflective properties to optical surfaces, but also optimizes their scratch resistance. This quality makes it useful in applications such as optical lenses, monitors, and touchscreens, to name a few. Single crystals grown from lithium niobate are used as the base material for radio frequency filters or SAW filters, which facilitate wireless data transfer and mobile communication without disruption.

Source: www.azom.com/article.aspx?ArticleID=13931

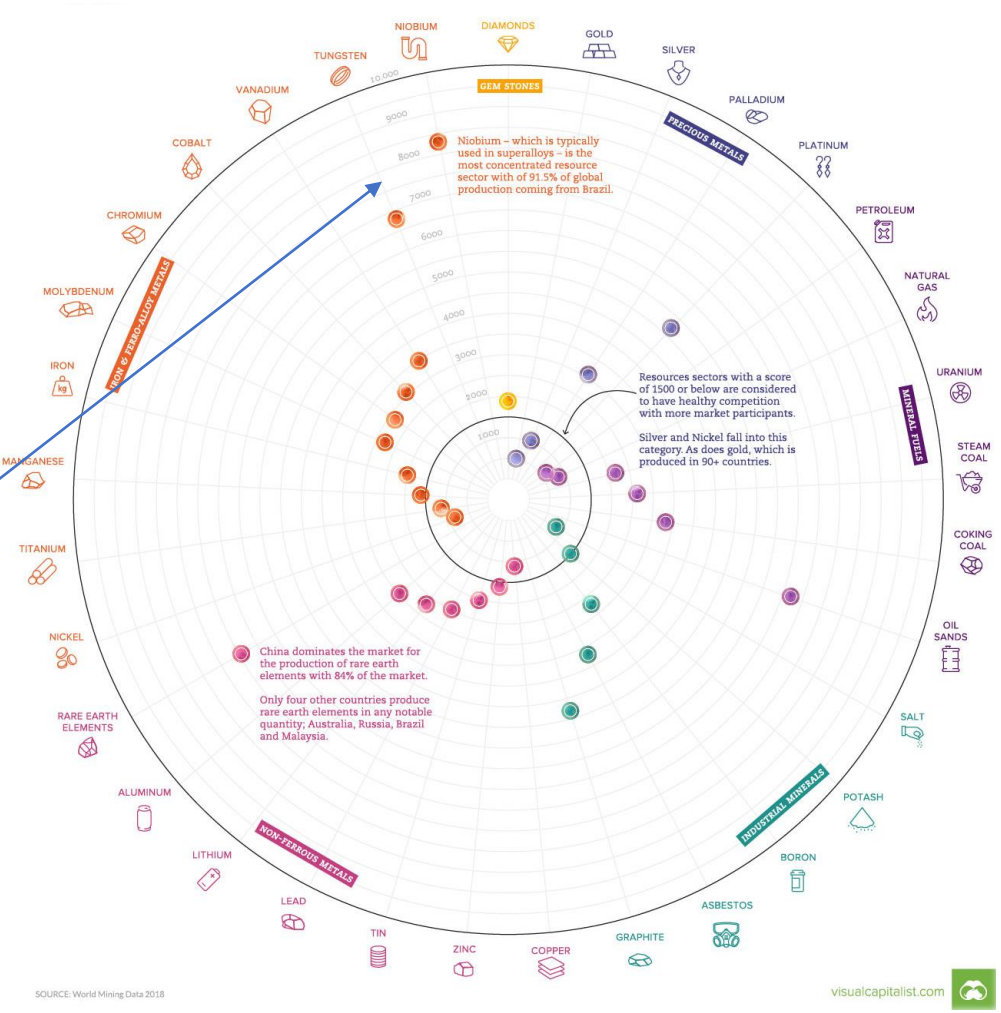
Niobium Supply: Only A few Suppliers

The Herfindahl-Hirschman Index, pictured right, is a commonly accepted measurement of market concentration, and in this case, it shows which mineral sectors have healthy competition between countries, as well as the sectors that are more monopolistic.

Anything below a 1500 score on the Index is considered a competitive marketplace.

The closer the score is to 10,000, the closer the market is to a monopoly.

Niobium scores over 8000 on the scale, demonstrating that the industry is highly concentrated with only three existing mines, two of which are located in Brazil and responsible for ~ 85% of global production.



Source: www.visualcapitalist.com/measuring-competition-valuable-minerals

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Niobium Supply: Brazil Dominant

CBBM, Brazil

(70% privately held, 15% each by Chinese SOEs and Japanese steel mills)

- ✓ US$13.33Bn enterprise
- ✓ Open pit mine
- ✓ 150,000 tpa capability FeNb*
- ✓ Nb_2O_5 facility installed for growth
- ✓ Price leader
- ✓ **Sold 15% for US$1.5B to Chinese consortium**
- ✓ **Sold 15% for US$1.5B to Japan Korea consortium**

Niobec, Canada

(100% privately owned - Magris Resources)

- ✓ US$530m enterprise
- ✓ Underground mine
- ✓ 7,500 tpa capability FeNb*
- ✓ No Nb_2O_5 capability
- ✓ Price follower
- ✓ **Acquired by Magris Resources Inc in 2012 for US$500m**

Catalao, Brazil

(100% privately owned – China Molybdenum)

- ✓ US$1.5Bn enterprise
- ✓ Open pit mine
- ✓ 7,500 tpa capability FeNb*
- ✓ No Nb_2O_5 capability
- ✓ Price follower
- ✓ **Acquired in 2016 by China Molybdenum for US$1.5Bn**

Niobium market controlled by 3 producers, collectively producing 99% of current supply

*published data of company websites

Demand

Growth in demand for steel and for higher quality steel products forecast to drive consumption of niobium.

