Minerals for a sustainable future

NORDIC MINING

Extended company presentation

Q3 2022

08 November 2022

Disclaimer

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Today’s presenters

Ivar S. Fossum

Chief Executive Officer

- 16 years’ with Nordic Mining (since founding)
- 20 years experience from various management positions in Hydro Oil and Gas, Hydro Agri International and FMC Technologies
- MSc in Mechanical Engineering from NTNU, Trondheim, Norway

Christian Gjerde

Chief Financial Officer

- With the company since August 2020
- 14 years’ experience from management positions in NorgesGruppen ASA, Telenor ASA, and Yara International ASA. Experience from large-scale mining projects and operations in Brazil, Canada, Ethiopia and Finland
- Master of Professional Accounting from Griffith University, Queensland, Australia

Mona Schanche

VP Resource and Sustainability

- 14 years’ with Nordic Mining
- Previous experience as a Geologist for Titania AS (Kronos Group) and various exploration and mine development projects
- MSc in Resource Geology from NTNU, Trondheim, Norway

Q3 2022 Highlights – over 75% of project financing secured for Engebø

Financing

- *USD 55 million royalty agreement with Orion Resources[1]*
- *USD 100 million senior secured bond*

Commercial

- *Project financials significantly improved from UDFS*
- *Full rutile production sold: second rutile offtake agreement signed*
- *Garnet offtake agreements negotiations ongoing*

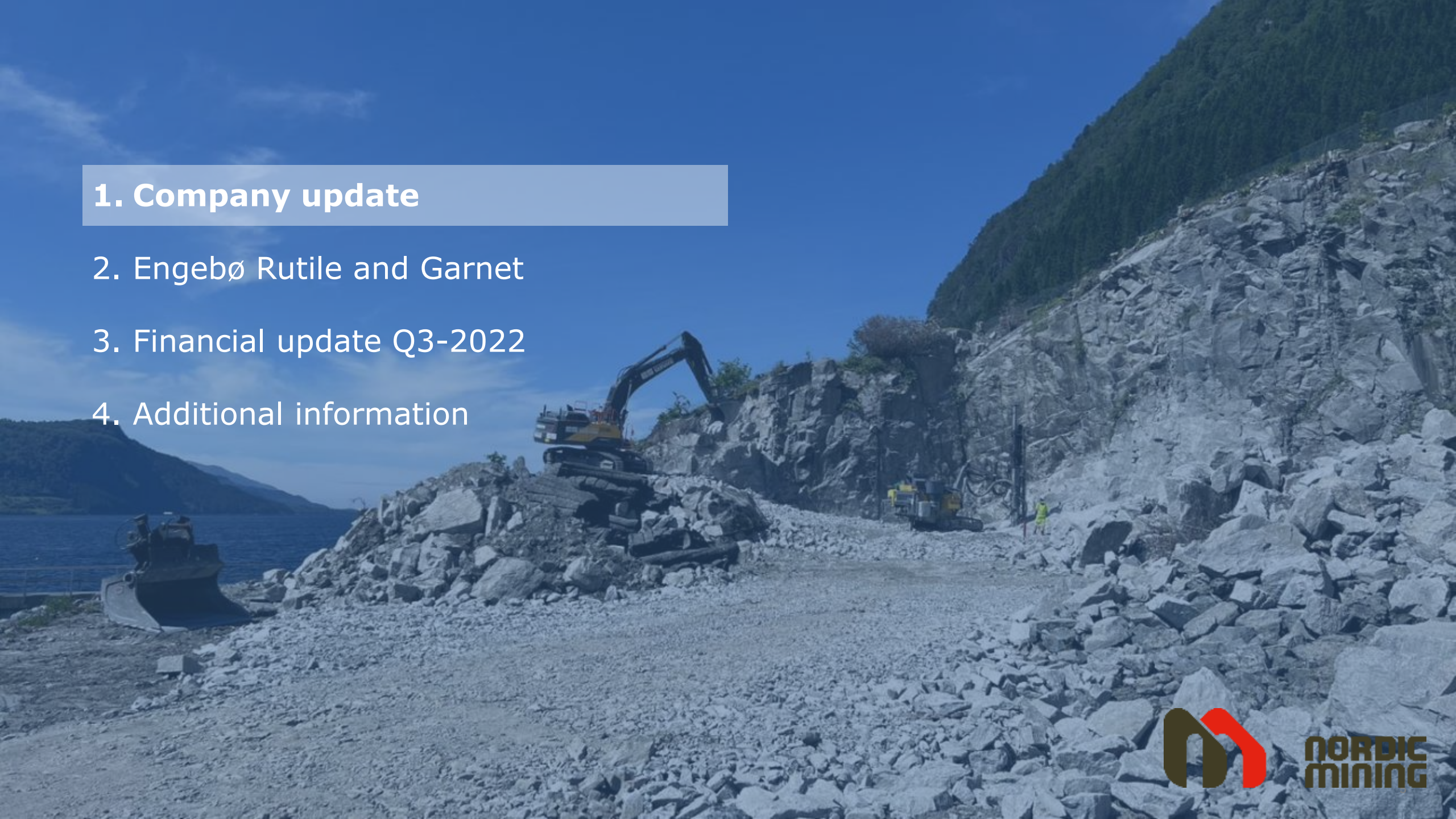
Project readiness

- *Project progressing according to plan*
- *Production start-up in 2024*

Other

- *ESG: Focus on climate and biodiversity*
- *Mining rights confirmed in the appeal court*

1) Investment from Orion Resource Partners will comprise of a USD 50 million non-dilutive royalty instrument to Nordic Rutile AS and USD 5 million in equity to Nordic Mining ASA



1. **Company update**
2. Engebø Rutile and Garnet
3. Financial update Q3-2022
4. Additional information

Building a Norwegian sustainable industrial company to deliver critical minerals

Fully permitted high-quality asset with low cost and industry-leading ESG profile

Engebø Rutile and Garnet project in Norway to produce for 40 years

Broad push from Norwegian industry, politicians and local communities for the sector – Engebø project will create more than 250 jobs[1]

The Confederation of Norwegian Enterprise (NHO), Confederation of Trade Unions (LO), and the Norwegian Mineral Industry and Confederation

Strong political drive in the EU and Western world to increase security of supply

EU has released the Critical Raw Materials Act (Sep-22), and intend to establish Strategic Partnership with Norway on raw materials and batteries

Nordic Mining aims to build a Norwegian industrial company by developing a green and sustainable value chain to deliver critical minerals to Europe and international markets

1) Environmental Impact Assessment, NIBR

Engebø is a project with attractive characteristics in a favourable location

Project highlights

Engebø Rutile and Garnet

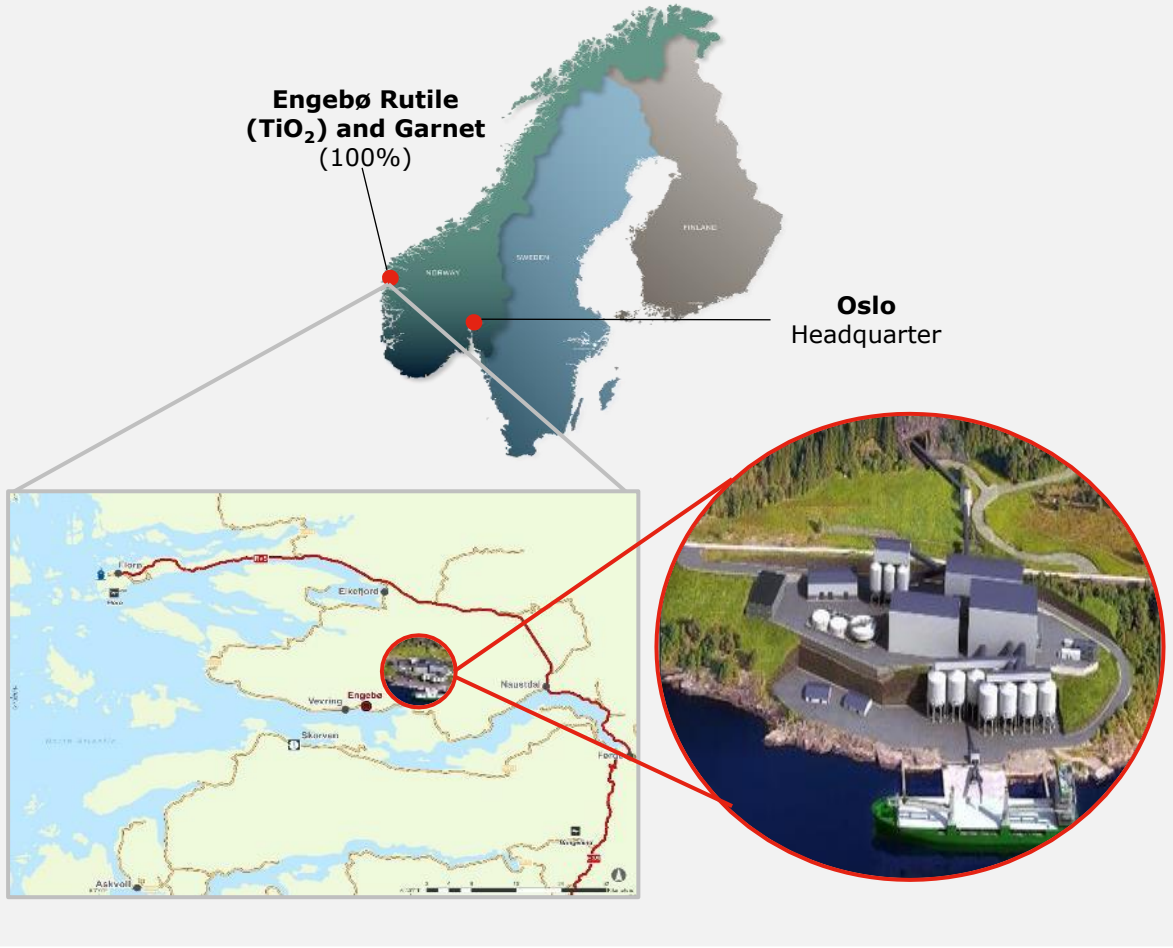
Titanium

Garnet

- **Large dual-mineral resource with high-grade rutile and garnet**
- **Attractively located in Western Norway – a country with stable and supportive policies towards mining operations and AAA rating**
- **Favorable location by the sea with ice-free, deep-sea quay – ensuring attractive shipping logistics to Europe**
- **Renewable hydroelectric power**
- **Region of skilled, industrial labor with maintenance and service vendors available**
- **Long-term offtake agreements securing future revenue visibility**

133 mt M&I Mineral resources[1]	**<5 years** Payback period	**USD 453m** Post-tax unlevered NPV8	**39 years** Life of Mine

Minerals for a sustainable future



1) Mineral Resource estimates (June 2018) completed by Competent Person Adam Wheeler, corresponding to the guidelines of the JORC Code (2012 edition). Ore Reserve estimate developed by Competent Person Matthew Randall (Open Pit) and Anton von Wiellight (Underground), Axe Valley Mining Consultants

Supplying critical industrial minerals - mitigating supply chain risk

Rutile

Application areas

Ti-metal


Renewable energy


Pigment


Welding

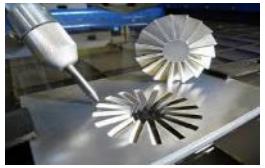

- Titanium is one of the most versatile elements with broad applications in multiple value chains - **rutile is the cleanest and purest form of TiO_2** and the only feedstock that can be used directly in production of pigment and metal
- **No rutile production** in **Europe** apart from Ukraine- 66% production stem from Sierra Leone, South Africa, China and Kenya
- **Attractively positioned** with **resource depletion** in Australia, Africa and CIS driving a **long-term supply deficit**

Nordic Mining is strategically positioned in the growing USD 17bn TiO_2 market

Garnet

Application areas

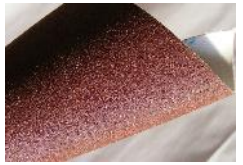
Waterjet cutting



Water cleaning

Sand blasting

Abrasives/other



- **Garnet is the only viable mineral for industrial waterjet cutting** – solid demand growth expected for the next decade
- China and South Africa accounts for 48% of supply, **no production** in **Europe**
- NOM is **attractively positioned with favorable logistics from Engebø** to Europe and US – the largest markets for garnet dependent on significant imports

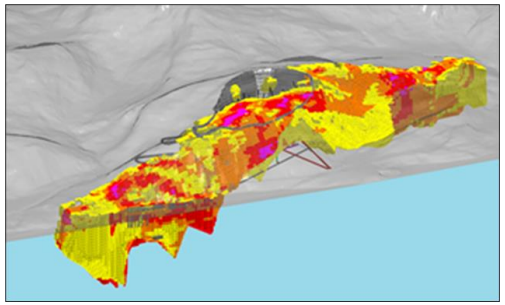
Nordic Mining will be the first producer of high-quality garnet in Europe

15 years of progress at the Engebø project, positioned for the next ~40 years

2006

Project initiated

2006: Acquired rights to the Engebø deposit



2007 – 2021

Studies, regulatory, permits and stakeholders

2009: Scoping Study completed

2015: Zoning plan and environmental permits granted

2016: Resource Estimation completed

2017: Prefeasibility study completed

2020: Defined Feasibility Study ("DFS") completed

2021: Updated DFS ("UDFS") with improved economics and ESG footprint

Defining project and securing regulatory and environmental permits under some of the strictest standards globally

2022 and onwards

Construction and long-term value-creation

2022: Final approval of Operational License

2022: Keliber stake sold for EUR 46.9 million

2022: Royalty Agreement with Orion Resource Partners

2022: New USD 100 million senior secure bond issued

2022: Full rutile production the first 5 years sold

2022: Nordic Mining wins over AMR in the appeal court (won two instances with expenses)

USD 211 million funding secured – positioned for ~40 years of production and value-creation

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Health & Safety

Key Performance indicator	Q3	Year to date	Target
Lost time injuries (1/1 million working hours)	0	0	<2,5[1]
Total recordable injuries (1/1 million working hours)	0	0	<8,8[1]
High potential incidents	1	1	0
Low potential incidents[2]	12	30	-

