

Minerals for a sustainable future



TITANIUM & GARNET (100%)



LITHIUM (22%)

Company presentation, June 2018



**NORDIC
MINING**

OAX: NOM

Exploration and production of high-end minerals and metals

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Developing high-value assets in the Nordic Region



Engerbø Rutile and Garnet (100%)



High Purity Quartz



Seabed minerals



Platinum, Palladium



Keliber Lithium (22%)



Board of Directors and Management

Management team



Ivar S. Fossum, CEO

Fossum has 20 years experience from management positions in Norsk Hydro (oil/gas and fertilizers) and FMC Technologies. He has a broad international experience and has been general manager of Norsk Hydro East Africa Ltd. in Nairobi, Kenya. Fossum holds a Master of Science in Mechanical Engineering from the University of Science and Technology in Trondheim, Norway.



Lars K. Grøndahl, CFO

Grøndahl has broad experience from industrial management positions in i.a. Aker, Scancem Group and HeidelbergCement. He holds a Master of Science in Economics and Business Administration from the Norwegian School of Economics in Bergen, Norway.



Mona Schanche, VP Exploration

Schanche has previously worked as a project geologist in Titania (Kronos Group), a major producer of pigment feedstock. She is a resource geologist from the University of Science and Technology in Trondheim, Norway and has more than 10 years experience from the mining sector.

Board of Directors



Tarmo Tuominen, Chairman

Deputy CEO in the Finnish mineral group Nordkalk. Geologist with broad mining experience. Chairman of the Geological Survey of Finland (GTK).



Kjell Roland, Deputy chairman

CEO of Norfund, the Norwegian Investment Fund for Developing Countries. Roland holds a Master of Science in Economics from the University of Oslo, Norway. Roland has been a partner and CEO in ECON Management AS and ECON Analysis.



Mari Thjømøe, Board member

Extensive executive and board experience from oil and gas, finance and investment management (e.g. Statoil, Norsk Hydro and KLP). Thjømøe holds a Master of Science in Business Administration from the Norwegian School of Management (BI) in Oslo, Norway.



Eva Kaijser, Board member

Kaijser has more than 18 years experience in the Swedish mining industry, i.a. 11 years in Boliden. Kaijser holds a Bachelor in Business Administration from the University of Stockholm, Sweden.



Kjell Sletsjøe, Board member

Sletsjøe has comprehensive international management experience from mining, coatings and construction industries as well as consulting. He holds a Master of Science in Civil Engineering from the University of Science and Technology in Trondheim, Norway. and a MBA from Columbia University in New York, USA.



Shareholder structure and share price development

Largest shareholders*

	Name of shareholder	No. of shares	%
1	NORDNET BANK AB (NOMINEE)	10 616 633	9,4 %
2	NORDEA BANK FINLAND (NOMINEE)	5 070 366	4,5 %
3	VPF NORDEA AVKASTNING	4 127 963	3,6 %
4	NORDNET LIVSFORSIKRING	2 810 032	2,5 %
5	CITIBANK N.A. S/A POHJOLA BANK PLC (NOMINEE)	2 793 638	2,5 %
6	B-L HOLDING COMPANY	2 579 620	2,3 %
7	DANSKE BANK A/S (NOMINEE)	2 218 940	2,0 %
8	ADURNA AS	1 634 500	1,4 %
9	NATURLIG VALG AS	1 620 000	1,4 %
10	DYBVAD CONSULTING AS	1 573 052	1,4 %
11	VIOLA AS	1 562 380	1,4 %
12	LITHION AS	1 405 977	1,2 %
13	MAGIL AS	1 350 000	1,2 %
14	KNUT FOSSE AS	1 304 747	1,2 %
15	INFOSAVE AS	1 296 026	1,1 %
16	OVE KLUNGLAND HOLDIN NIL	1 195 016	1,1 %
17	CROSS AS	1 134 505	1,0 %
18	OLAV BIRGER SLETTEN	1 090 000	1,0 %
19	SNATI AS	1 022 672	0,9 %
20	ODDMUND HOLMEFJORD	839 332	0,7 %
	Top 20 shareholders	47 245 399	41,6 %
	Others	66 205 069	58,4 %
	Total	113 450 468	100,0 %

Share overview and share price development*

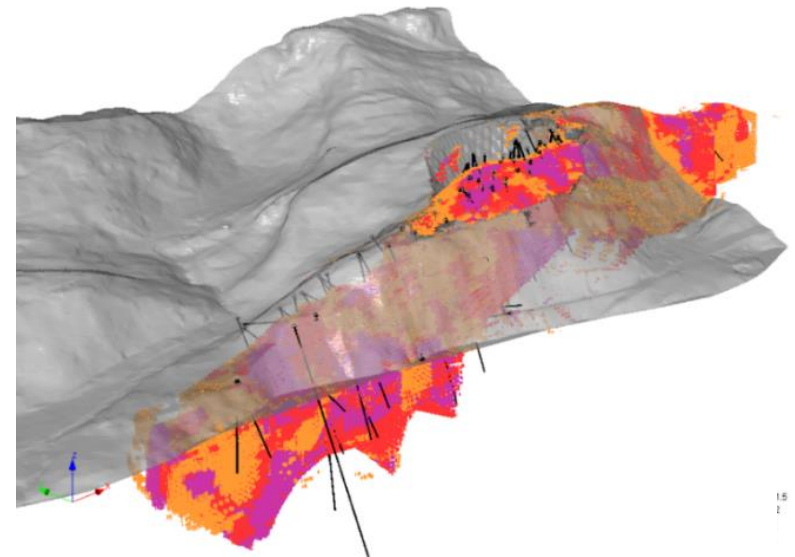
Share overview

Number of issued shares	113 450 468
Owned by management	1.9%
Current share price (NOK)	3.81
Market capitalisation (NOKm)	432
Trading range YTD (NOK)	2.70 - 3.97



Large rutile and garnet deposit located at tidal waters

- ✓ Outcropping eclogite orebody with unknown extension to depth
- ✓ Geotechnically stable rock allows for effective mining
- ✓ Low impurities, negligible content of heavy metals and radioactive elements
- ✓ Easy transition from open pit to underground mining