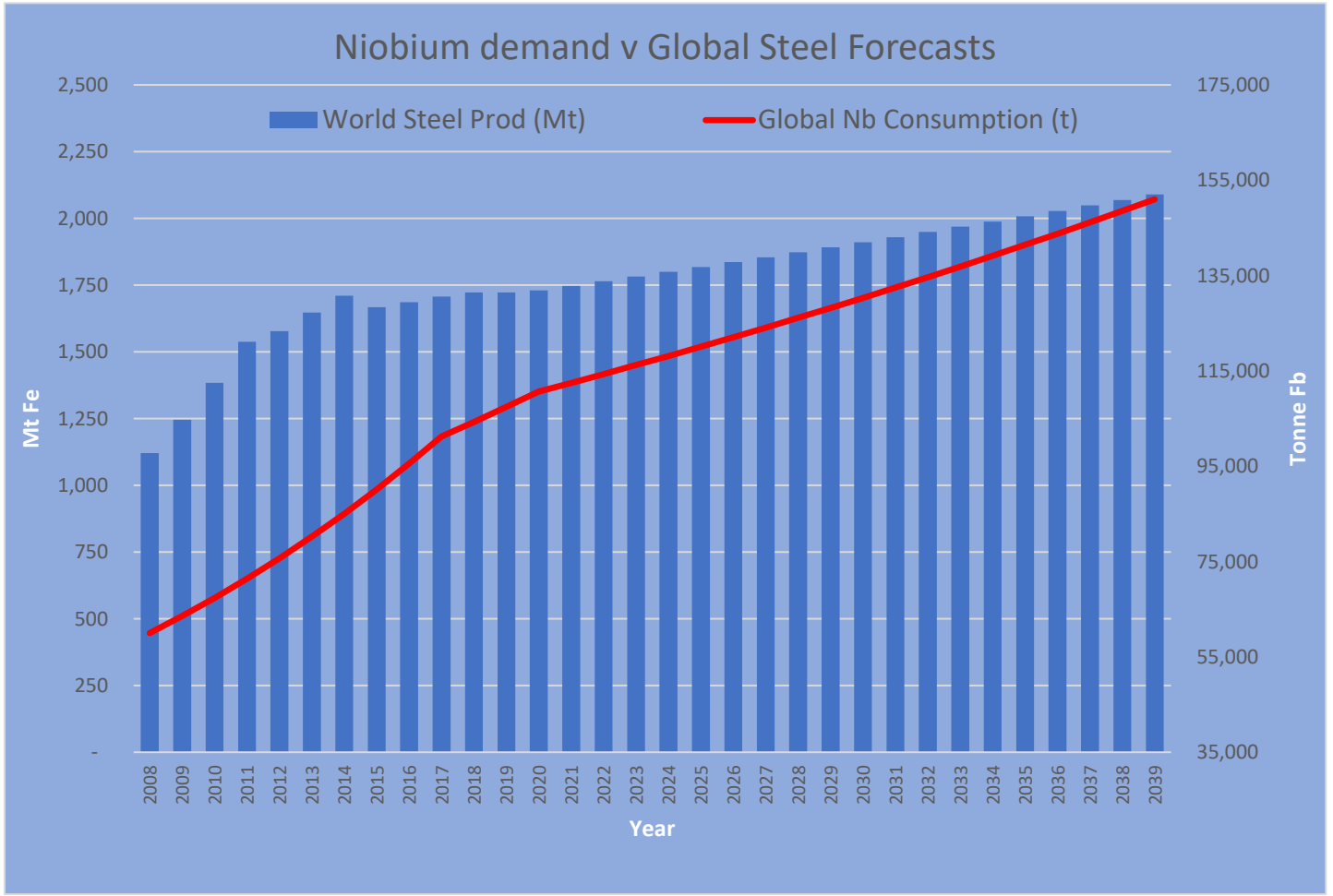
HSLA steels account for ~90% of global Niobium consumption

Niobium Demand Drivers – two factors:

i) increase in overall steel production; and

ii) increase in the amount of niobium used in steel (usage intensity rate).

Source: www.statista



Demand Driver – Structural Steel

Short Term

In October 2020, Worldsteel (the World Steel Association) released its Short Range Outlook for steel demand for 2020 and 2021.