HSE status

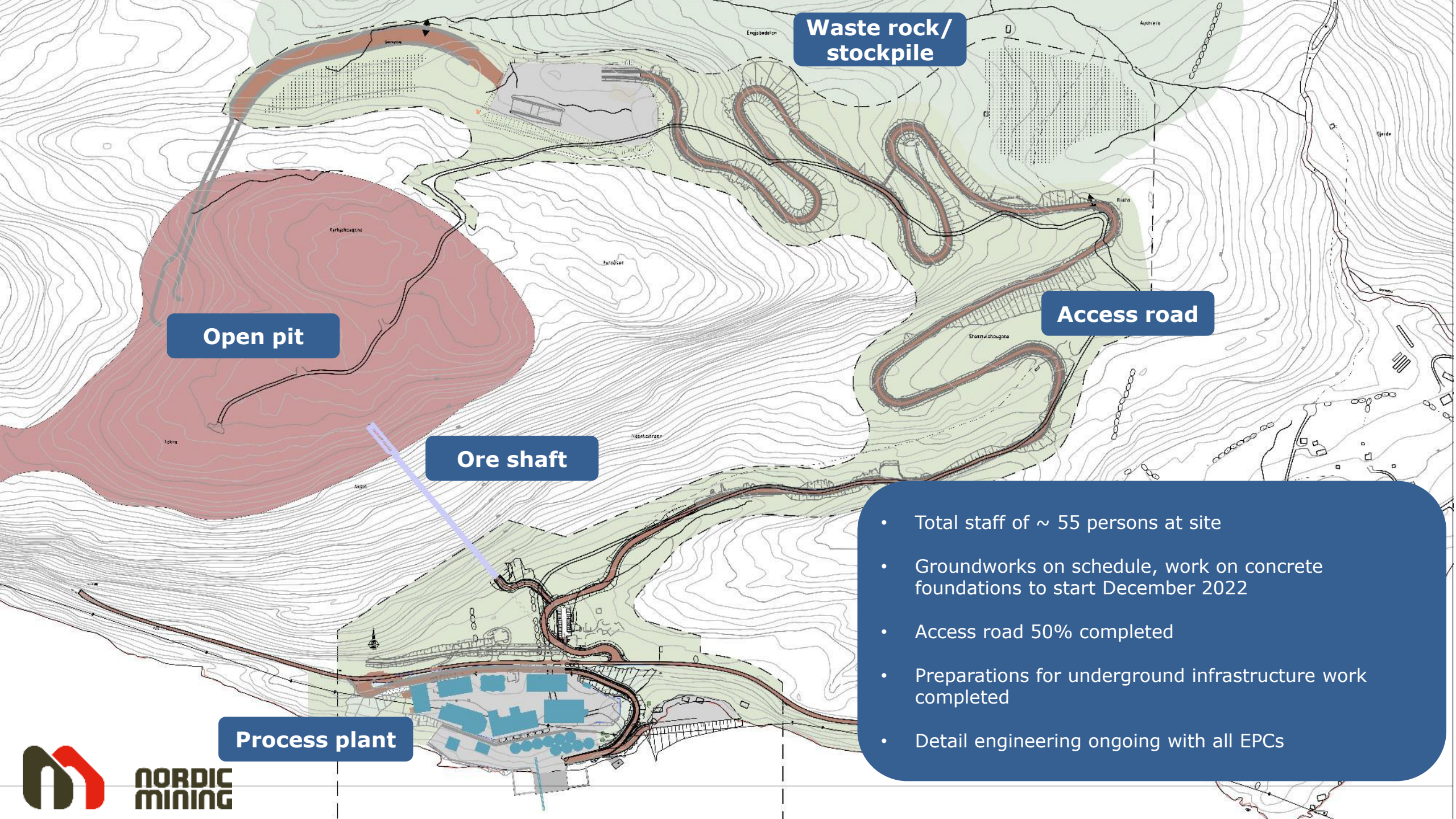
- No injuries in Q1-Q3
- No incident when drilling into area with old explosives
- The Norwegian Labor Inspection Authority (Nw. Arbeidstilsynet) has carried out a document inspection of Nordic Rutile AS regarding the asbestos case. The result of the inspection was "no violation of the regulations"
- 4 risk workshops carried out

Incidents

- Dump truck incident
  - The dump truck partially overturned when reversing
  - No injuries to personnel, only minor injuries to truck
  - Investigation revealed a need to mark edges more clearly

1) Source: The Federation of Norwegian Industries
2) Health, Safety and Security reported Non-Conformance

Preparatory groundworks progresses according to plan



- Total staff of ~ 55 persons at site
- Groundworks on schedule, work on concrete foundations to start December 2022
- Access road 50% completed
- Preparations for underground infrastructure work completed
- Detail engineering ongoing with all EPCs

NORDIC MINING

Material funding progress in 2022 from large financial and strategics partners

Orion Resource Partners

USD 50m royalty (non-dilutive)

UDS 5m equity commitment

Iwatani

Binding 5 year off-take agreement

USD 19m equity commitment[1]

Nordic Bond

USD 100m bond raised

Global investor distribution: 45% US, 26% Scandinavia, 24% UK and 5% Central Europe

EPC partners

Consortium of local EPC partners

USD 16m Convertible Loan – used to fund acquisition of main properties and early construction work

Extensive technical, commercial, legal and financial review[2]

HATCH, GOLDER MEMBER OF WSP, PETER W HARBEN Industrial Mineral Consultants, THOMMESSEN, NORTON ROSE FULBRIGHT, SLR, TiPMC Consulting, KVALE, EY, simmons+simmons, Wiersholm

USD 190m from large financial and strategic partners during 2022

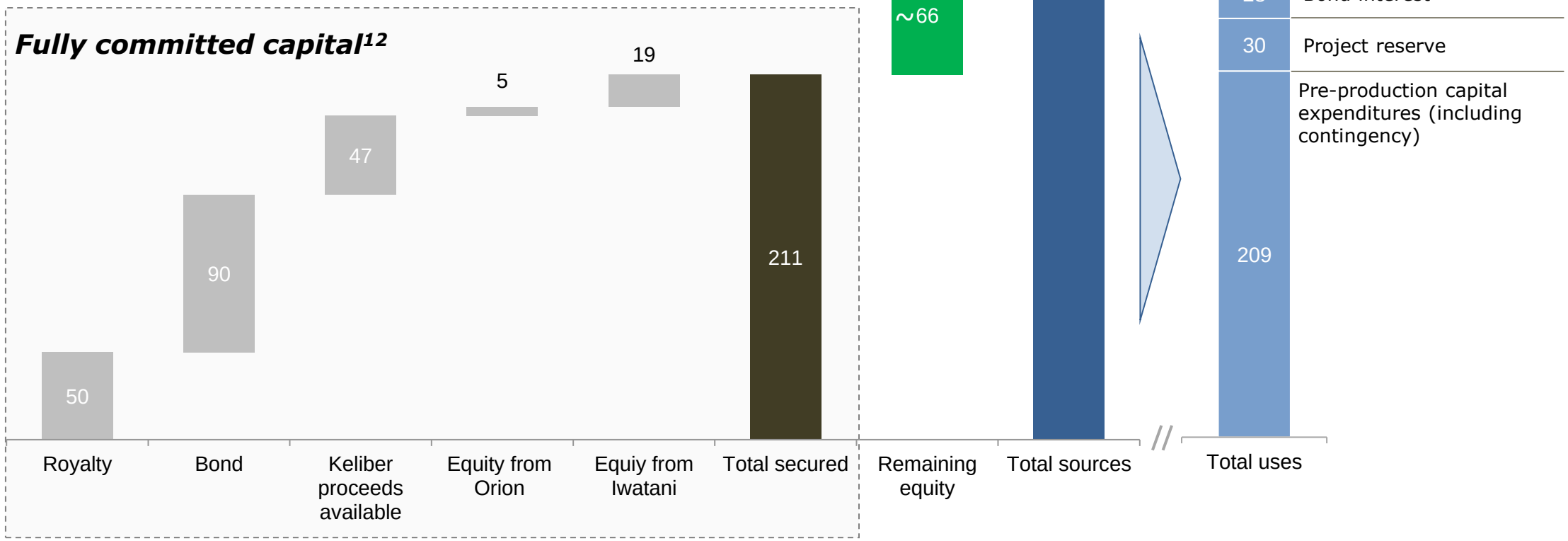
EUR 46.9m in equity through sale of stake in Keliber

Source: Companies, Oslo Børs NewsWeb

1) NOK 191.7 million (corresponding to USD 20 million at the time of the signing of the agreement) at USDNOK foreign exchange rate at date of report 2) Please refer to the appendix for a full overview

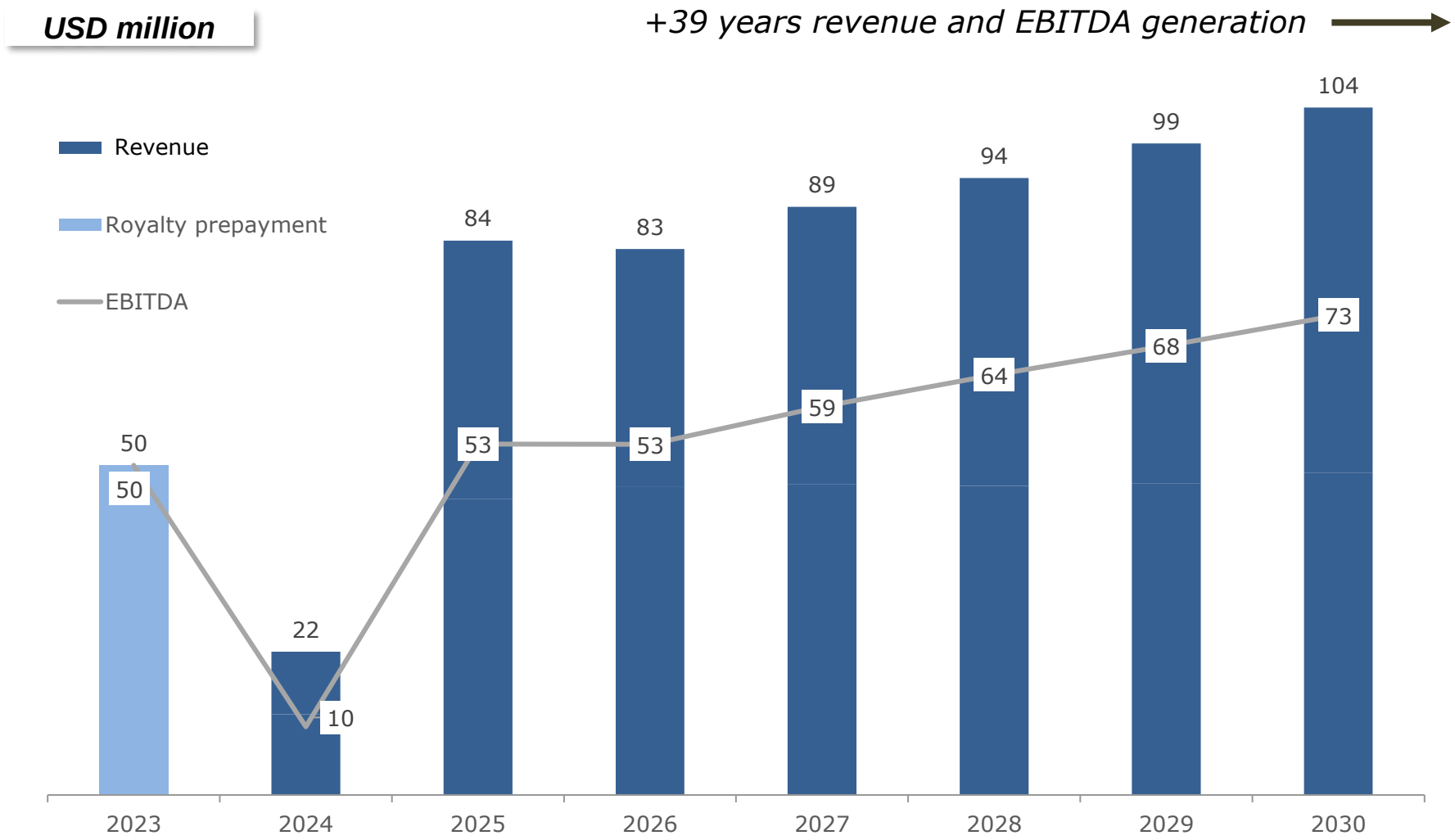
Significant progress on financing in 2022 – less than 25% in equity remaining

The remaining equity raise is the last piece of the puzzle for Engebø to become fully financed



1) Royalty Agreement with Orion is conditional and subject to subject to formalization of final documentation 2) Funds from Keliber and Iwatani at relevant foreign exchange rate at date of report

Forecast for solid revenue and low cost, provides substantial EBITDA[1]



Total revenue of USD 624 million from 2023-2030

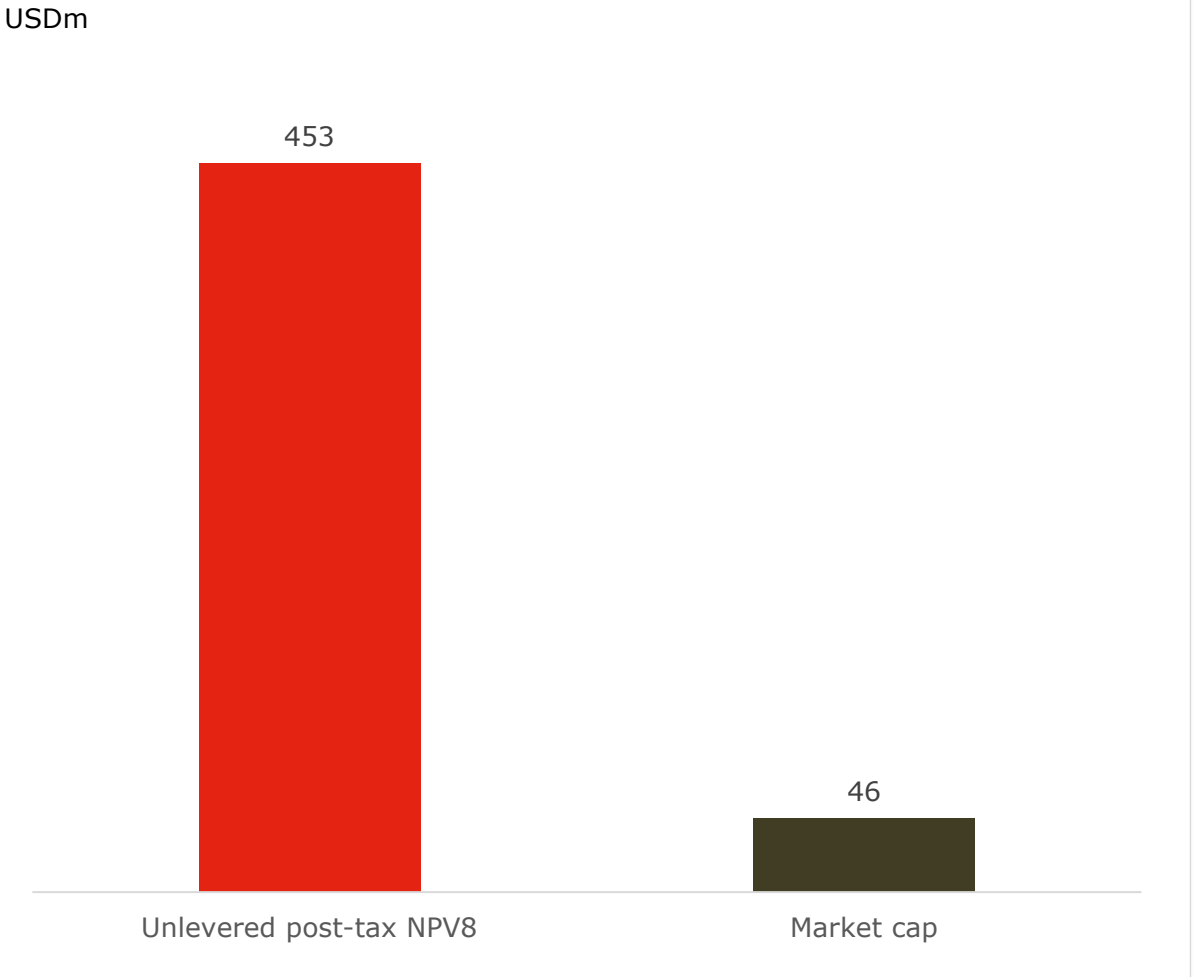
Avg. EBITDA margin of 65% from start of production