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High grade rutile and garnet mineralisation

Mineral resource and reserve classifications*

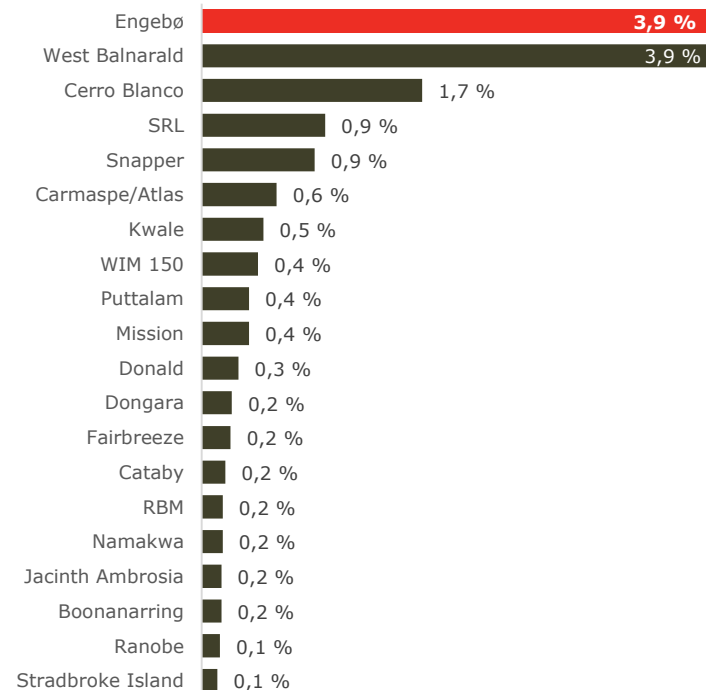
- ✓ Increased cut-off implies stronger financial performance in early mining years
- ✓ Large potential in inferred resources

	3% cut-off grade		
	Tonnage Mt	TiO ₂ %	Garnet %
Measured	15	3.97%	44.6%
Indicated	78	3.87%	43.6%
Measured & indicated	93	3.89%	43.7%
Inferred	138	3.86%	43.5%

	Ore reserves		
	Tonnage Mt	TiO ₂ %	Garnet %
Proven	10.194	3.81%	43.4%
Probable	31.702	3.35%	39.5%

Among the highest rutile grades

- ✓ Rutile grade for current producers and planned projects



* Resource estimates and reserve statement completed by Competent Person Adam Wheeler, corresponding to the guidelines of the JORC Code (2012 edition).



Rutile and garnet - unique mineral properties, increasing demand

Rutile (TiO₂)

Current world production: ~ 0.8 million tonnes



PIGMENT



WELDING RODS



TITANIUM



Tests have demonstrated that Engebø can produce 95% TiO₂ rutile suitable for pigment and titanium

Garnet

Current world production: ~ 1.4 million tonnes



WATERJET CUTTING



SAND BLASTING



ABRASIVES

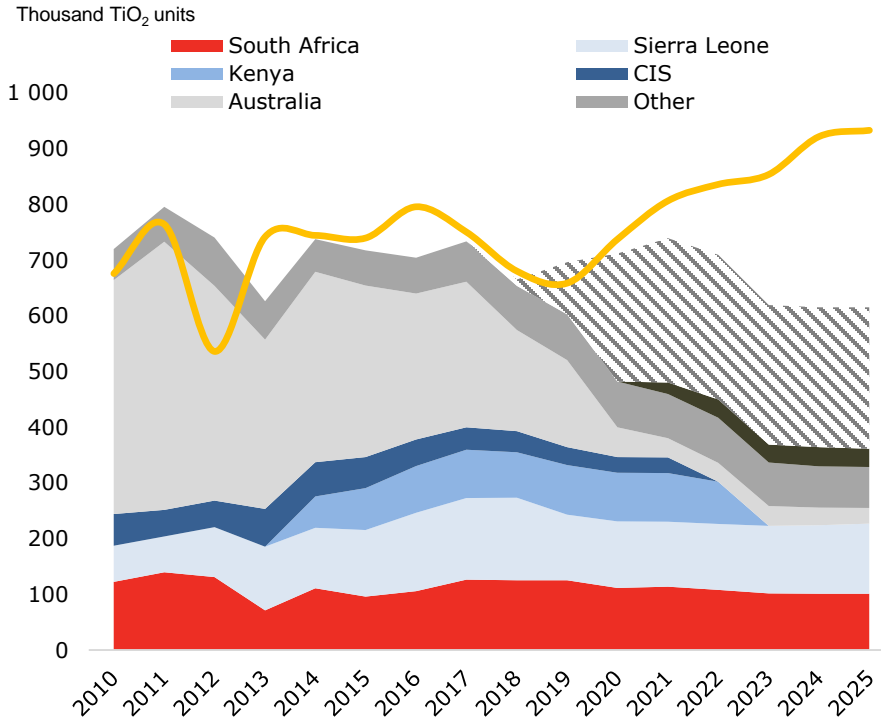


Tests have demonstrated that Engebø can produce coarse and fine garnet suitable for a broad range of applications



Rutile demand expected to grow with increasing prices

Global rutile demand is forecasted to outpace supply...