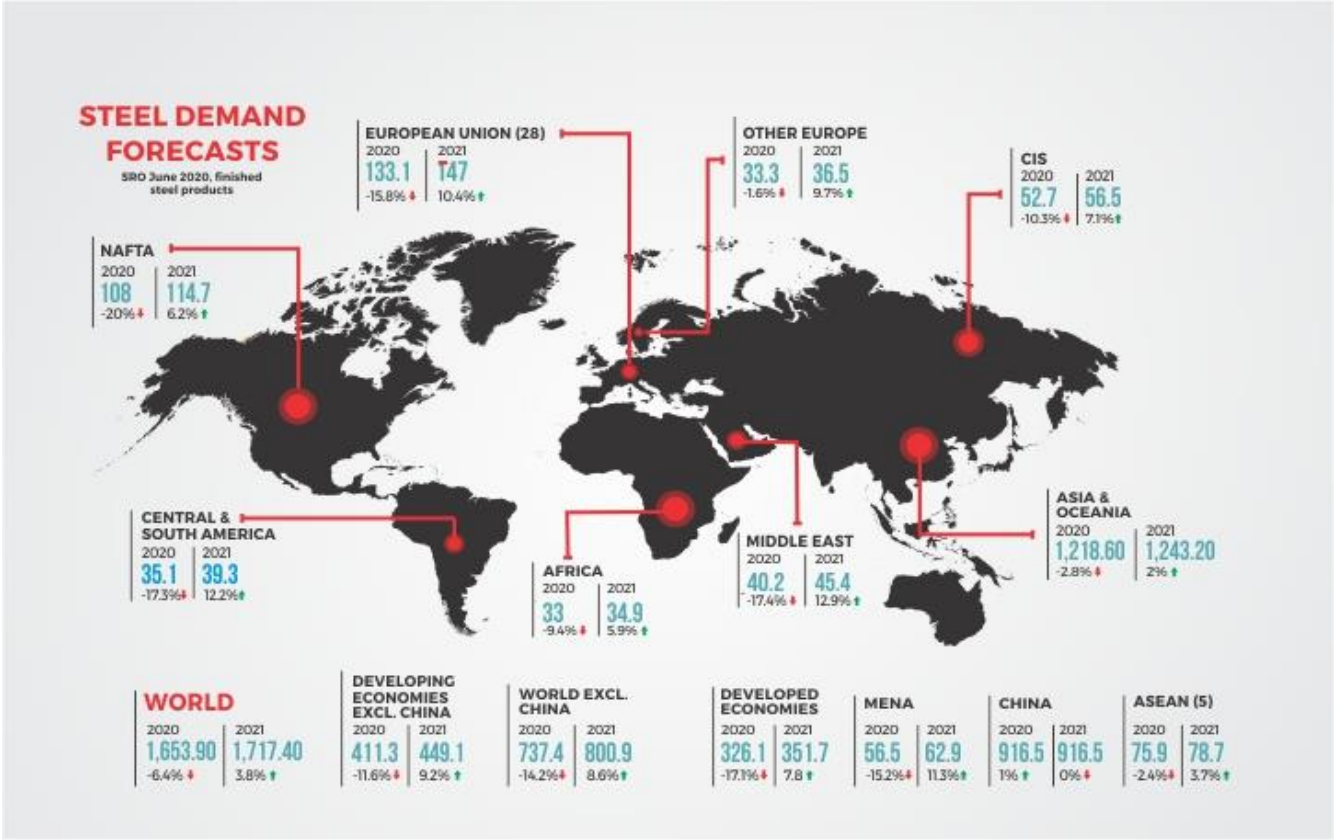
Worldsteel is predicting global steel demand will contract by -2.4% in 2020 dropping to 1,725.1 Mt due to the COVID-19 pandemic but recover in 2021 to 1,295.1 Mt, an increase of 4.1%.

The growth forecast is mainly due to China, and expected to be aided by government infrastructure stimulus and a strong China real estate / construction market.

Medium Term

Research and Market has released its latest report on 26 October 2020 concluding that;

"The market for niobium is expected to grow at a CAGR of around 6% between 2020 and 2025. Major factors driving the market are the increased consumption of niobium in structural steel and extensive utilization of niobium-based alloys in manufacturing aircraft engines. "



Source: www.steel-360.com

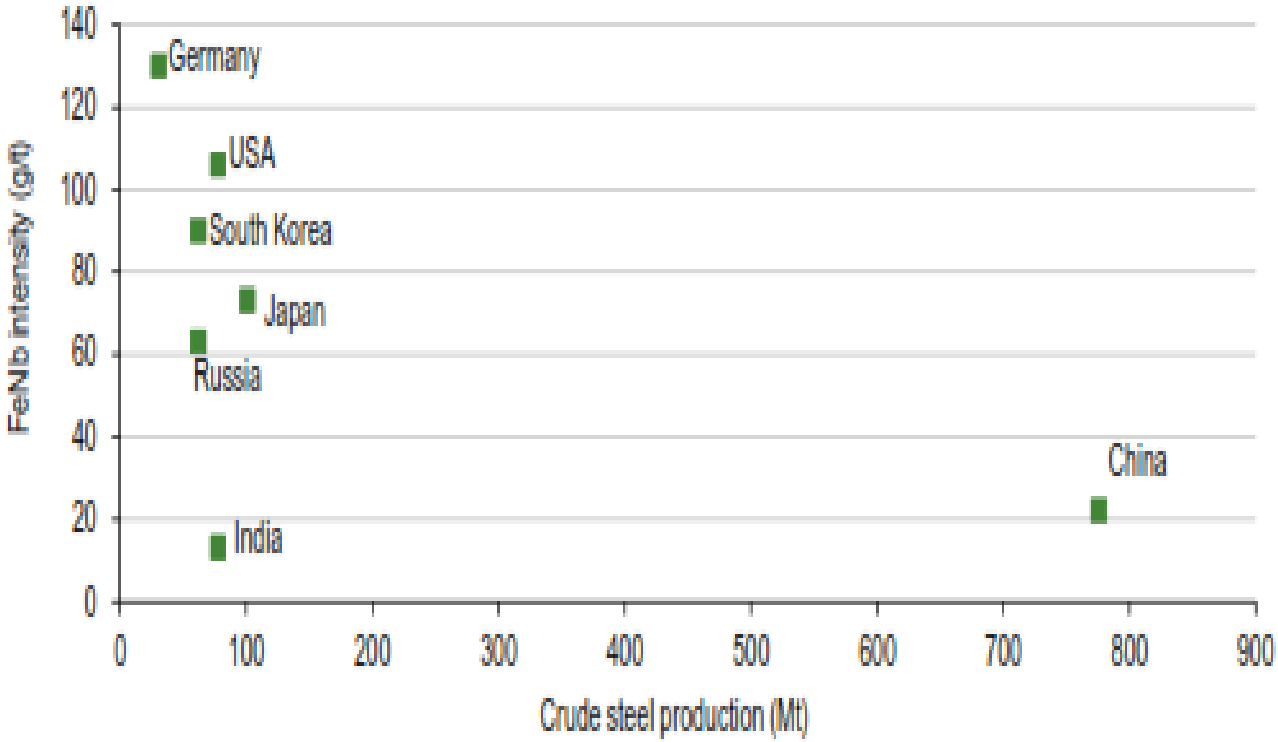
Demand Driver – Increased Intensity of Use