Majority of revenue secured by offtake agreements

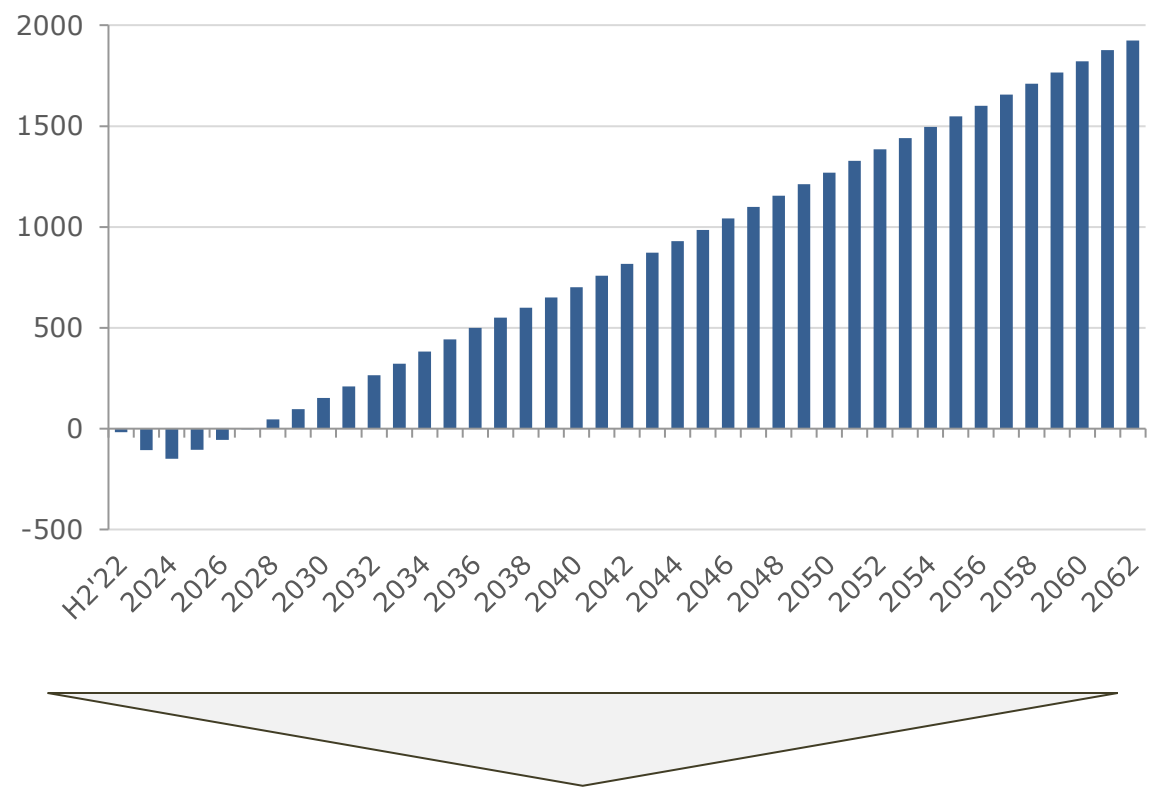
1) EBITDA assumes USDNOK of 9.68 and accounts for 11% of revenue being paid as royalty to Orion

Fully financed post equity raise and outlook for strong cash flow generation

Substantial upside potential to a de-risked project – illustrative metrics[1]



Potential for strong cash cash flow generation (USDm)



Outlook for material cash flow generation and shareholder distributions in the coming decades

1) Post-tax NPV8 based on the same production and cost profile as UDFS from 2021 taking account into investments related to early-works and updated forecasted sales prices and market cap as per 07 November 2022

Significantly improved economics, NPV8 increased by > 70% since UDFS

USD 453m
Unlevered post tax NPV_8

24.4% IRR
Unlevered post tax

USD 62m
Avg. annual EBITDA '25-'30[3]

USD 50m
Avg. annual free cash flow '25-'30[3]

LOCATION

Stable and supportive policies towards mining operations

Attractive shipping logistics to Europe

RESOURCE

133.2 Mt measured and indicated resources[1] (254 Mt inferred future resources)

3.51% TiO_2 grade and 44% garnet grade[1]

~39-year LoM with 1.5 Mtpa ore feed to plant)

INFRASTRUCTURE

Excellent infrastructure with access to **renewable hydroelectric power**

Good **access to regional skilled/industrial labor** and maintenance/service vendors

PROJECT READINESS

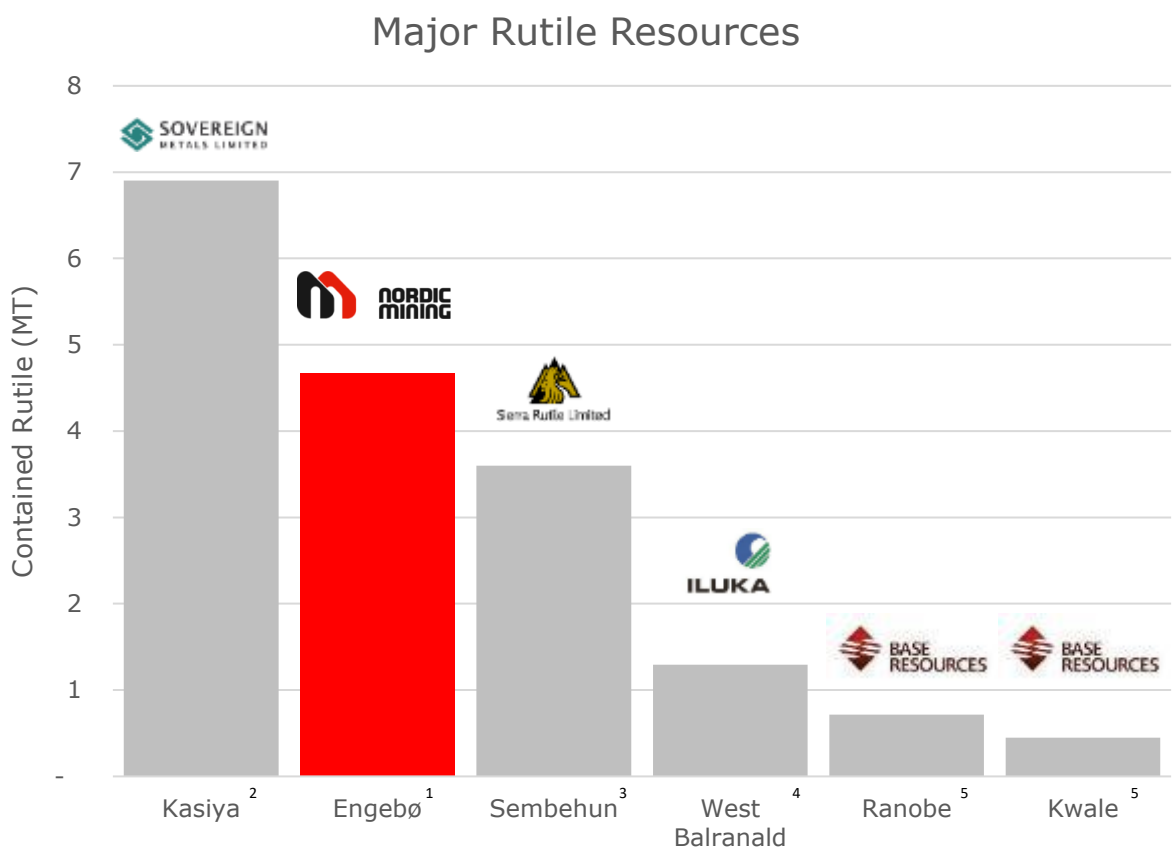
Fully permitted project With strong fundamentals confirmed in UDFS

Fully de-risked and efficient project design (extensive test work carried out)

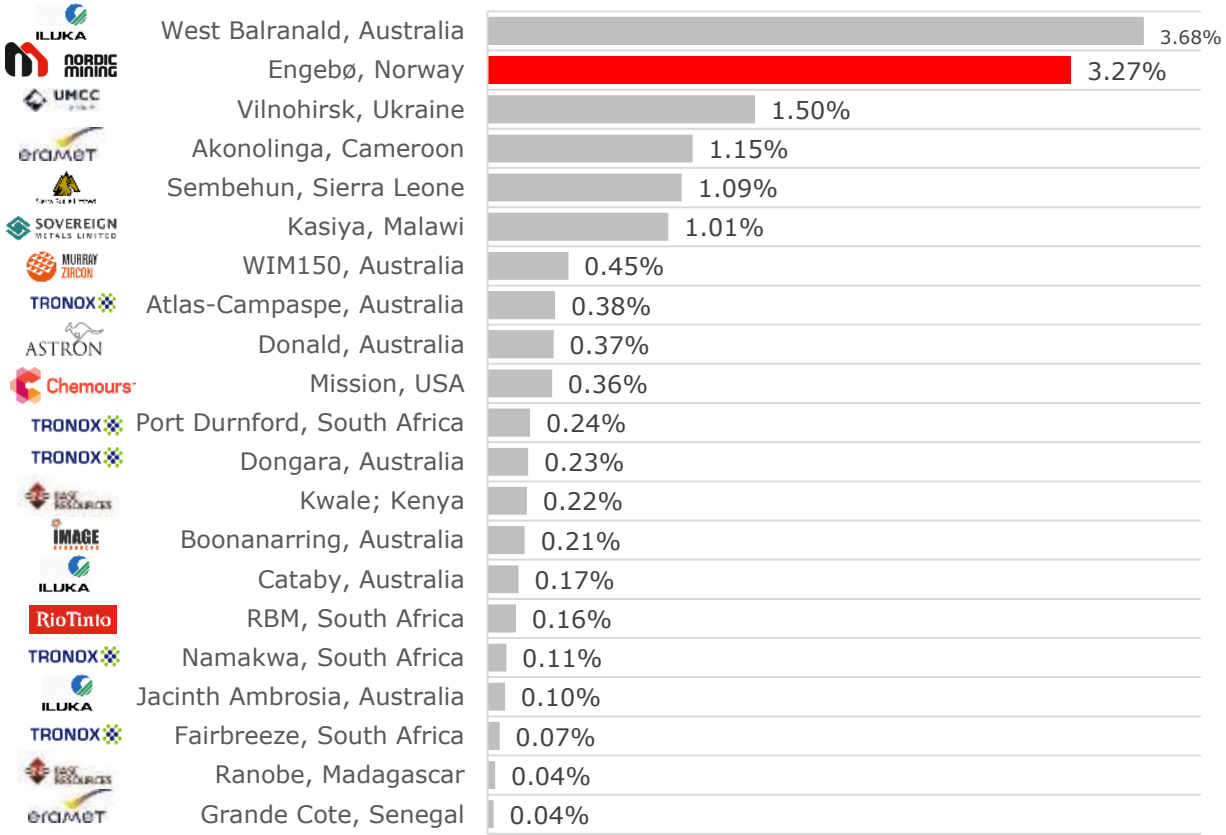
1) Resource estimates (June 2018) completed by Competent Person Adam Wheeler, corresponding to the guidelines of the JORC Code (2012 edition)
2) Defined as CAPEX through 2024 3) Assumes LOM average realized prices of 1,443 USD/t and 311 USD/t for rutile and garnet, respectively
3) EBITDA and FCF accounts for 11% of revenue being paid as royalty to Orion

Among the largest high-grade rutile resources globally

Compared with major operational and planned rutile resources (MI)



Indicative rutile grades (TiO_2) for current producers and planned projects (MI&I)



1) Nordic Mining Mineral Resource estimates (June 2018) completed by Competent Person Adam Wheeler, 2) Sovereign Metals webpage, Kasiya Expanded Scoping Study Presentation June '22, 3) Sierra Rutile Demerger Booklet, June '22, 4) Iluka Summary Ore Reserves and Mineral Resources 2021 and 5) Base Resources, 2022 Annual Report to shareholders

Long-term offtake agreements secure future revenue visibility

Rutile – sales secured for full annual rutile production

Iwatani

Binding offtake agreement signed in June 2022

5-year agreement
From commencement of production

20,000mt per year

Take-or-Pay commitment

Price determined from TZMI index

Mutual renewal of 3 years
With 15 months notice

Equity investment of USD 20m
From Iwatani in construction financing

Iwatani Corporation

- Founded 1945
- Engaged in the provision of gas and energy services
- Headquartered in Osaka, Japan
- TYO listed (8088)
- ~USD 2.2bln MCAP

Global TiO_2 Partner

Binding offtake signed October 2022

Agreement with major pigment producer

Terms are confidential and not to be disclosed by Nordic Mining

This agreement, combined with the Iwatani agreement secures sales for up to the full annual production of rutile the first 5 years