- ✓ Market conditions are expected to result in a tighter market on supply deficit
- ✓ Significant producers with depleting resources
- ✓ Industry consolidation, e.g. with Iluka's acquisition of Sierra Rutile

...driving rutile prices up in the forecast period

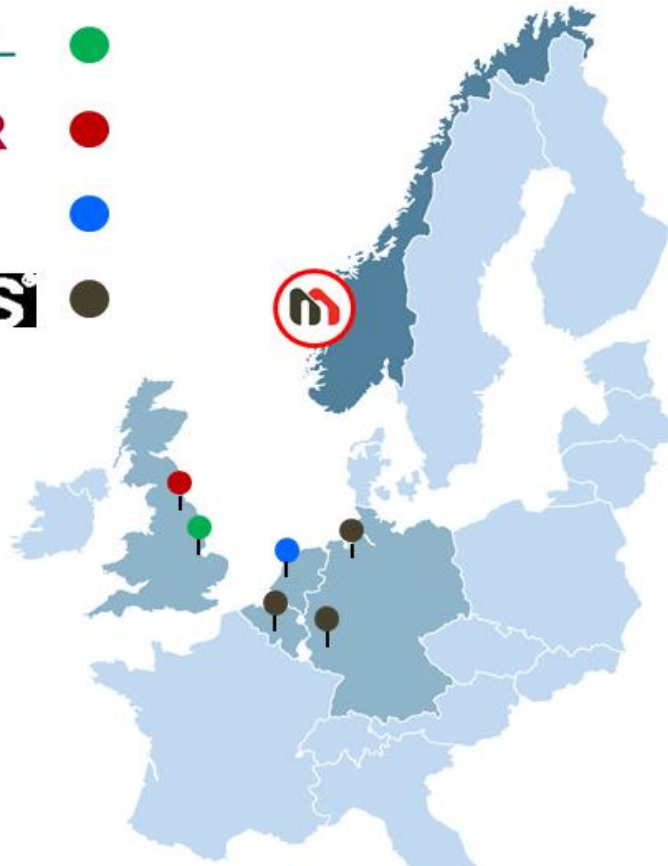


- ✓ Easing price pressure after chloride pigment producers de-stocking finished
- ✓ Long-term outlook indicates higher rutile prices on significant supply deficit

Source: TZMI, Australia



Export sales to Europe and overseas markets



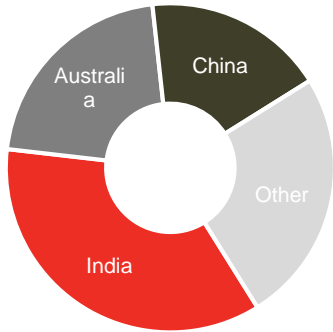
- ✓ The largest pigment manufacturers in Europe have chloride technology that benefits from high grade feedstock
- ✓ Several can consume Engebø's annual volume
- ✓ Plant-to-plant shipment
- ✓ Logistical and freight cost advantages



First European producer of garnet

Garnet market and price assumptions

Current world production

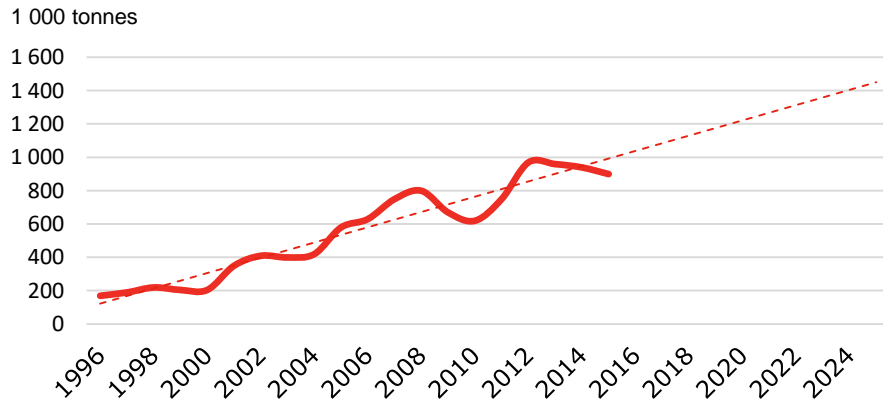


- Emerging mineral with strong growth in the waterjet cutting markets
- Currently no European production
- Engnebø is one of few hard rock deposits with almandine garnet
- Engnebø will produce commercial end-products:
 - 80 mesh waterjet
 - 100 mesh waterjet
 - 30/60 mesh blast market
- PFS garnet price assumption of USD 250/tonne in real terms based on a basket of the three products with roughly equal weighting

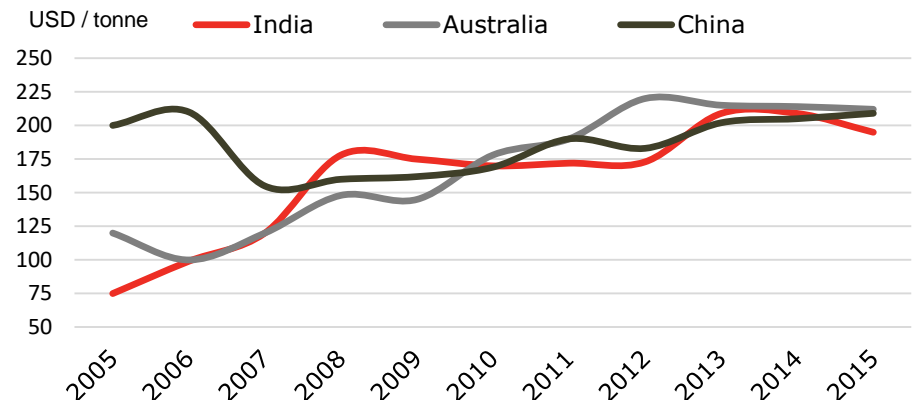
Estimated garnet price, Engnebø PFS

Product / Case	Low price	High price
80 mesh waterjet	USD 267/t	USD 289/t
100 mesh waterjet	USD 267/t	USD 289/t
30/60 mesh grades	USD 289/t	USD 311/t
PFS garnet basket price	USD 250/t	

Estimated garnet consumption (excl. China)



Historical average garnet export prices (FOB)



Cooperation with the US Barton Group for garnet

The Barton Group

- ✓ Barton, family owned and founded in 1878.
- ✓ Leading US garnet producer and distributor
- ✓ Leading player in developing waterjet cutting technology
- ✓ Operates a garnet mine in the state of New York
- ✓ Supplies high-performance garnet abrasives in Western Europe, South America, Southeast Asia and China



Heads of Agreement

Nordic Mining entered into a Heads of Agreement with Barton Group, on the following main principles:

- ✓ Offtake agreement for North America
- ✓ Joint-venture agreement for other markets
- ✓ Financing of pre-construction project development
- ✓ Construction financing