Overall intensity of use of ferro-niobium (FeNb) in steel is at its greatest in highly developed countries (eg Germany, USA) and averages in excess of 100g/t.

Overall intensity of use of ferro-niobium (FeNb) in steel in India and China is extremely low; averaging less than 20g/t.

Intensity of usage expected to increase in China as it moves to higher quality steel products as has already happened in other parts of Asia (South Korea, Japan).

The rate of increase of intensity of usage in China is forecast to be the main driver for niobium consumption in the medium term.



Source: Roskill

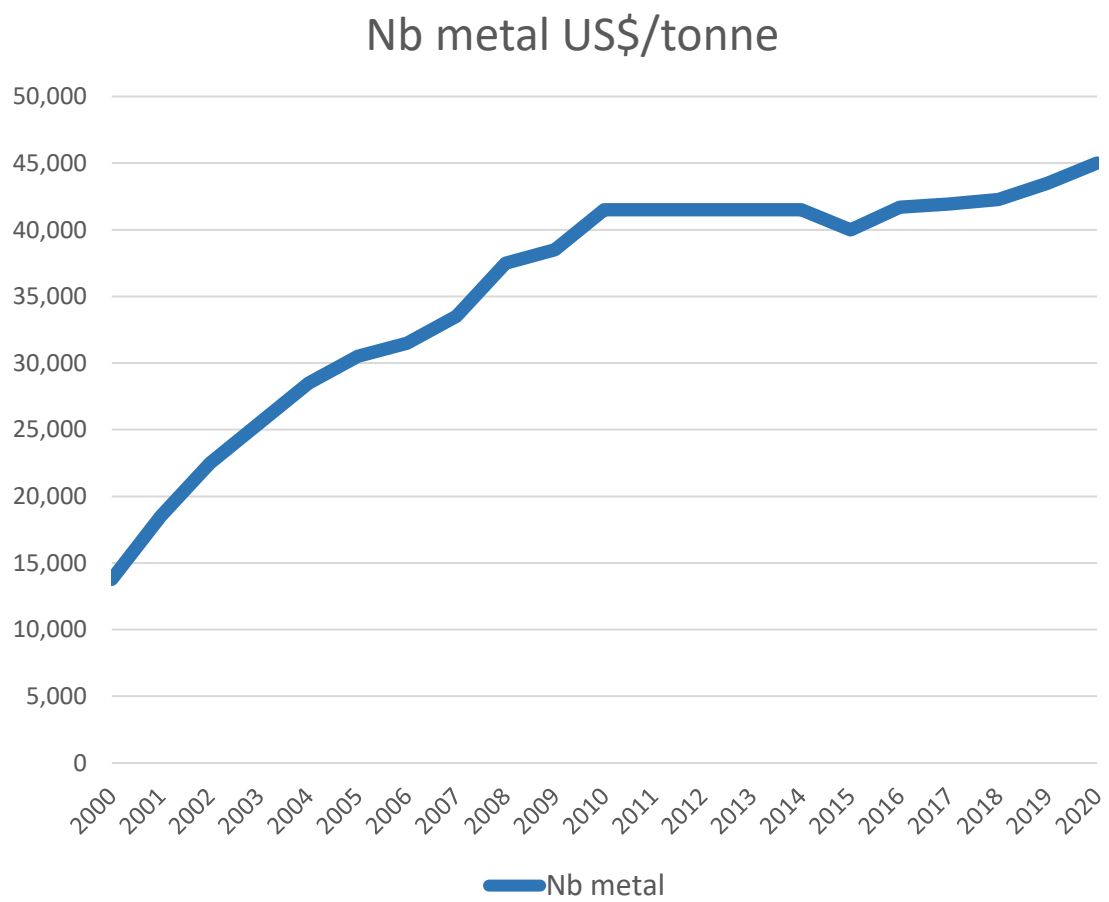
Niobium Pricing – Concentrate and finished product

Concentrate

- Nb_2O_5 concentrate is rarely sold or in very low volumes
- Typically a by-product from tantalum production
- Pricing: $25/kg ±20%

Niobium Pentoxide

- Niobium is mostly sold as FeNb for HSLA steel use
- FeNb currently sells at $45/kg of contained Nb
- Nb_2O_5 is a value add product used in manufacture of master and super alloys and in chemical applications.
- Pentoxide is a premium product which attracts a premium price.