Garnet

EU Partner

Negotiations ongoing

5-year agreement
From commencement of production

«Committed» volume build-up
20,000 to 50,000mt in year 4

«Best Effort» volume build-up
70,000mt in year 4

Take-or-pay commitment

Annual price discussions
Based on market prices

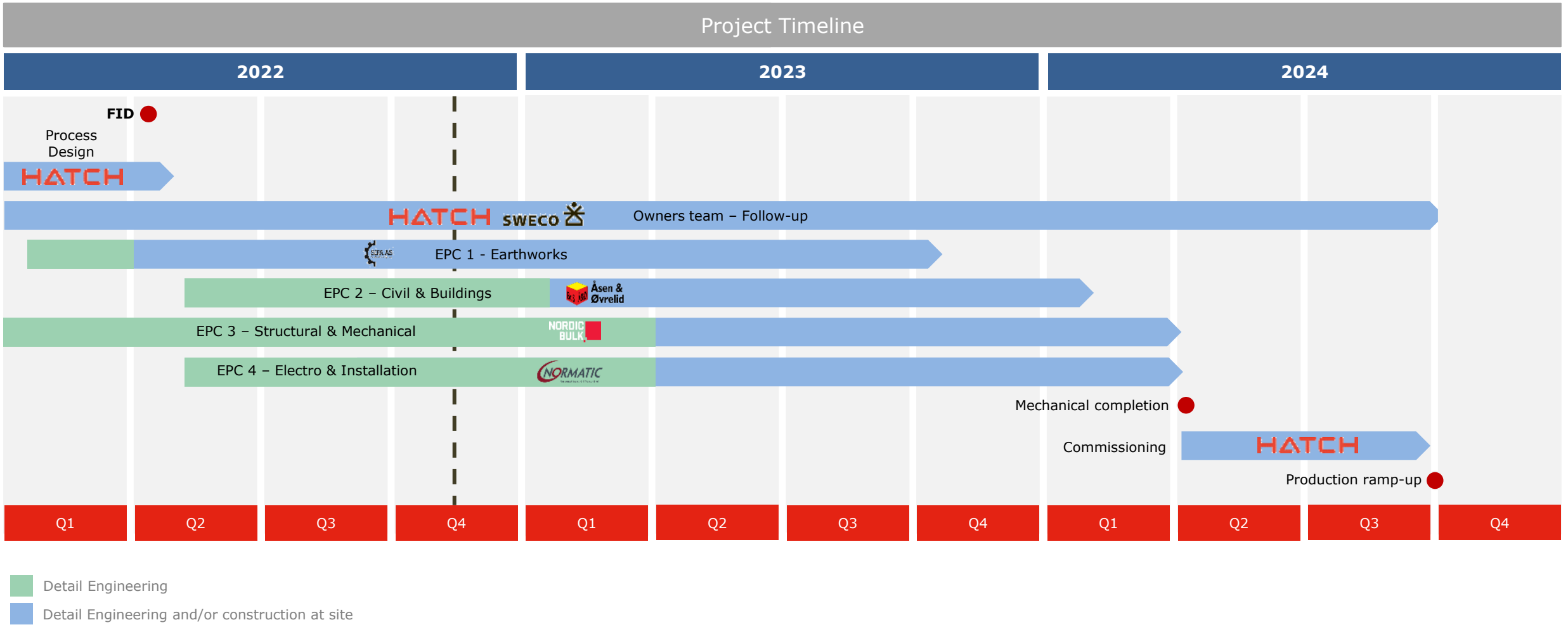
Mutual renewal of 5 years
With 15 months notice

US Partner

MOU signed for garnet distribution in the US and Canada

Source: Refinitiv 02.10.2022

Early construction started H1'22 and on track to produce in 2024



Sustainability at the core of our business

Environmental responsible

- ✓ Work towards zero-emission operations and contribute to reduce value-chain emissions
- ✓ Establish management systems to assess, avoid, reduce and monitor negative impact on environment
- ✓ Restore and compensate loss of biodiversity with the long-term goal of net gain

Positive impact on communities

- ✓ Establish relations based on transparency, trust, and respect with communities and stakeholders
- ✓ Value local knowledge and capabilities, and respect cultural, political and social diversity
- ✓ Promote initiatives to strengthen economic diversification and positive impact on communities

Safe and healthy work environment

- ✓ Build operations with safety embedded in the culture and mindset of the way we work and conduct business
- ✓ Map and analyze risk associated with our activities and products
- ✓ Promote diversity and mutual respect among employees

ESG Policy anchored in UN's SD Goals and the Towards Sustainable Mining framework

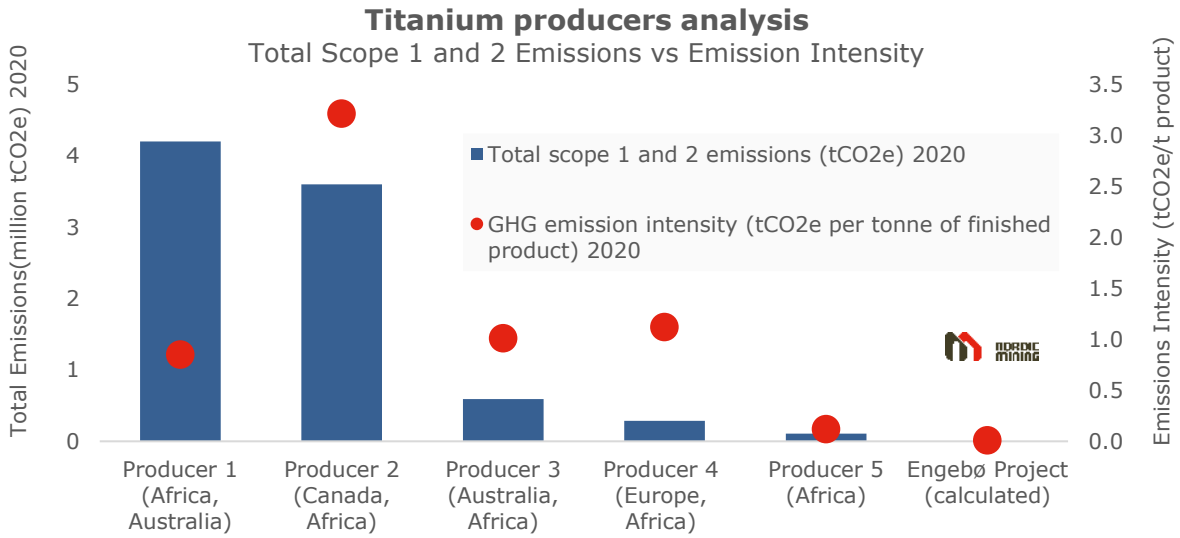
SUSTAINABLE DEVELOPMENT GOALS

Towards Sustainable Mining
Bærekraft i Norsk Bergindustri

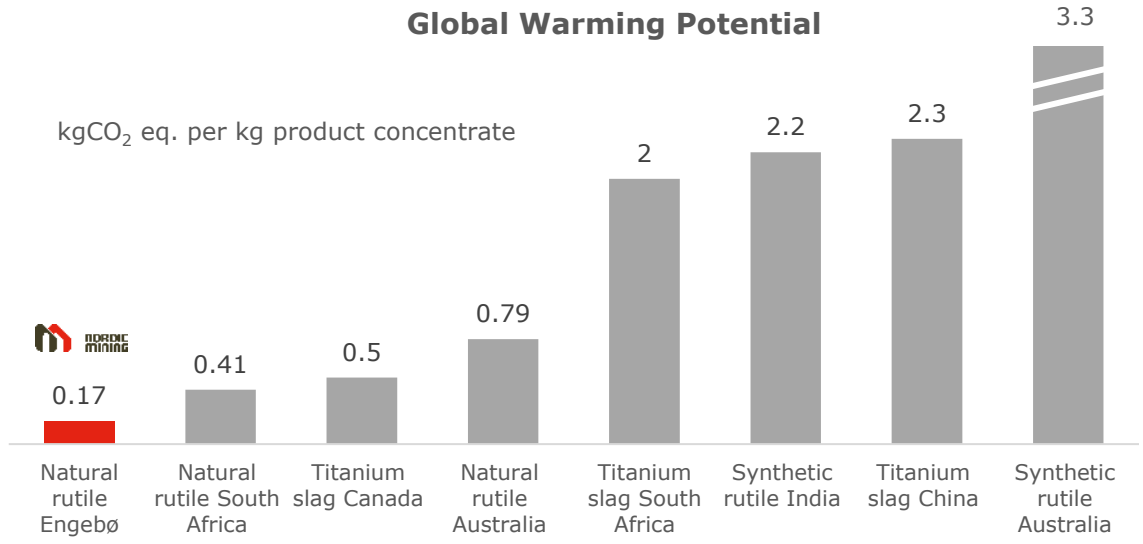
Source: https://www.norskbergindustri.no/artikkelarkiv2/tsm2/

World's most climate friendly titanium feedstock

Industry leader on GHG emissions[1]



Life Cycle Analysis proves superior rutile product[2]



***Zero-emission process** plants due to use of hydro electric power*

***Low energy consumption** due to tight infrastructure and efficient design*

***Emissions reduced by 85%** due to use of electrical dryers*

*Work for **zero emissions and phase out fossil fuel processes***

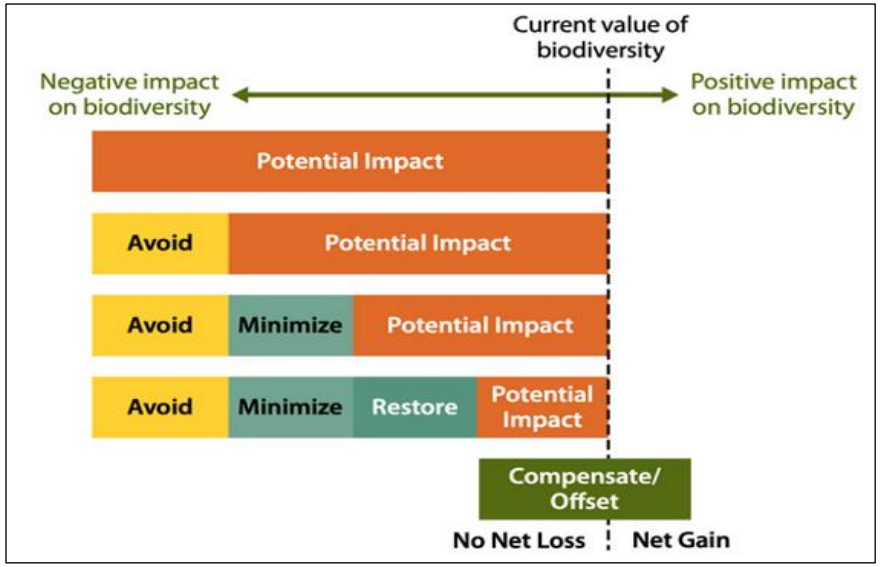
***Substantially lower GHG emissions** from superior natural rutile product*

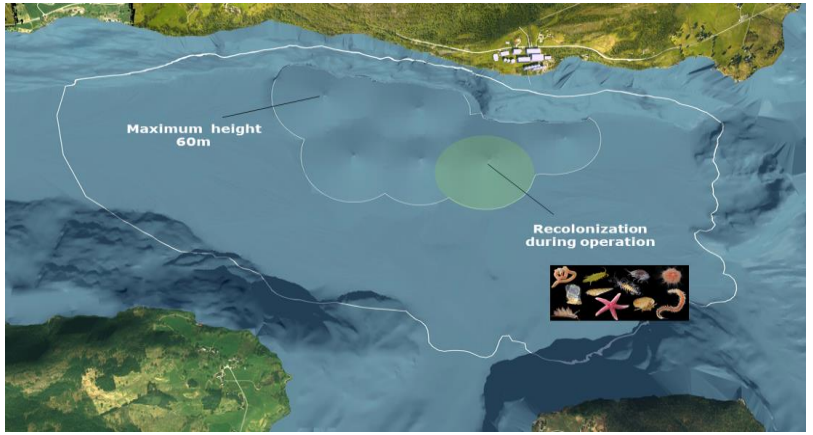
Source: 1) SRK Consulting, UK (2021, including scope 1 and 2)
2) Minviro, UK (2022, including scope 1,2 and 3)

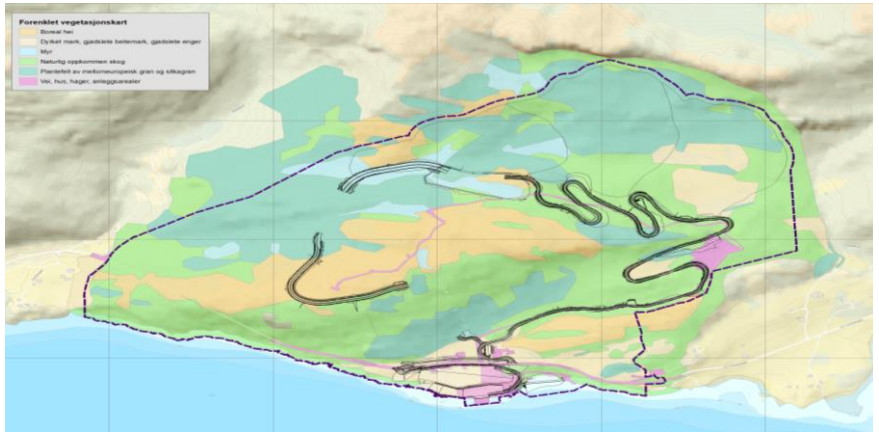
Taking action for biodiversity

Environmentally responsible

- As a response to the United Nation's goal to stop loss of biodiversity, Nordic Mining has adopted a goal of net biodiversity gain over the life of mine for the Engebø project
- To achieve this, a Biodiversity Action Plan is under development with DNV and Asplan Viak
- A map to obtain net gain by avoiding, minimizing, restoring and compensating loss
- A good knowledge base – comprehensive mapping of biodiversity completed
- Work started to enhance biodiversity during the construction phase
- Plan for progressive restoration of mine and waste facilities during operation
- Seek to compensate/offset loss of biodiversity in the region in collaboration with local communities







Source: BBOP, Biodiversity Offsets Design Handbook, ICMM Good Practice Guidance for Mining and Biodiversity

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Keliber sale ensures funding to continue Engebø early construction

- The Group's balance sheet remains solid:
  - NOK 525 million in cash after sale of Keliber; will be used towards Engebø construction
  - Engebø development costs of NOK 51 million capitalized under «Mine under construction» in the quarter with carrying amount at end Q3 of NOK 168 million
  - Realized loss on Keliber investment of NOK 10.7 million as result of changes in foreign exchange, which was offset by foreign exchange gain on EUR consideration of NOK 21.8 million.
  - Fair value of interest-bearing convertible loan assessed to NOK 143.4 million, recognizing a fair value gain in the quarter of NOK 1.9 million

- For details, see full interim report on https://www.nordicmining.com/

Investment Highlights and Q&A

- Sustainable Norwegian industrial minerals producer for the next 40 years
- Significant revenue and EBITDA (65%) generation
- Substantial part of funding secured
- Construction on track for production in 2024
- Industry leading ESG profile