BARTON
Global leader in garnet abrasives



PFS process testwork; industrial scale equipment

- ✓ Comprehensive testwork has documented commercial products from rutile and garnet according to market specifications
- ✓ Testwork has demonstrated rutile recovery of approximately 60%



HATCH

ihc ROBBINS

JKtech
SMI
Technology Transfer

SGS


MINTEK

IMSV
ENGINEERING

CORE 

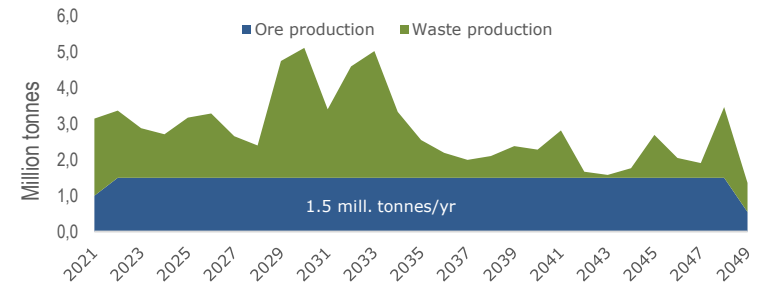
 **Mineral
Technologies**
A Downer Company



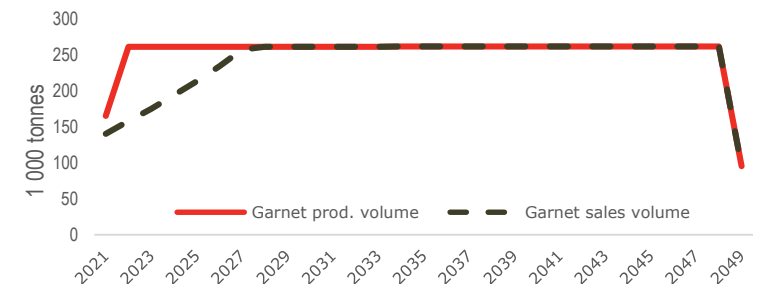
Key project assumptions, PFS

Assumptions	Value
Garnet price	USD 250/tonne
Rutile price	USD 1 070/tonne
Garnet sales (from ~2027)	261 000 tpa
Rutile sales (average)	32 500 tpa
Opex per sales tonne ¹⁾	USD 87 per tonne
Capex 2019-2021	USD 207 mill.
Open pit mining and comminution	26.8
Mineral processing and tailings handling	68.6
Infrastructure, storage and loadout	35.7
Indirects	41.8
20% contingency	34.2
Deferred capex 2033	USD 17 mill.
Underground mining and comminution	10.8
Indirects	2.7
25% contingency	3.4