Source: Internally generated by Globe using information extracted from Roskill reports

Globe
Metals & Mining

Section 2
Kanyika Project

Project Overview

- 28,603m of RC and 5,162m of core drilling completed
- Mineral resource (JORC 2012) defined, consisting of 68.3 million tonne of mineralisation with a grade of 2,830 ppm Nb_2O_5 and 135 ppm Ta_2O_5
- Engineering flowsheet completed
- Metallurgical studies = ~75% recovery; further optimisation studies ongoing
- Environmental approval obtained – certificates issued
- Mine plans and design completed
- CAPEX and OPEX conducted in 2018 – requires update

Project Location

Well located

- ✓ ~250kms N of capital city of Lilongwe
- ✓ ~800kms WNW of Nacala Port, Mozambique

Proximity to good infrastructure

- ✓ Rail
- ✓ Airport
- ✓ Sea port
- ✓ Telecommunications

Low infrastructural demand

- ✓ 1,000t per month (Concentrate)
- ✓ 50 sea containers (eq)
- ✓ 10 road trains (eq)

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Mineral Resource Estimate

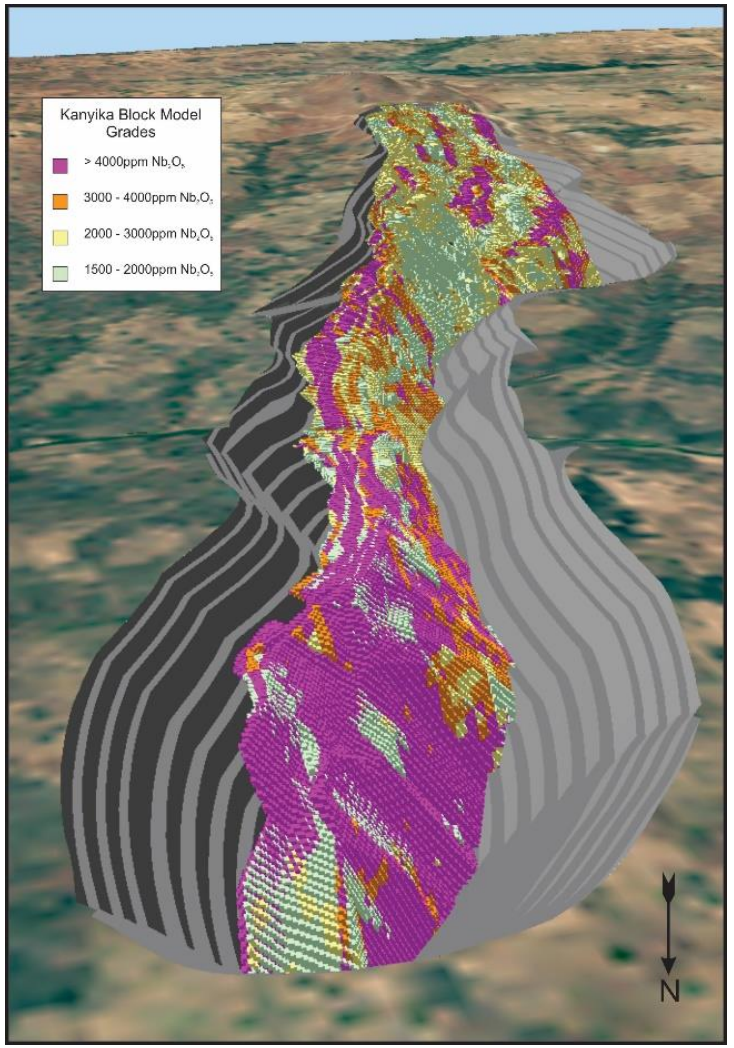
Classification	Tonnes (Mt)	Nb_2O_5 (ppm)	Contained Nb_2O_5 (t)	Ta_2O_5 (ppm)	Contained Ta_2O_5 (t)
Measured	5.3	3,770	19,981	180	954
Indicated	47	2,860	134,420	135	6,345
Inferred	16	2,430	38,880	120	1,920
Total	68.3	2,830	193,281	135	9,219

Refer Competent Person Information and Mineral Resource Estimate information at rear

Engineering complete

Mining Schedule (established)