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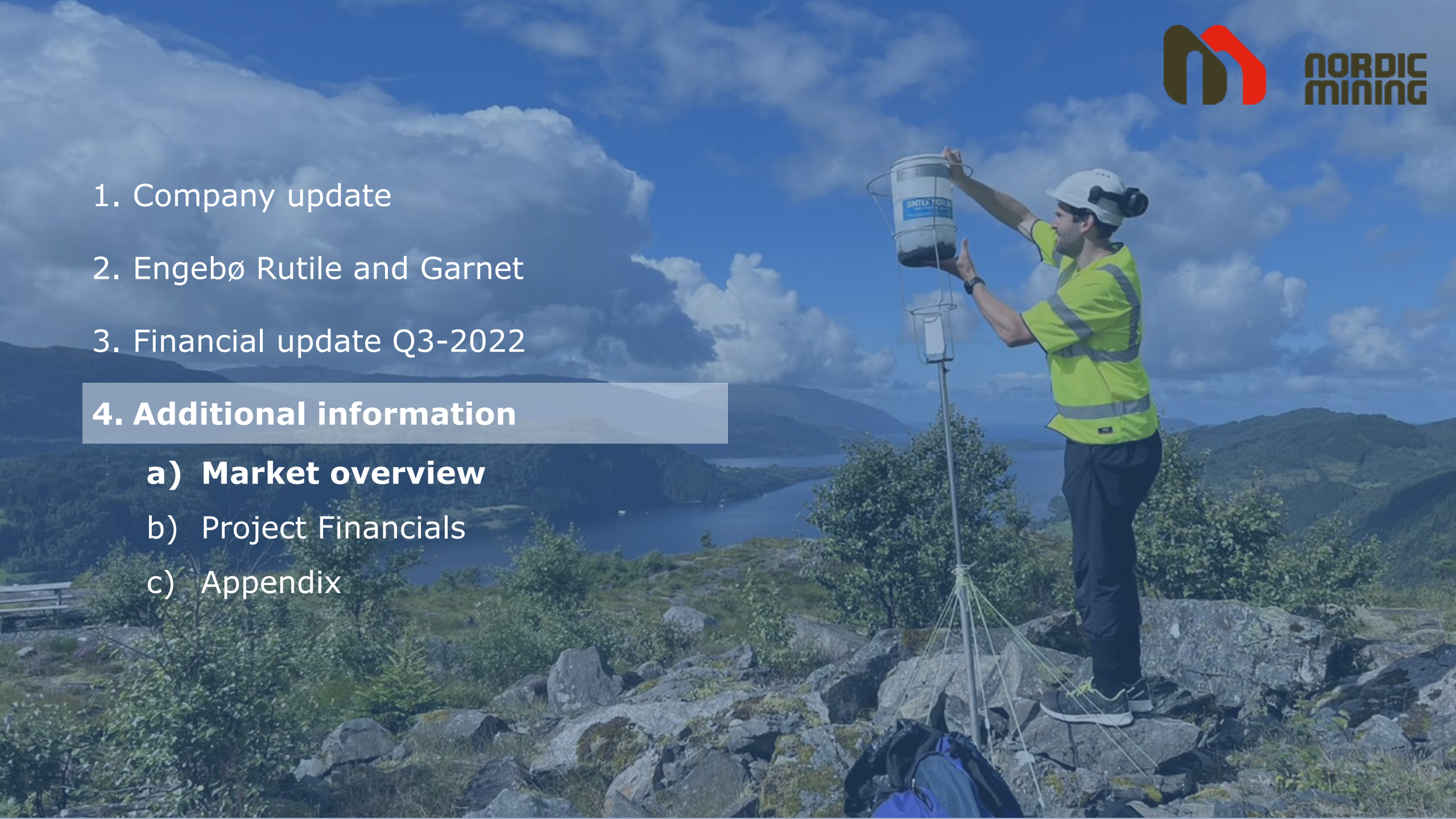

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   a) **Market overview**
   b) Project Financials
   c) Appendix

Natural rutile – Superior titanium feedstock

Properties

- Titanium is one of the most versatile elements with broad applications in multiple value chains
- Rutile is the cleanest and purest form of titanium feedstock and the only feedstock that can be used directly in production of pigment and metal

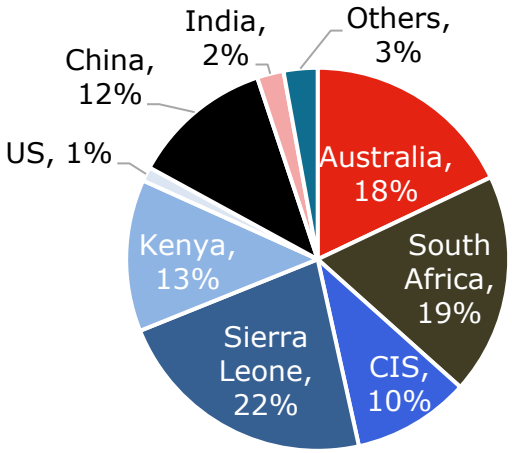
Market drivers

- TiO_2 consumption is closely linked to GDP and income growth as it is an essential component of basic consumer products such as housing, motor vehicles etc.
- Urban population trends in combination with GDP and income growth have historically the primary drivers of long-term demand

Demand by end use[1]

- **Pigment ~89%**
- **Ti-metal ~7%**
- **Welding ~5%**
- **Renewable energy**

Rutile supply by country (2021)[1]

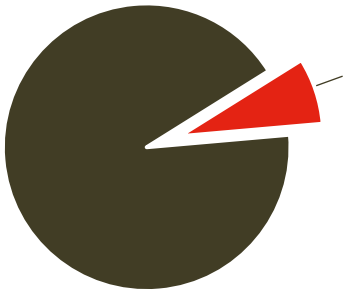


Rutile supply (2021)[2]

Natural rutile supply:

~ 0.7m tonnes

Total annual feedstock demand (2021)[1]



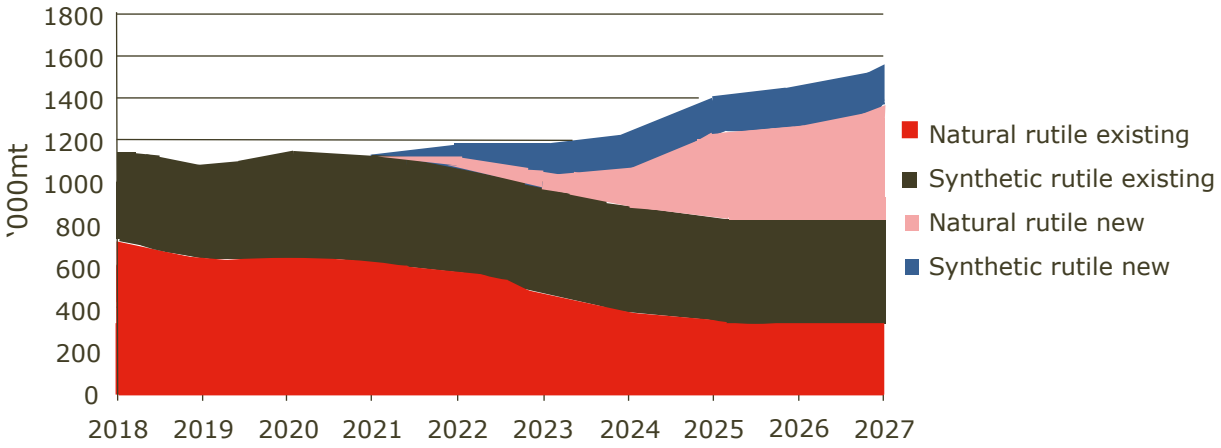
Annual demand natural rutile ~ 0.6m TiO2 units

Total feedstock demand ~ 8m TiO_2 units

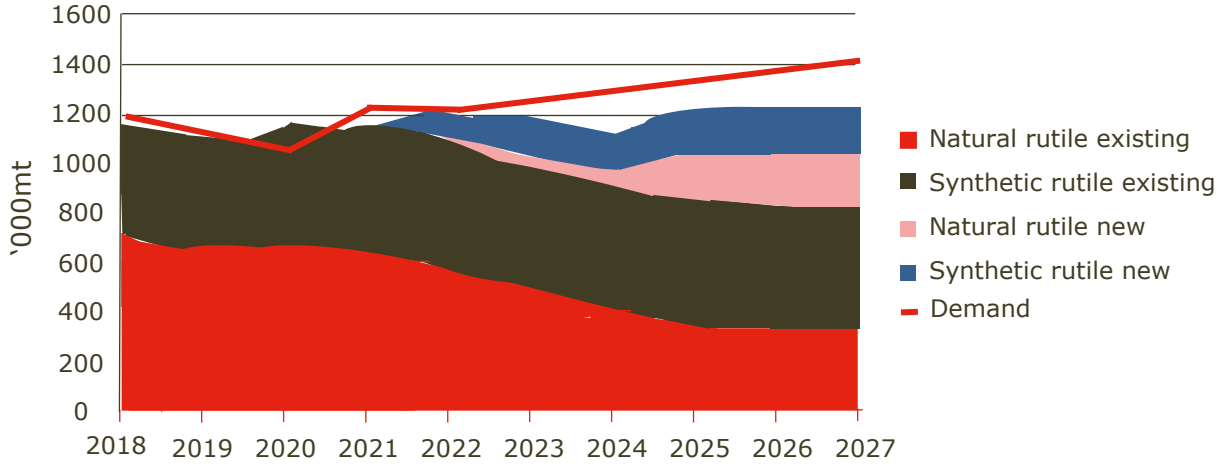
Source:1: TZMI, 2:TiPMC Consulting

Resource depletion drives long-term supply deficit

Global supply (projected volumes as planned)



Supply-demand balance (projects probability-weighted)



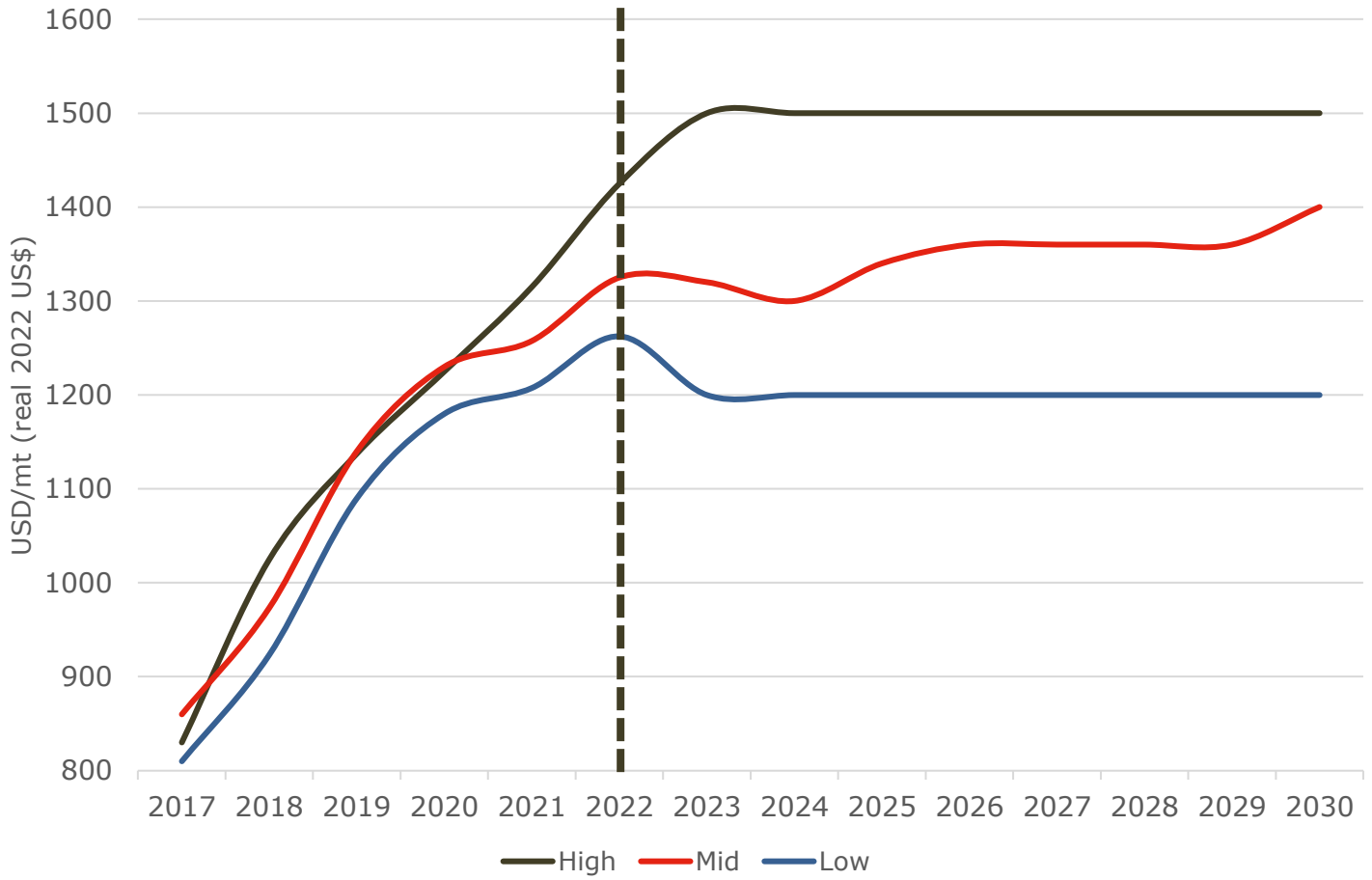
Comments

- Supply has been decreasing steadily over the last few years with an absence of a response on the supply side
- The decline in supply is a result of resource depletion
- Numerous large resources of rutile have depleted since 2017
  - CRL- Sibelco (Australia)
  - Iluka and Tronox in the Murray Basin, Australia
- In the next 5 years more assets are expected to deplete:
  - Base Resources (Kenya)
  - Iluka J/A (Australia)
  - SRL (Sierra Leone)
- Synthetic rutile is increasingly used to complement the supply of natural supply
- The existing pipeline of upcoming projects will not bring notable new production to the market until 2026 at the earliest
- End-market demand fundamentals for rutile- pigment (paints and coatings), metal (aerospace, defense, industry), and welding (shipbuilding and infrastructure), expected to show continued growth in the future
- Demand is expected to increase over the next five years, while supply is expected to remain relatively flat after including likely new supply creating a significant supply deficit ahead

Source: TiPMC Consulting

Rutile price forecast reflects supply deficit

Natural rutile (TiO_2) price forecast on FOB basis



Source: TiPMC Consulting

Comments

- Declining natural rutile production has put an upward pressure on prices from 2017 and onwards
- Natural rutile is expected to continue to benefit from positive pricing dynamics for the next 5-10 years due to the supply-demand deficit
- Global price reflects global average FOB price. Negotiated prices may vary based on freight costs incurred by customer, with final prices determined by negotiations
- Long-term rutile prices (from 2027 to 2042) are expected within the range of USD 1,200-1,680/mt FOB
- Bulk natural rutile prices in H1 2022 has been in the excess of USD 1,500/mt FOB, with spot tonnages selling up towards the range USD 1,600-1,900/mt FOB tonne