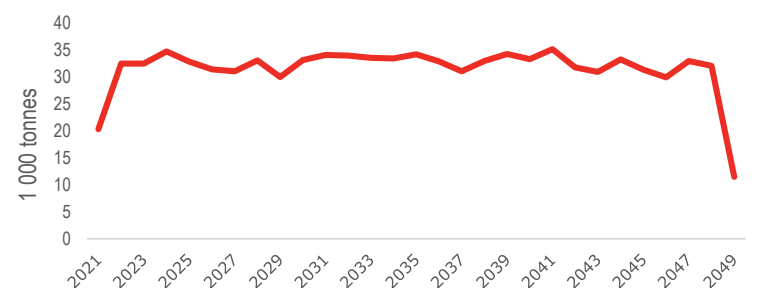
Mine production



Garnet sales and production volume



Rutile sales and production volume

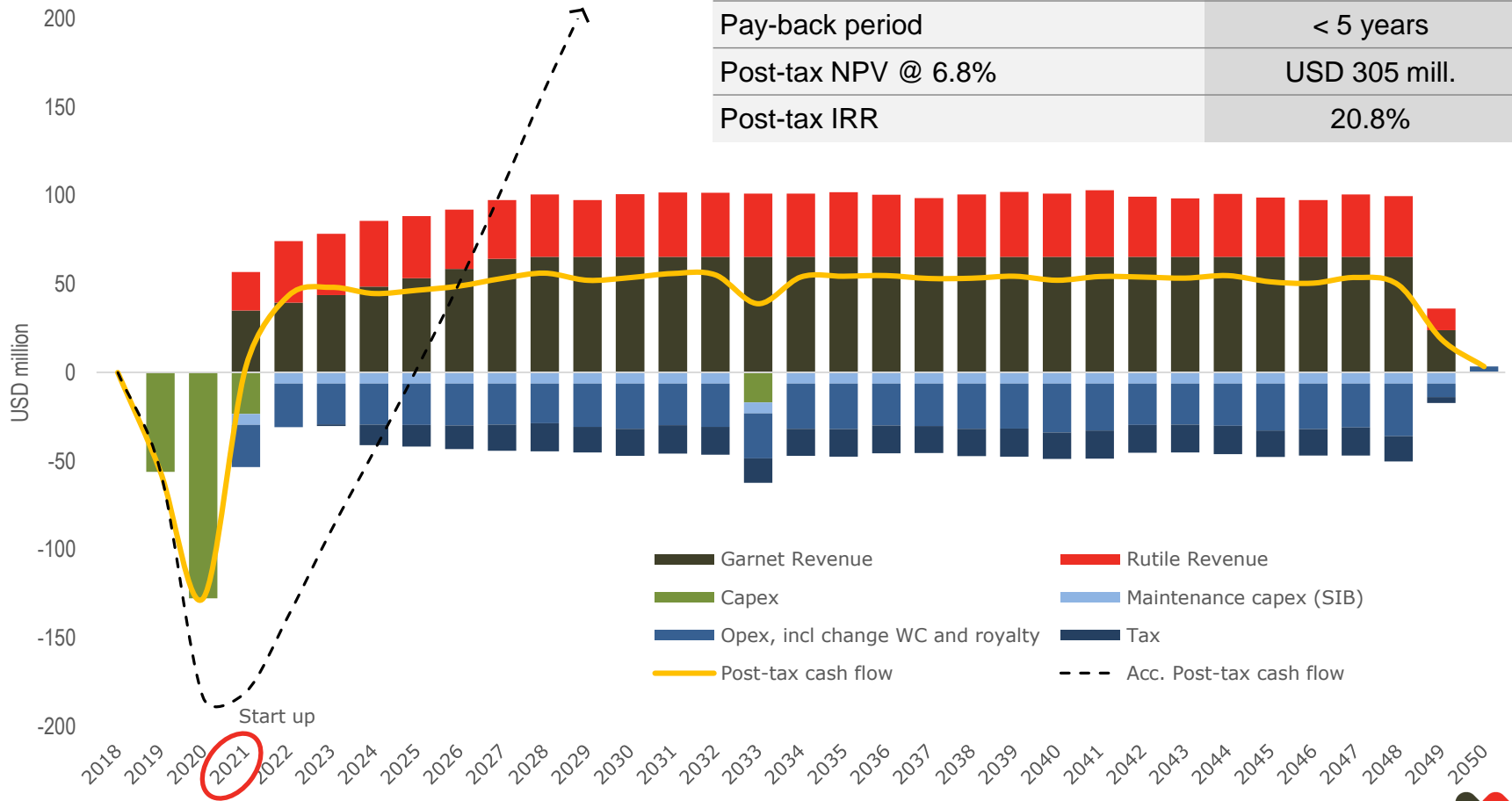


1) Based on total sales volume for rutile and garnet



Attractive project economics, PFS

Metric	Value
Pre-tax NPV @ 8%	USD 332 mill.
Pre-tax IRR	23.8%
Life of mine	29 years
Pay-back period	< 5 years
Post-tax NPV @ 6.8%	USD 305 mill.
Post-tax IRR	20.8%