Supports long mine life



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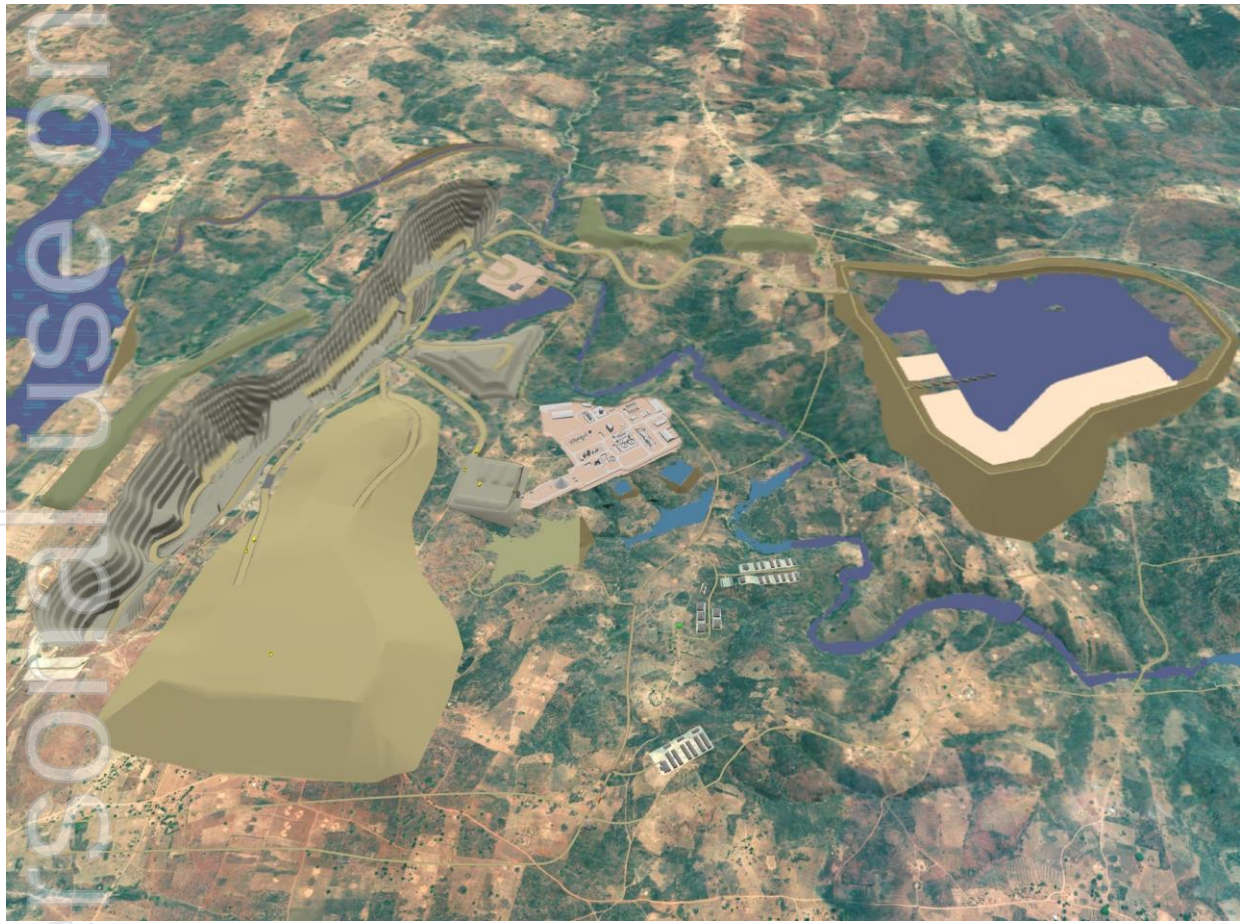
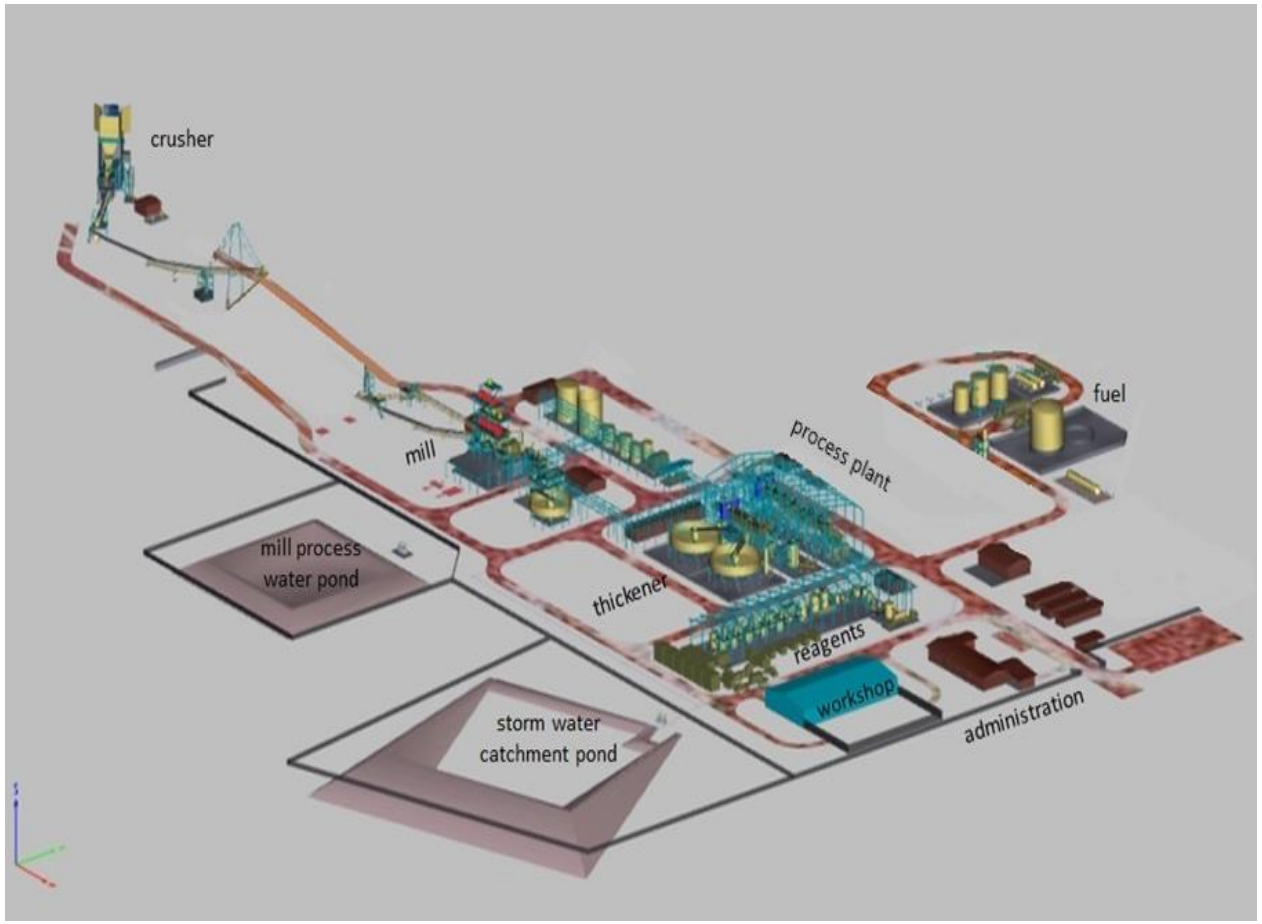
Infrastructure Plan & Processing Plan Layout