Source: TZMI and TiPMC Consulting

Garnet – major producer's market position challenged by high freight costs

Properties

- The only viable mineral for industrial waterjet cutting
- The waterjet technology has revolutionized the production processes for e.g., cars and aircrafts
- Garnet is a completely inert mineral without health implications
- Garnet is easily recyclable for multiple uses such as abrasives

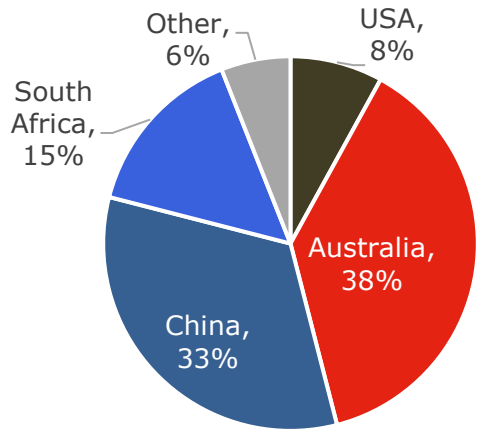
Market drivers

- Demand growth to be driven by GDP growth and construction activities
- Waterjet cutting is expected to be the main demand driver

Demand by end use[2]

- **Waterjet cutting ~47%**
- **Abrasives/speciality ~11%**
- **Sand blasting ~37%**
- **Water filtration ~5%**

Garnet supply by country (2021)[2]

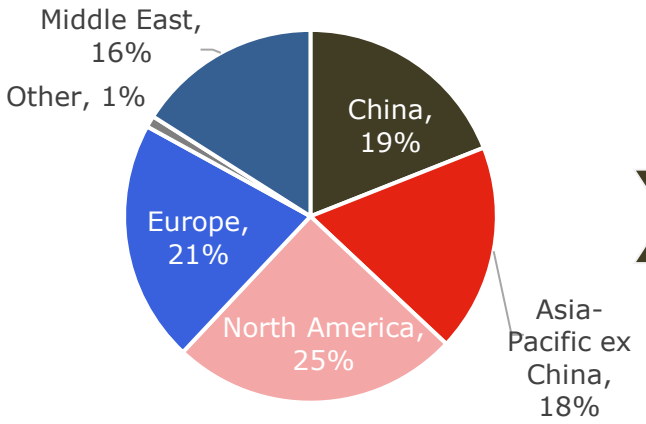


Garnet supply (2021)[2]

Total garnet supply

945,000 tonnes

Garnet demand by region (2021)[1]



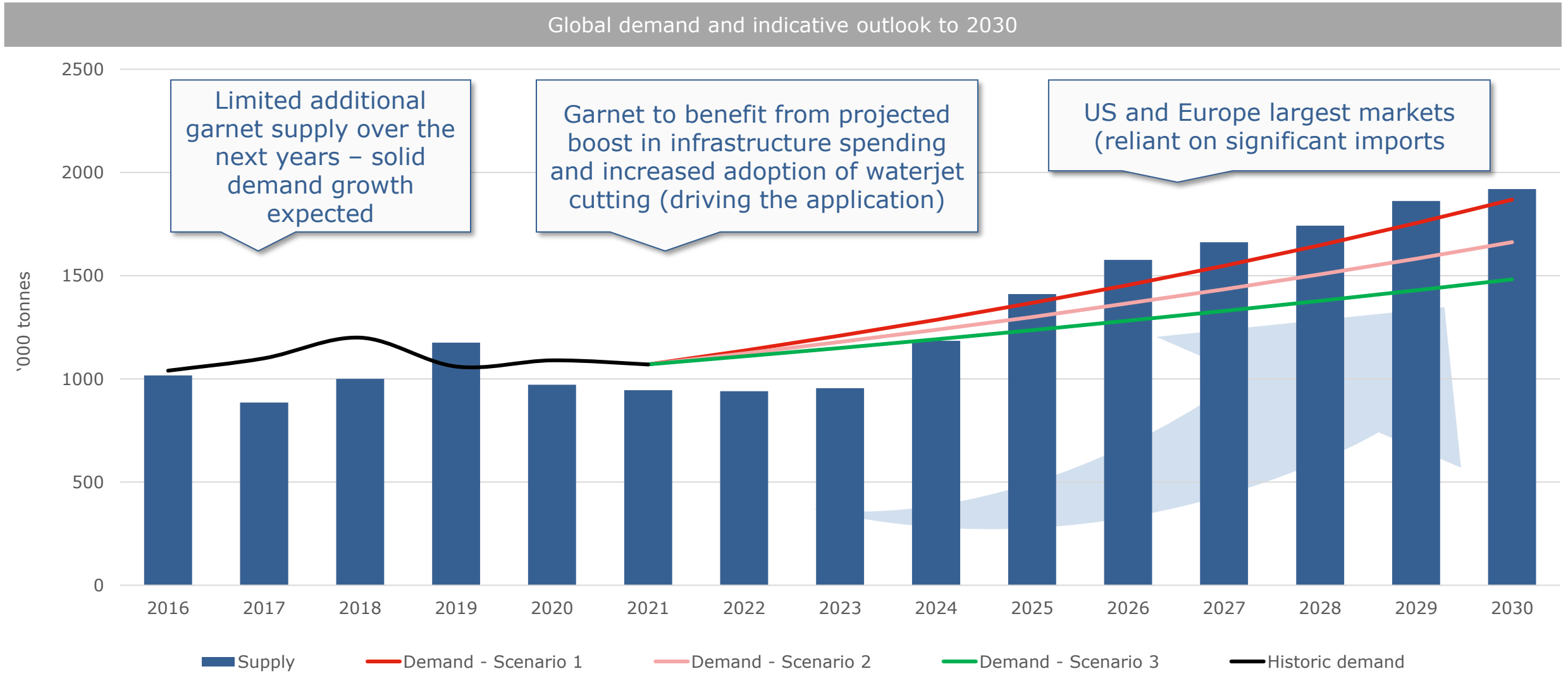
Garnet demand (2021)[2]

Total garnet demand

1,000,000 tonnes

Source: 1: TZMI. 2: Peter W. Harben Inc.

Garnet – Strong demand recovery after Covid

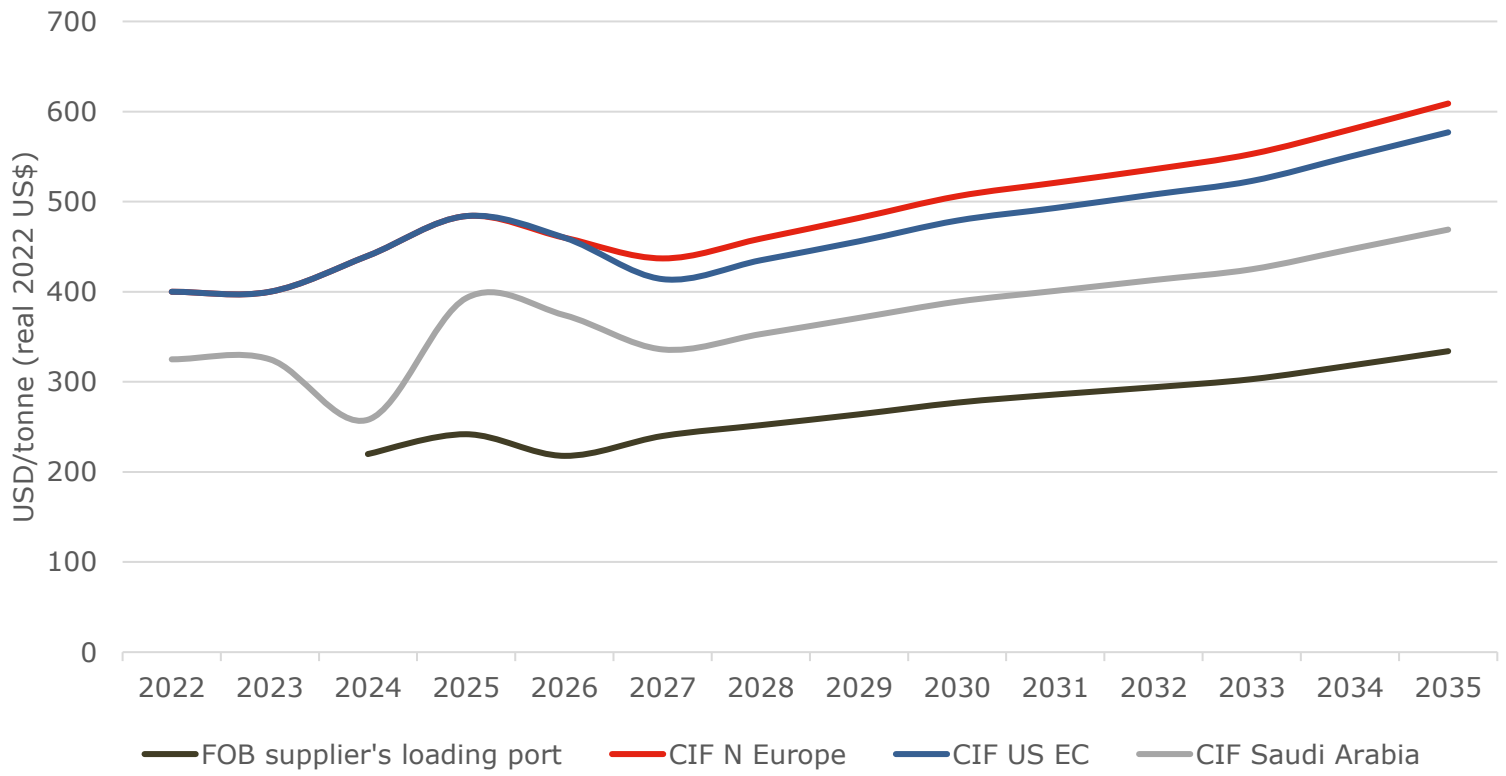


Source: Peter W. Harben Inc.

Source: Peter W. Harben Inc., TZMI

Garnet – Freight and global economic recovery to drive garnet price

Price expectations for processed and bagged garnet



Garnet in bulk: FOB Engebø

Sized and bagged: CIF N Europe, CIF US EC and CIF Saudi Arabia

Comments

- There is no terminal market to quote garnet prices
- Garnet prices vary according to the source location, hard-rock versus alluvial, coarseness, bulk or container freight, distribution charges, packaging, volume discounts, or penalties
- Garnet prices are expected to increase due to strong demand growth in combination with limited new supply
- Average FOB value of garnet exported from Australia, India, and China in 2020/21 was USD 230-290/mt
- Loss of supply from India has put upward pressure on prices

Source: Peter W. Harben Inc.

Direct use in pigment or metal production give substantially lower GHG footprint

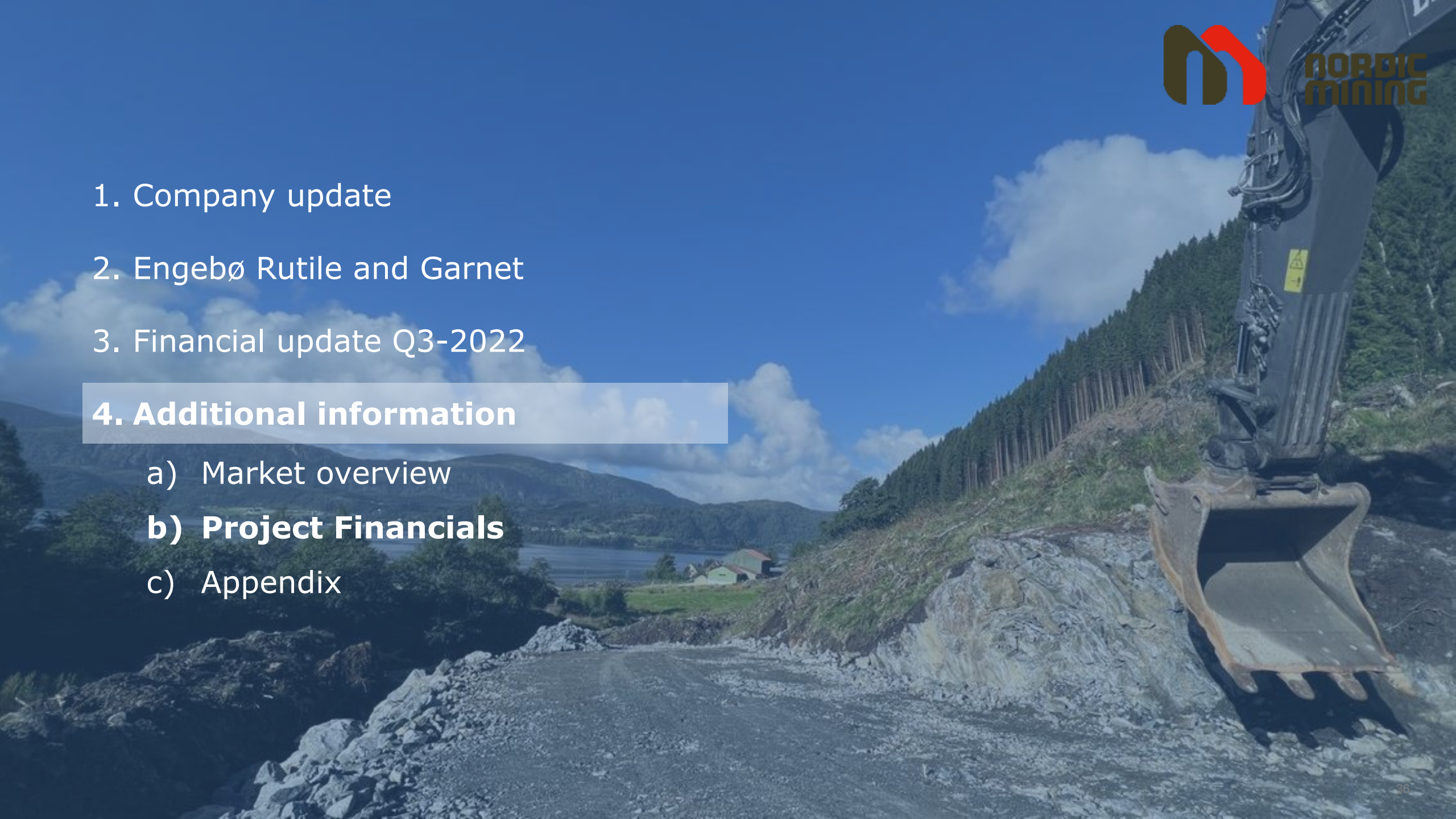
Natural rutile is the purest of all titanium feedstocks