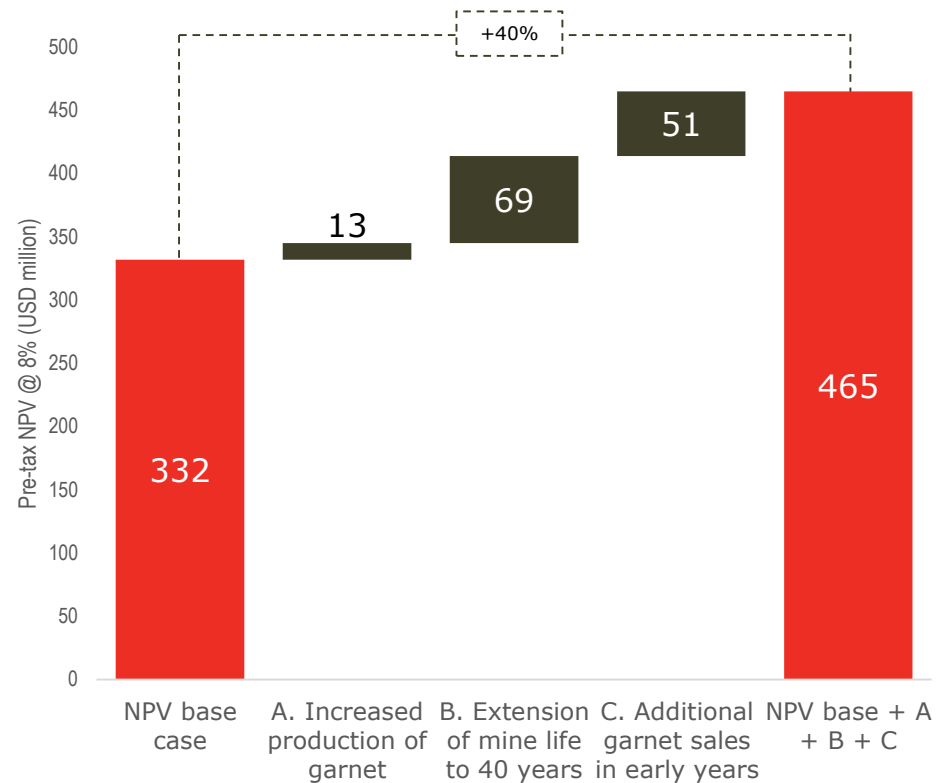


Post-tax cash margin of 55%



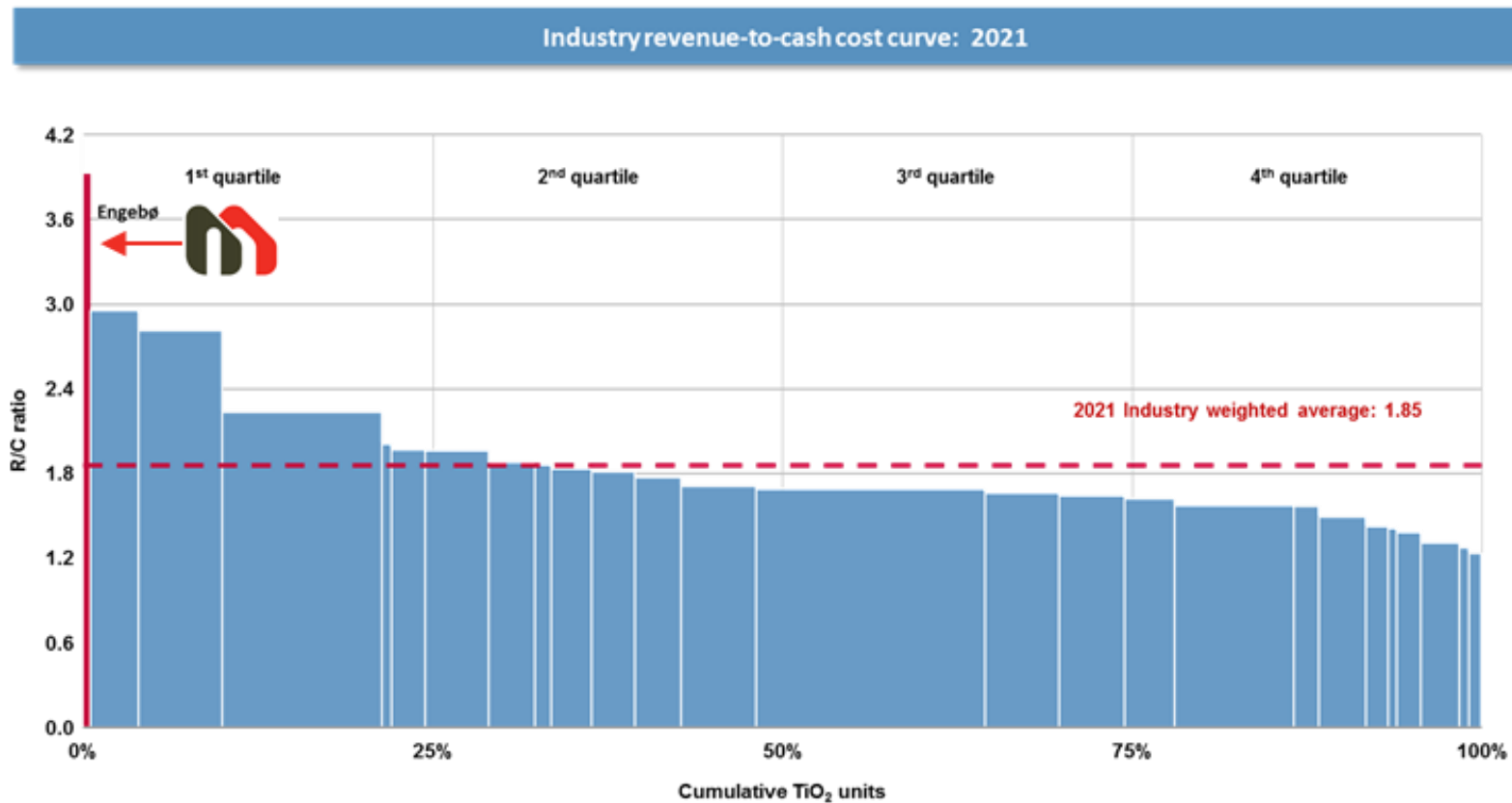
PFS with large upside potential

- A.** Increased production of garnet to 300 000 tonnes/year
- B.** Extension of mine life to 40 years by including Inferred Resources
- C.** Additional garnet sales in early years



Competitive PFS rutile revenue-to-cash cost position

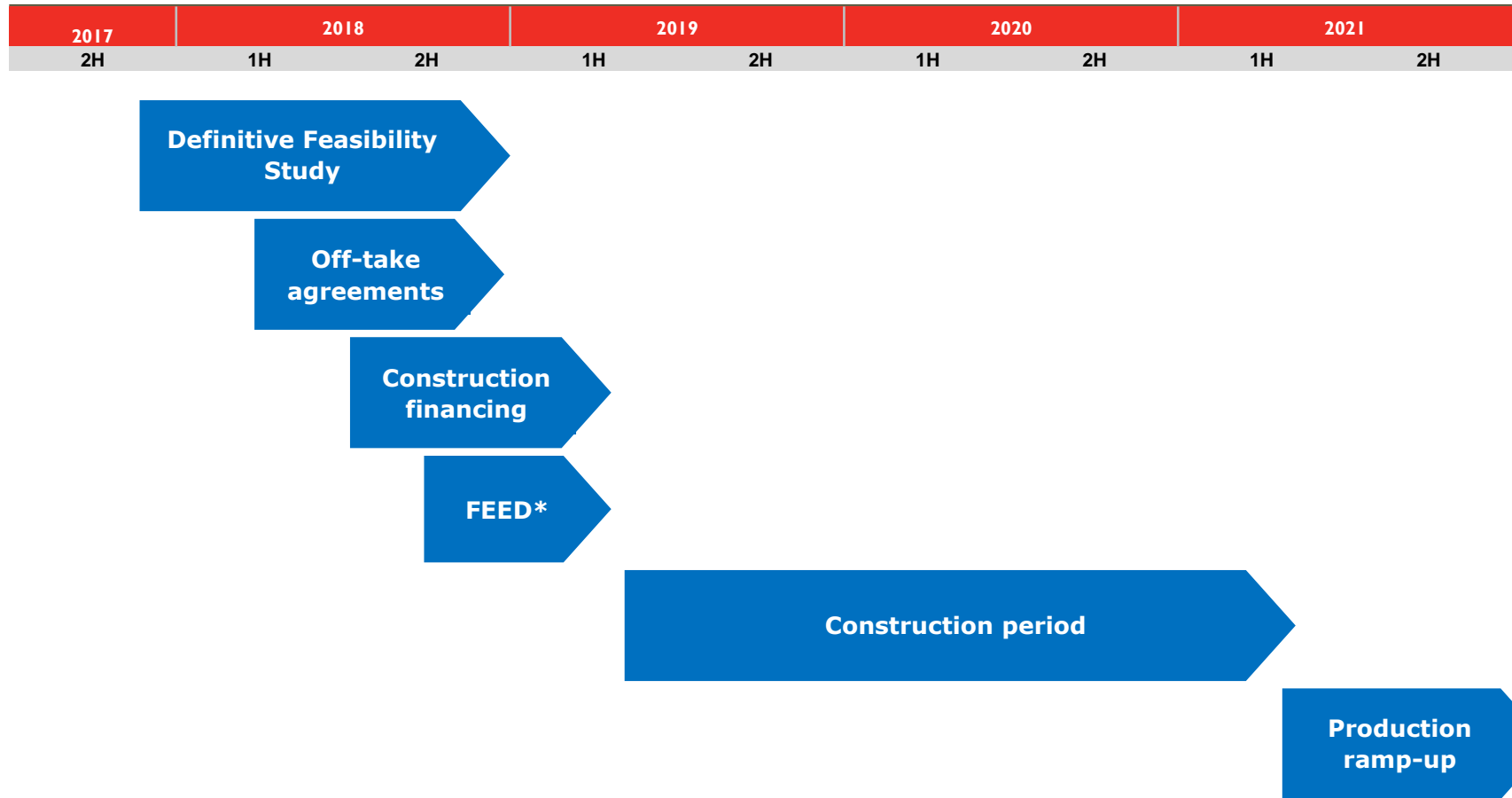
- ✓ The revenue-to-cash cost ratio is based on the first ten years of operations
- ✓ Engebø benefits from producing two high value products with low mining and processing costs