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Processing Plant Layout

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Kanyika Project Environmental Certification

MALAWI GOVERNMENT

APPROVED

NCE No. 41 EIA CERTIFICATE No. 41.7.4

ENVIRONMENT MANAGEMENT ACT
(No. 23 OF 1996)

NOTICE OF APPROVAL TO
PROCEED WITH PROJECT

RE: THE GENERAL MANAGER, GLOBE METALS AND MINING (AFRICA) LTD, PRIVATE BAG A 201, LILONGWE

WHEREAS the Minister has in terms of Section 24 (1) of the Environment Management Act specified by notice published in the Gazette, that is, Government Notice No . 58 of 1997, types and sizes of projects which shall not be implemented unless an environmental impact assessment is carried out,

WHEREAS CHATOLOMA-KANYIKA ROAD, PROJECT is, pursuant to said Government Notice, of a type and/or size requiring evironmental impact assessment prior to implementation;

WHEREAS GLOBE METALS AND MINING (AFRICA) LTD has conducted an Environmental Impact Assessment of the project and has submitted to the Director of Environmental Affairs, in respect of such assessment, a Project Brief, Environmental Impact Assessment Report and Environmental Management Plan.

WHEREAS Section 26 (1) (d) of the Environmental Management Act provides that the Director of Environmental Affairs may recommend to the Minister approval of a project for which an environmental impact assessment has been carried out, subject to such conditions as of approval as he may deem appropriate,

NOW, THEREFORE TAKE NOTICE THAT CHATOLOMA-KANYIKA ROAD, PROJECT

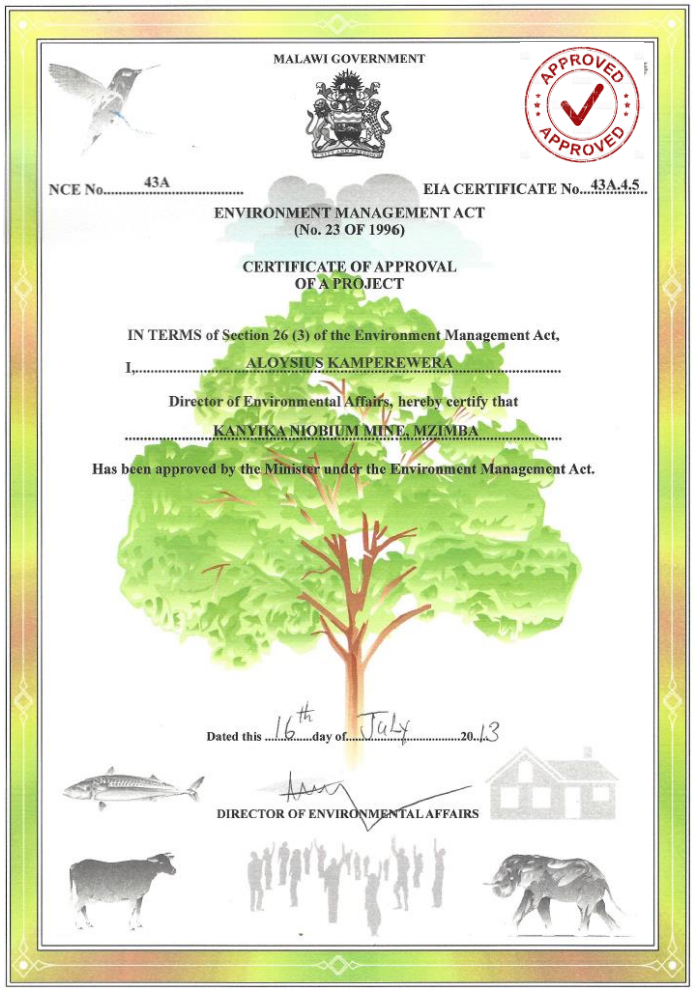
Has been approved to proceed subject to the attached terms and conditions overleaf.

Recommended: _____ Director of Environmental Affairs — Date 29-06-12

Concurred: _____ Chair, National Council for the Environment — Date 18/7/12

Approved: _____ Minister Responsible for Environmental Affairs — Date 26/10/2012

Attachments (where appropriate)



MALAWI GOVERNMENT

APPROVED

NCE No. 43A EIA CERTIFICATE No. 43A.4.5

ENVIRONMENT MANAGEMENT ACT
(No. 23 OF 1996)

CERTIFICATE OF APPROVAL
OF A PROJECT

IN TERMS of Section 26 (3) of the Environment Management Act,

I, ALOYSIUS KAMPEREWERA

Director of Environmental Affairs, hereby certify that

KANYIKA NIOBIUM MINE, MZIMBA

Has been approved by the Minister under the Environment Management Act.

Dated this 16th day of July 20.13

DIRECTOR OF ENVIRONMENTAL AFFAIRS

Globe Metals & Mining

Section 3
Malawi Overview

Niobium – Celebrating Excellence in Engineering

Malawi Country Facts

Capital: Lilongwe

Population: 18 million, 90% in rural areas (estimated)

Located in Central Africa, bordered by Tanzania (north), Zambia (west) and Mozambique (east and south).
Divided into 28 Districts

Gained independence in 1965

Legal system based on English law. Official Languages English and Chichewa.

Kwacha (MWK) official currency

Agriculture Economy (27% of GDP; 80% of export revenue)

Tobacco is most important crop.

The World Bank

INTERNATIONAL MONETARY FUND

Economy relies on World Bank & IMF support.