Feedstock Product	TiO_2 content	Typical applications
Natural rutile	**95-96%**	**Chloride pigment, metal, welding electrodes**
Upgraded slag	95%	Chloride pigment, metal
Synthetic rutile	91-93%	Chloride pigment, metal
Chloride fines	86-92%	Sulfate pigment
Chloride-grade slag	86-92%	Chloride pigment, metal
Leucoxene	65-90%	Chloride pigment, welding
Sulfate-grade slag	75-80%	Sulfate pigment
Chloride-grade ilmenite	58-64%	Chloride pigment, SR manufacture, slag manufacture
Sulfate-grade ilmenite	44-56%	Sulfate pigment, welding electrodes, slag manufacture

Comments

- Titanium feedstocks are raw minerals that contain TiO_2 (titanium dioxide)
- Titanium feedstock is the most crucial raw minerals input to TiO_2 pigment and titanium metal processes
- The application of feedstock depends primarily on TiO_2 content
- Key titanium feedstocks include ilmenite, leucoxene, and rutile:
  - Other titanium feedstocks encompass sulfate and chloride slag, and synthetics rutile -these feedstocks are essentially upgraded ilmenite
- Most titanium feedstocks require additional processing:
  - The upgrading of ilmenite into slag or synthetic rutile is intensive in terms of energy and GHG emissions
  - Rutile has the advantage that it can be used directly in pigment or metal plants, resulting in a substantially lower GHG footprint
- Rutile has the highest grade of titanium feedstocks and improves efficiency and reduces waste and climate footprint

Source: TZMI and TiPMC Consulting



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2. Engebø Rutile and Garnet
3. Financial update Q3-2022
4. **Additional information**
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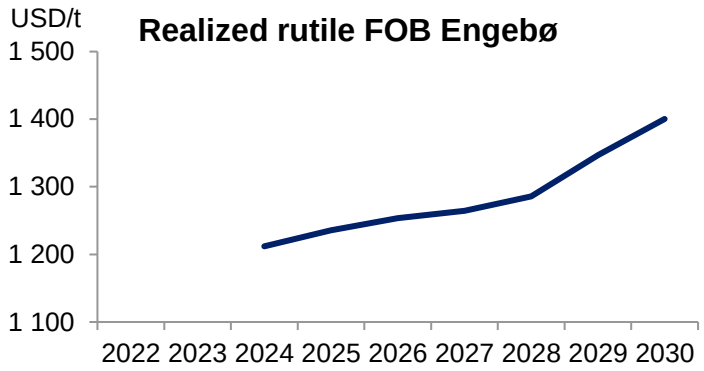
    c) Appendix

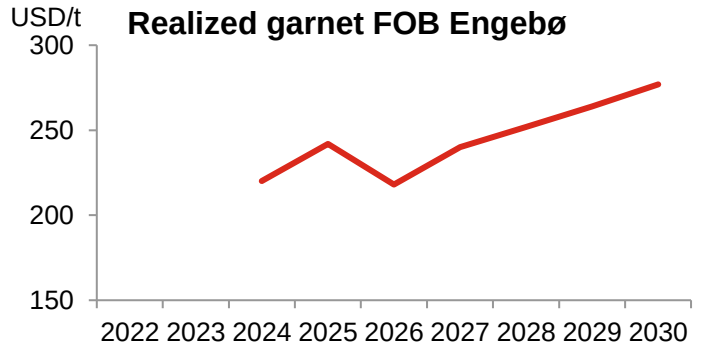
Overview and assumptions

Financial overview[1,2]

USDm	H2-2022	2023	2024	2025	2026	2027	2028	2029	2030
Revenue from rutile	-	-	12	45	47	47	47	47	49
Revenue from garnet	-	-	9	39	36	42	47	51	55
Revenue from royalty	-	50	-	-	-	-	-	-	-
Operating Costs and Expenses	-	-	(11)	(31)	(30)	(30)	(30)	(31)	(31)
EBITDA	-	50	10	53	53	59	64	68	73
WC and Other adjustments	-	-	(1)	(5)	(4)	(3)	(3)	(3)	(3)
Payable Tax	-	-	-	-	-	(1)	(11)	(12)	(14)
Cash Flow from Operations	-	50	10	48	49	54	50	53	56
Development Capital	(18)	(138)	(50)	(5)	-	-	-	-	-
Sustaining Capital	-	-	(2)	(0)	(0)	(0)	(2)	(1)	(0)
Cash Flow from Investing	(18)	(138)	(52)	(5)	(0)	(0)	(2)	(1)	(0)
Free cash flow to company	(18)	(88)	(42)	43	49	54	48	51	56
Cash Flow from Financing	129	74	(12)	(12)	(12)	(111)	-	-	-
Net cash flow	111	(14)	(55)	31	37	(57)	48	51	56
Cash end of period	118	104	49	80	117	60	108	159	215

Assumptions



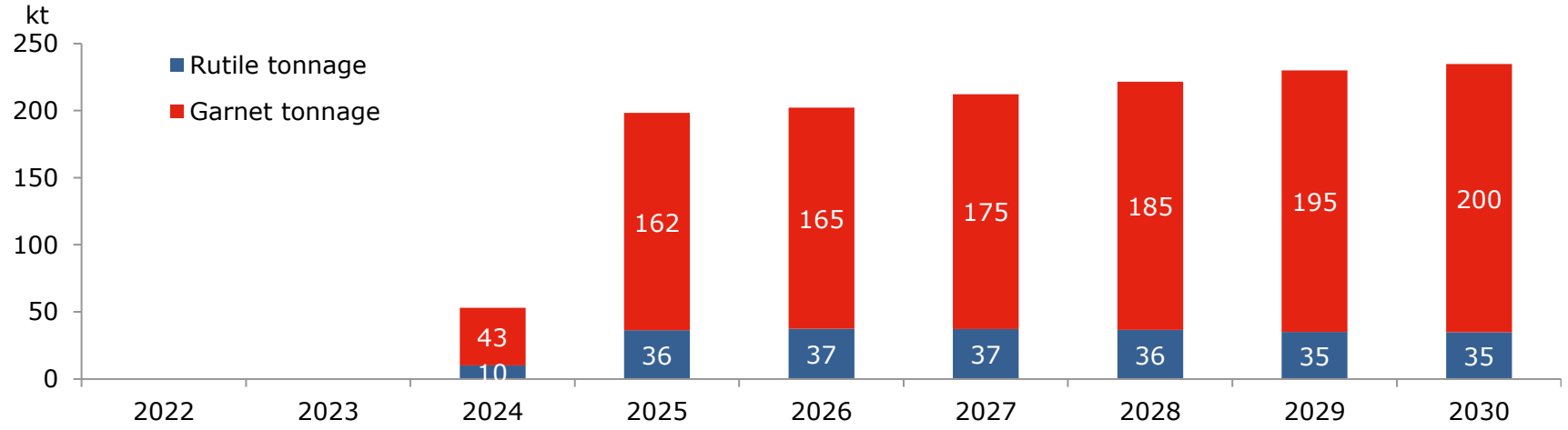


FX	
USD/NOK	9.6822
EUR/USD	1.0195
AUD/USD	0.7027

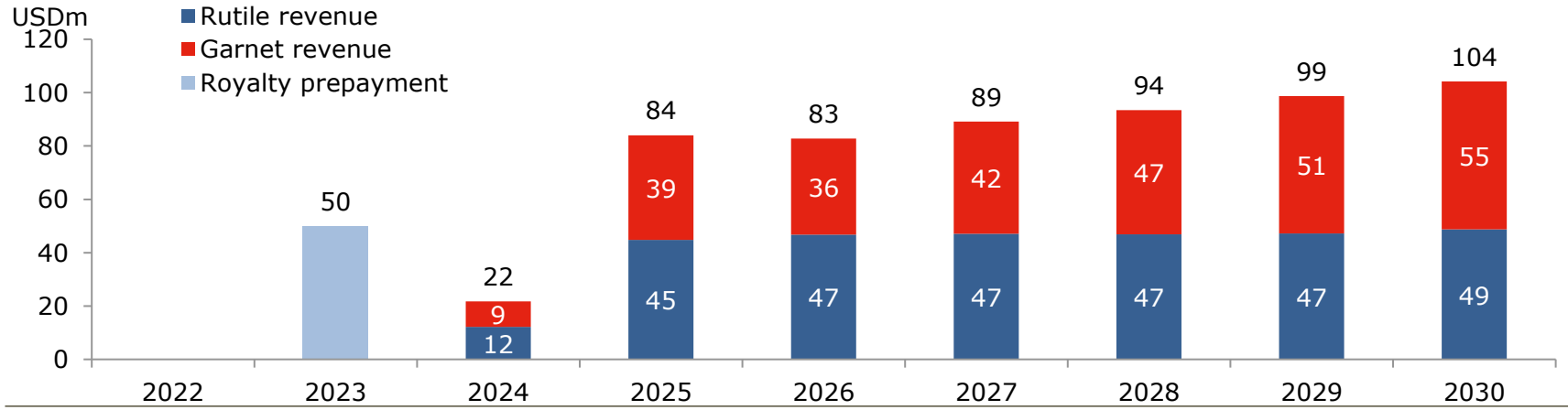
1) Royalty described as financing item throughout for illustrative purposes
2) Includes only H2 of 2022

Solid revenue supported by two commodities

Production profile



Revenue composition



Comments

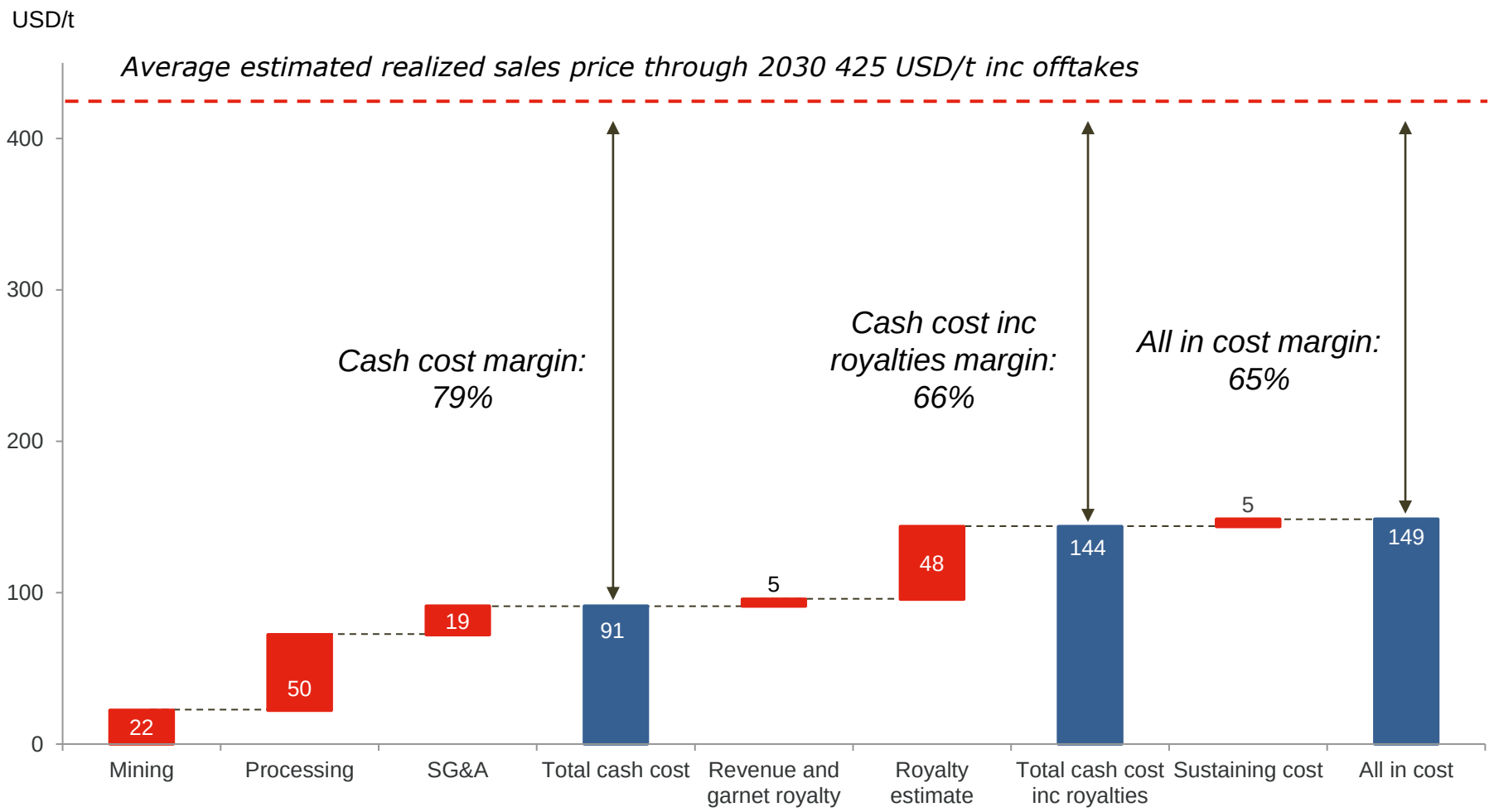
- Production split from ’24 through ’30 with 17% rutile and 83% garnet from a tonnage perspective
- Attractive orebody allows for very consistent production numbers
- Start of rutile and garnet production in Q3’24
- Revenue split through 2030 consisting of 51% from Rutile and 49% from garnet

Assumptions[1]	
Average prices LOM	USD/t
Rutile[1]	1,447
Garnet	318

1) Forecasted realized sales prices based on forecasts from TiPMC Consulting and Peter Harben Inc., including any corrections for rutile offtake agreements

Low operational cash cost provides solid margins for Engebø

Cash cost build-up for combined sales through 2030[2]