Source: TZMI



Towards construction and production



* FEED: Front End Engineering & Design



Ongoing Definitive Feasibility Study targets project bankability

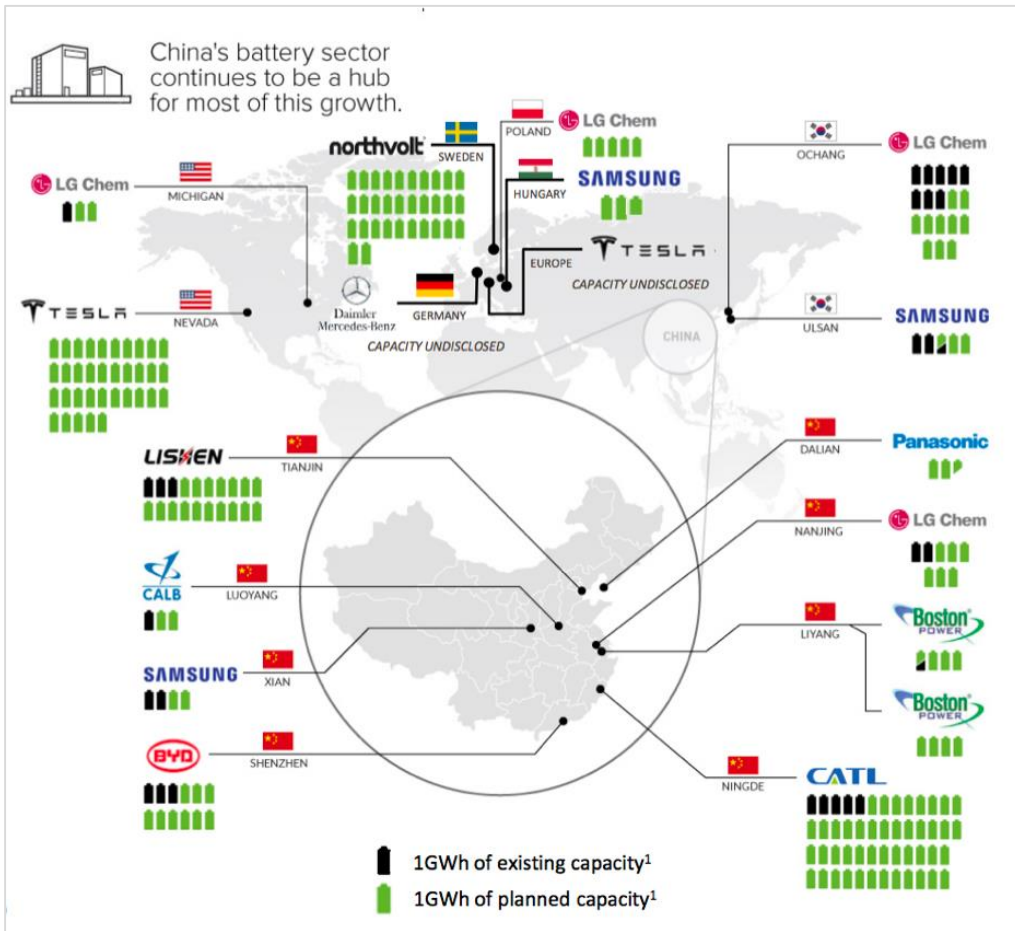
- ✓ Mining trade-off studies, mine design and schedule
- ✓ Processing testwork, ore variability and flowsheet optimisation
- ✓ Modularisation and logistical studies
- ✓ Procurement strategy and procurement operating plan
- ✓ Multi-disciplinary design and engineering work
- ✓ Project Execution Plan and Construction Schedule
- ✓ Risk assessment
- ✓ Building "Owners team" including local project team
- ✓ Cooperation and anchoring with local society



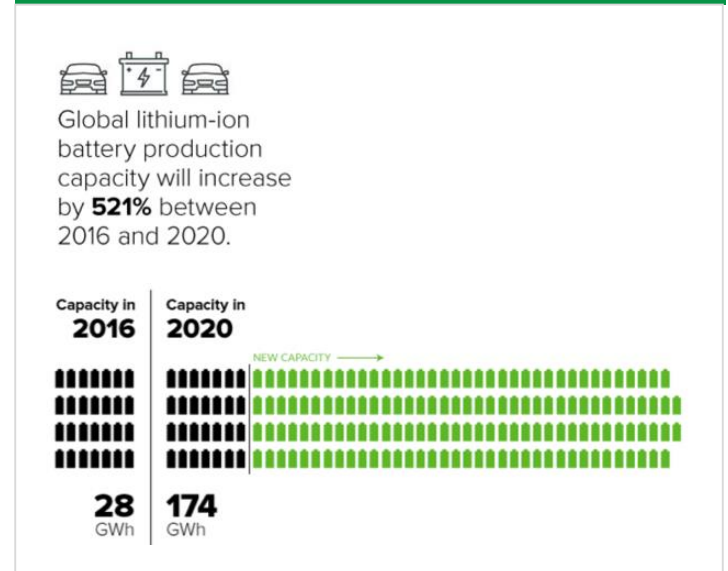
Keliber – Lithium from Europe for future energy solutions