Stable government and a democratic multi-party, system since end of one-party rule in 1993

Malawi is ranked one of Africa and the World's least developed economies

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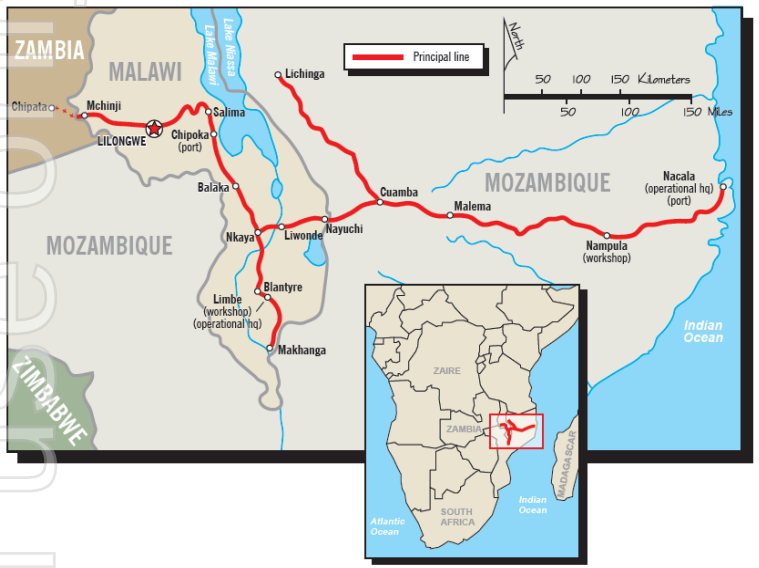
Infrastructure



- Government initiatives targeting improvements in road, railroad, electricity and telecommunications infrastructure to assist industrial development.
- Kachasu Nkaya section of US$4.9 billion Nacala Railroad Corridor Project (Vale, Mitsui) commissioned August 2017 connects Malawi to the sea; providing cost effective transportation.
- US$350m pact between Malawi and MCC to improve the availability, reliability and quality of power supply.

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Section 4
Pathway to Production

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Processing Plant Layout

***If the Development Agreement is signed/finalised then*.....**

- AML reissued to DoM
- MRC has 190 days review period
- +45 days Mining Licence Issued
- Community Agreement Complete

Commence early works
Community relocation

Commissioning & Ramp up

Production

Commence FEED designs
Sales Agreements
Funding

The impact of COVID 19 on this process is uncertain

The above timetable is indicative only and assumes execution of a Development Agreement in calendar year 2020 and progression of relocation, construction and pre-production testing within reasonable timeframes thereafter. The actual timeline may vary significantly from above due to delays caused by attainment of finance, offtake , COVID-19 impacts, and other unforeseen matters. Accordingly, the above timetableshould not be relied upon.

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Section 5
Summary

Summary

Kanyika is a development ready project

Compelling Economics

(NPV = tba)

Development Agreement

(currently with Malawi Government for execution)

Product Sales and Funding ready

Engineering studies completed

Community, Government and Stakeholder supportive

Strong outlook for niobium price & demand

Globe Metals & Mining

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Competent Persons Statement

Competent person: 'The information in the report to which this statement is attached that relates to **Exploration Targets, Exploration Results, and Mineral Resources** is based on information compiled by Mr Alistair Stephens, a Competent Person who is a Fellow of 'The Australasian Institute of Mining and Metallurgy' included in a list posted on the ASX website from time to time. Mr Stephens is a full-time employee of Globe Metals and Mining Limited. Mr Stephens has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken 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 Stephens consents to the inclusion in this report of the matters based on his information in the form and context in which it appears.

Competent person: 'The information in the report to which this statement is attached that relates to **Exploration Targets, Exploration Results, and Mineral Resources** is based on information compiled by Mr Andrew Bewsher, a Competent Person who is a Member of the 'Australian Institute of Geoscientists' included in a list posted on the ASX website from time to time. Mr Bewsher is a full-time employee of BMGS Pty Ltd. Mr Bewsher has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken 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 Bewsher consents to the inclusion in this report of the matters based on his information in the form and context in which it appears.

Competent person: 'The information in the report to which this statement is attached that relates **Ore Reserves** is based on information compiled by Mr Alistair Stephens, a Competent Person who is a Fellow of 'The Australasian Institute of Mining and Metallurgy' included in a list posted on the ASX website from time to time. Mr Stephens is a full-time employee of Globe Metals and Mining Limited. Mr Stephens has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken 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 Stephens consents to the inclusion in this report of the matters based on his information in the form and context in which it appears.

Mineral Resources Estimate

The information in this report that relates to Mineral Resources is extracted from the report titled "Kanyika Niobium Project – Updated JORC Resource Estimate" released to the Australian Securities Exchange (ASX) on 11 July 2018 and available to view at www.globemm.com and for which Competent Persons' consents were obtained. Each Competent Person's consent remains in place for subsequent releases by the Company of the same information in the same form and context, until the consent is withdrawn or replaced by a subsequent report and accompanying consent.

The Company confirms that is not aware of any new information or data that materially affects the information included in the original ASX announcement released on 11 July 2018 and, in the case of estimates of Mineral Resources, that all material assumptions and technical parameters underpinning the estimates in the original ASX announcement continue to apply and have not materially changed. The Company confirms that the form and context in which the Competent Persons' findings are presented have not been materially modified from the original ASX announcement.

Full details are contained in the ASX announcement released on 11 July 2018 titled "Kanyika Niobium Project – Updated JORC Resource Estimate" available to view at www.globemm.com