Lithium-ion megafactories

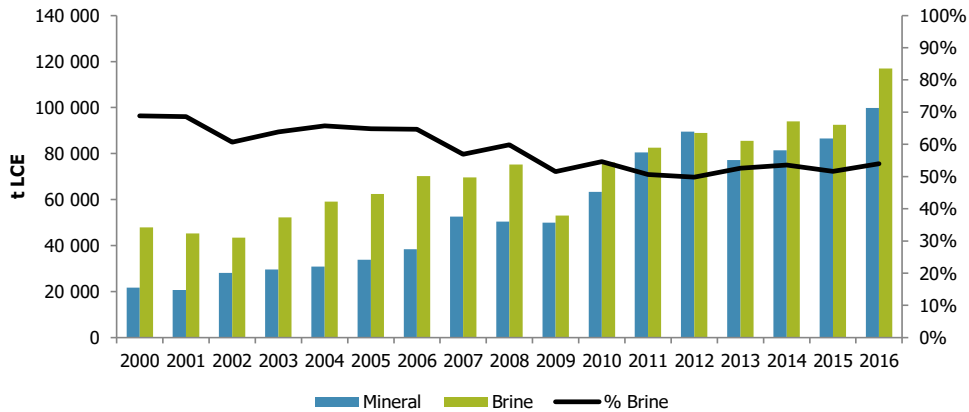


New lithium battery projects have been announced in Europe by SDI Samsung (Hungary), Daimler (Germany), Nissan (UK), Northvolt (Sweden), LG (Poland) and Tesla (location TBD)



Global mine production of lithium

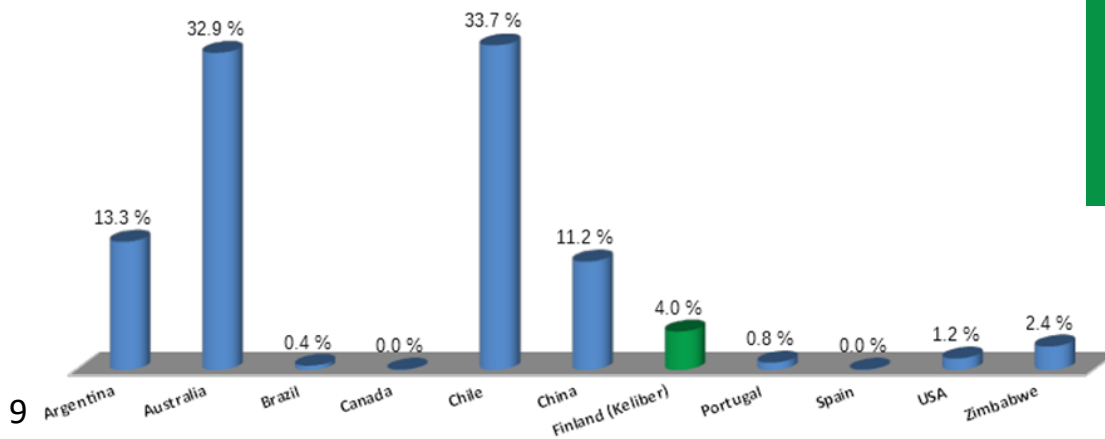
Figure 1: World: Mine production of lithium by type, 2000-2016 (t LCE and % brine)



In 2016 mine production of lithium totalled 216 740 LCE tons

- 20 % increase in production compared to 2015
- Mine production of lithium from hard rock sources growing
- Keliber first Company to produce battery grade lithium carbonate from own ore reserves in Europe

Keliber's future production compared to mine production of lithium by country in 2016 (t LCE)



Project in a nutshell

Lithium carbonate production with high value creation potential

1 Innovative clean tech process

- Efficient and environmentally sound production
- Potential for recovery of valuable by-products

2 Production of high purity lithium carbonate

- 9 000 tonnes of lithium carbonate per annum for +10 years
- Attractive market driven by Electric Vehicle industry

3 Position in the lithium value chain

- Production strategy enables competitive advantage in the lithium value chain

4 Growing resources

- Deposits located in one of the most significant lithium-bearing areas in Europe
- Significant upside potential

Way to production

Definitive feasibility study and preparation for production

Tentative timeline for the next stages	2017	2018	2019	2020
Basic Engineering – Definite Feasibility Study				
Permitting (environmental, mining and other)				
Detailed Engineering				
Construction				
Commissioning and testing				

Production estimated to start 2020

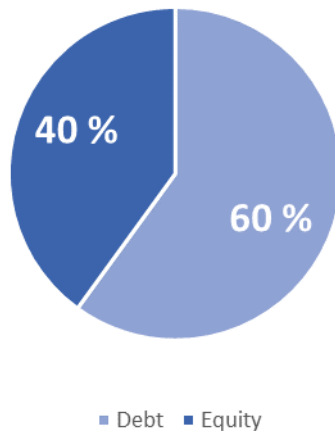
Summary

- 1 The Engebø project – One of the world's best rutile and garnet deposits**
 - Total of M&I of 98 mill. tonnes (3% TiO₂ cut-off)
 - High metal grades: 3.9% rutile grade and share of garnet is 44%
 - Favorable logistical location in a stable political environment in Norway
- 2 Solid market outlook**
 - Rutile – depleting existing resources resulting in supply deficit and tighter market
 - Garnet – emerging mineral with strong growth, no current European production
 - Lithium – exceptional growth of demand driven by electric / hybrid cars production
- 3 Total PFS project NPV of NOK 332 billion**
 - Phased development with CAPEX estimate of USD 207 mill. in first phase (PFS)
 - Start-up in 2021 and later investments funded by operational cash flow
 - IRR of 20.8% and less than 5 years payback (PFS)
- 4 Robust project economics**
 - Garnet price and volume impact cushioned by agreement with Barton Group.
 - High project flexibility
 - Low environmental footprint, and all required permits granted
- 5 22% ownership in lithium development company Keliber**
 - Early move into the highly attractive lithium market
 - Ongoing DFS and likely commercialization
 - Financial investment with potentially high return
- 6 Project de-risking and bankable Definitive Feasibility Study (DFS)**
 - The DFS includes plans for sale/offtake and basic engineering
 - Exploring several opportunities for construction financing
 - Partnered with blue chip professionals on DFS

Financing

- ✓ Sufficiently financed until Q4 2018, based on current activity plans
- ✓ Consideration of various opportunities for further financing is ongoing
 - New equity
 - Divestments
 - Strategic partnerships
 - Debt instruments

Tentative outline of construction financing:



Sources of capital

- Equity (industrial partners, shareholders and others)
- Bank loans
- Bonds
- Streaming/Royalty
- Leasing
- Supplier credits
- Hybride instruments (i.e. convertible bonds)

THANK YOU!

Safety – Environment - Innovation



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