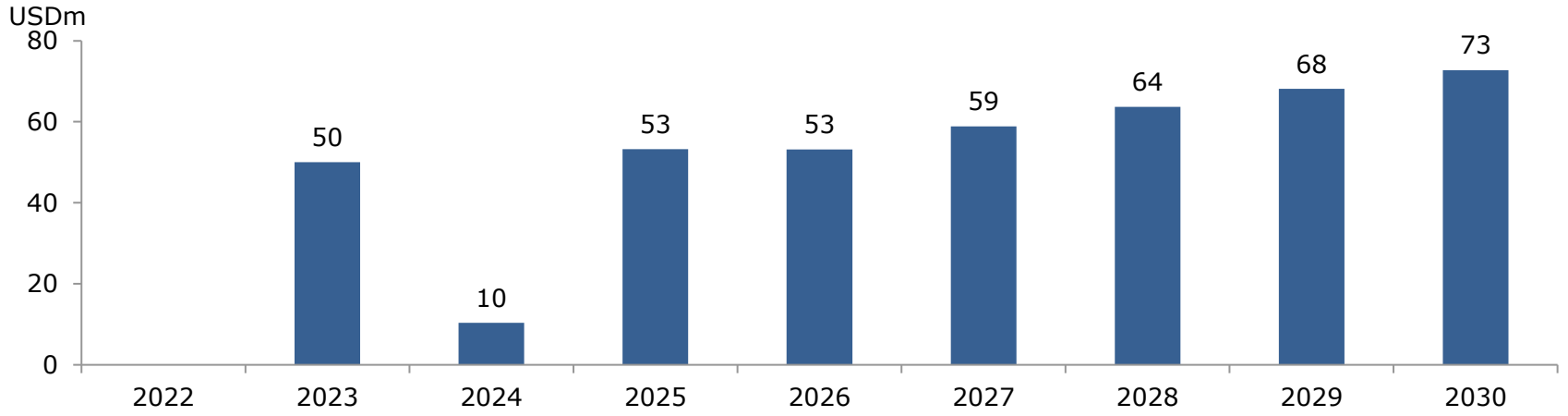
Margins through 2030

Production	***kt***
Rutile	227
Garnet	1,125
Total	**1,352**
Revenue[1]	***USDm***
Rutile	294
Garnet	280
Total	**574**
Average sales price	***USD/t***
Combined rutile and garnet sales	**424.5**
Margins	***%***
Average margin on cash cost	78.6 %
Average margin inc royalties	66.1 %
Average margin all in	**65.0 %**

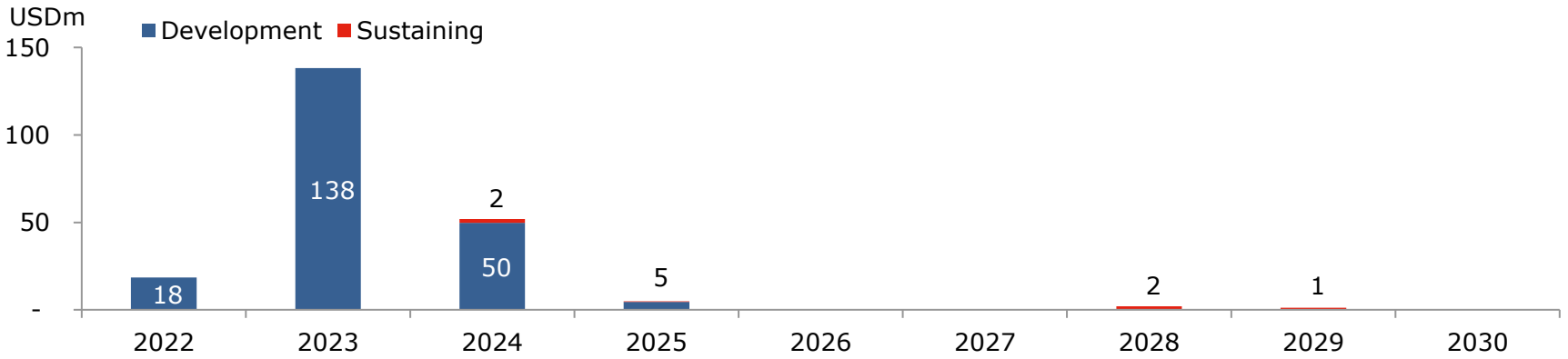
1) Forecasted realized sales prices based on forecasts from TiPMC Consulting and Peter Harben Inc., including any corrections for rutile offtake rutile agreements, is 1,293 USD/t and 249 USD/t for rutile and garnet, respectively 2) Mining cash cost excludes ore to stockpile

Strong EBITDA numbers and low sustaining CAPEX for attractive cash flow to firm

EBITDA



CAPEX schedule

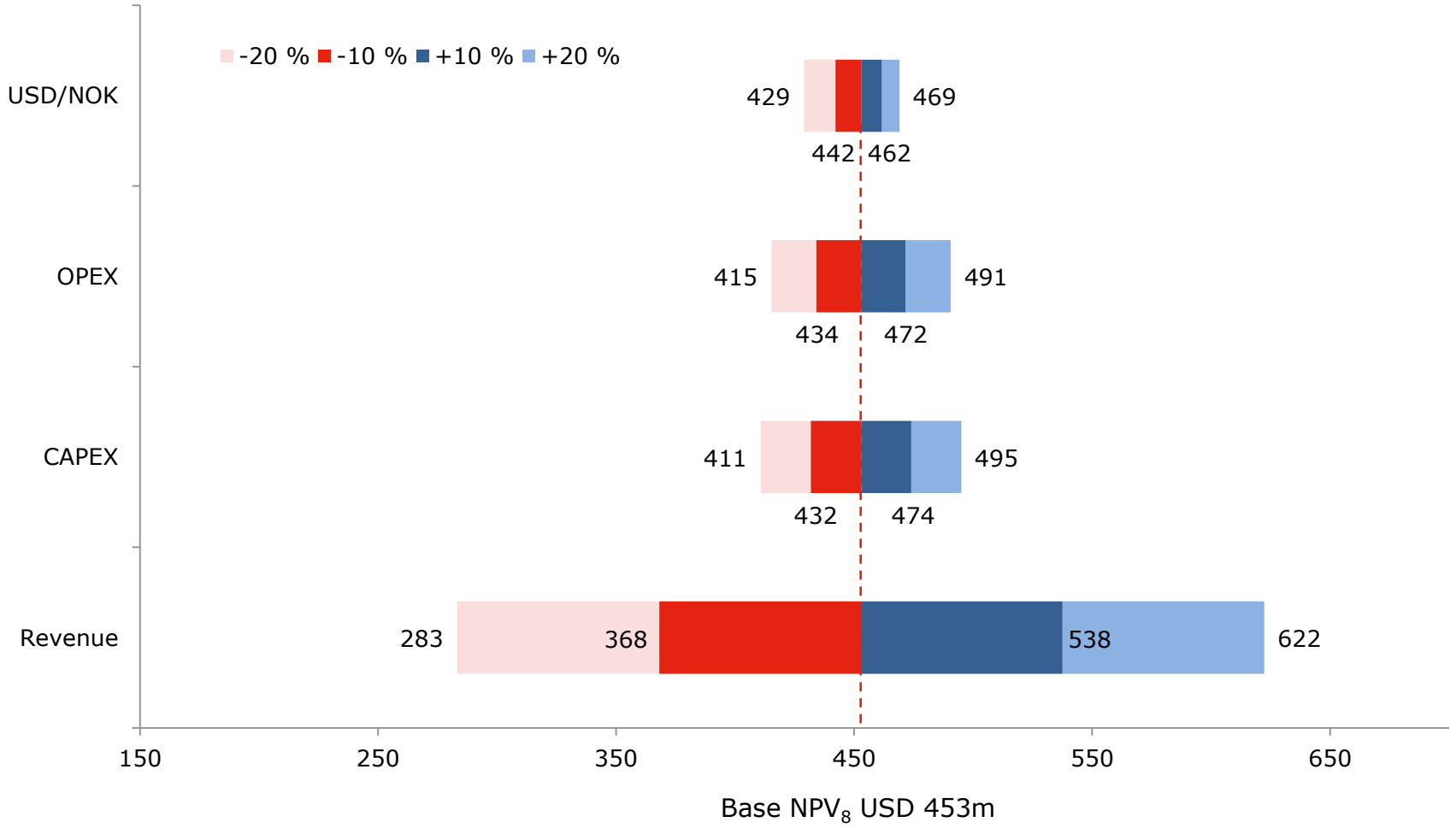


Comments

- Average annual EBITDA initial 5 years post ramp-up is USD 70m
- Pre-production operating costs are capitalized and accounted in CAPEX plan
- Royalty is accounted as a financing cost and excluded from the revenue and EBITDA calculations illustrated
- Sustaining CAPEX includes capitalized waste rock and developments
- Project contingencies, on top of the EPCs contingencies, represent 11% of the total development capital
- Development capital in 2025 consist mainly of a contingent payment to ConocoPhillips of NOK 40m
- Low sustaining capital due to simple processing technology and orebody with minimal overburden and low strip ratio

Attractive economics in wide range of scenarios

NPV sensitivity



Comments

- Projected USD 453m Net Present Value of the project after tax and on an unlevered basis (also excluding royalty) with 8% discount rate
- Realized sales price is the largest driver of the project NPV
- A 10%/20% increase in USD/NOK increases the NPV as the project has revenue in USD and costs partly in NOK, hence a decrease in USD/NOK decreases the NPV
- High margins and revenue in USD result in low sensitivity to USDNOK when NPV is calculated in USD
- Model also takes EUR/USD and AUD/USD into account but has minimal sensitivity to either of them

Pre-production capital expenditure supported by lump-sum EPC contracts

Breakdown of total remaining capital cost through '24 (USDm)

Direct costs	USDm
EPC1 (Sitewide Earthworks and Underground Infrastructure)	29.3
EPC2 (Civil and Buildings)	16.5
EPC3 (Structural, Mechanical, Pipework and Plating)	60.3
EPC4 (Electrical, Control and Instrumentation)	16.3
Mechanical Process Equipment	32.1
Mechanical Systems	5.9
Operational Equipment and Systems	2.8
Indirect costs	
Owner's cost	11.6
Consultants	0.7
Provisions	
Project contingency	20.7
Total	**196.3**
Expansionary CAPEX – OBSL	
Landowners	0.8
Power (Construction Contribution)	1.0
Road (Construction Contribution)	4.1
Total	**202.2**
Other pre-production costs	
Pre-Production capitalized operating costs (incl. Corporate Overheads)	4.7
Sustaining CAPEX through 2024	2.2
Total	**209.2**

Comments

- Development CAPEX plan is based on updated DFS from May 2021, with corrections for USD 7.2m in early works investments (USD 196.3m compared to USD 203.4m)
- >60% of remaining capital expenditure of USD 196.3m is covered under lump-sum EPC contracts with selected EPC partners under NS8407[1]
- Project contingency of USD 21m, which excludes the EPCs contingencies, represent 11% of the initial capital expenditure
- Project reserve of USD 30m will be funded, for combined project contingency and reserves of 27% of remaining CAPEX
- Pre-production operating costs, including all SG&A costs related to Engebø Rutile and Garnet, are capitalized and included Pre-production capital expenditure
- Development CAPEX in 2025 (post-production start) totals USD 4.6m, of which USD 4.2m constitute a contingent payment to Conoco Phillips of NOK 40 million payable 12 months after first production
  - Conoco's claim under the contingent payment is currently secured by first priority security in extraction rights, but have undertaken to waive their security in favor of the bondholders and other project finance creditors

1) Norwegian Standard, Totalentreprise NS8407, General conditions of contract for design and build contracts

Non-dilutive royalty of USD 55m from leading resource investment firm

Key terms	
Royalty provider	Orion Resource Partners LLP
Purchase price	USD 50m
Equity contribution	USD 5m
Use of proceeds	Project development and construction
Royalty rate of gross revenue	11.00 %
Royalty term	Life of Mine
Payment schedule	Quarterly

Comments

- Orion Resource Partners is a global natural resource investment firm with approx. USD 8bn under management[1]. The fund specializes in mining investments and have a robust insight into the industry and market
- Orion to provide a total of USD 55m in funding for the project split between prepayment and equity
- Royalty payments of 11% calculated on a gross revenue basis on the received payments to NOM for sale of Garnet and Rutile without deductions for selling costs
- Royalty to hold second priority lien on bondholder security package
- Intercreditor Agreement ("ICA") to be entered into between royalty holder and Bond Trustee. ICA principles found as Schedule 4 to the Term sheet
  - The ICA agreement will grant the royalty provider with certain senior rights, including a survival clause

orion | MINE FINANCE

1) https://www.orionrp.com/

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Management with complementary skillset and extensive mining experience

Ivar S. Fossum | Chief Executive Officer

- 16 years' with Nordic Mining (since founding)
- 20 years experience from management positions in Hydro and FMC Technologies
- MSc in Mechanical Engineering from NTNU, Trondheim, Norway

Christian Gjerde | Chief Financial Officer

- With the company since August 2020
- 14 years' experience from management positions in NorgesGruppen ASA, Telenor ASA, and Yara International ASA. Experience from large-scale mining projects and operations in Brazil, Canada, Ethiopia and Finland
- Master of Professional Accounting from Griffith University, Queensland, Australia

Mona Schanche | VP Resource and Sustainability

- 14 years' with Nordic Mining
- Previous experience as a Geologist for Titania AS (Kronos Group) and various exploration and mine development projects
- MSc in Resource Geology from NTNU, Trondheim, Norway

Terje Gundersen | Project Director, Engebø

- With the company since February 2022
- Extensive experience as Project Director executing large scale oil and gas and infrastructure projects for Aibel and Sweco
- MSc in Industrial Economics from the University of Stavanger, Norway

Kenneth Nakken Angedal | Operations Director, Engebø

- With the company since August 2018
- Broad management and project coordination experience from various management positions in the ABB Group
- Bachelor of Automation Technology, Control Engineering from the Wester Norway University of Applied Science

Maurice Kok | Commercial Director

- Assumed position in August 2022
- Broad experience from sales and marketing of alloys and mineral products from Elkem, Tizir/Eramet and Kalbar Operations
- MSc in Business Administration from Erasmus University, Rotterdam, the Netherlands

Board of Directors

Kjell Roland | Chair of the Board

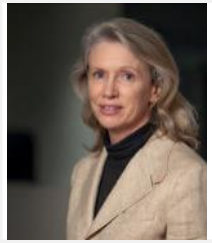
- Previously CEO at Norfund and co-founder/CEO of ECON
- Extensive experience in the intersect between macroeconomics and environment
- Master of Science degree from the department of Economics at the University of Oslo, a lower degree in Philosophy from University of Tromsø and has been a visiting scholar at Stanford University

Kjell Sletsjøe | Deputy Chair of the Board

- Management experience from mining, construction and consulting
- Previously CEO of Rana Gruber AS (iron ore), Lundhs AS (natural stone) and held various top management positions in Jotun Group
- Master of Science in Civil Engineering from the University of Science and Technology, Trondheim Norway and MBA from Colombia University, NY, USA

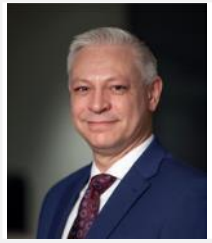
Eva Kaijser | Board member

- More than 20 years of experience from the mining industry, whereof 11 years in the Boliden Group, CFO in Northland Resources and CEO in Nordic Mines
- Bachelor of Science in Business Administration and Economics with advanced studies in Finance from the University of Stockholm, Sweden



Benedicte Nordang | Board member

- Extensive experience from the offshore industry, including top management positions at Equinor and Aker Marine Contractors
- Has held several board positions in the mining industry for more than 10 years, including Nussir ASA and Wega Mining ASA
- Master of Science from the Norwegian Institute of Technology, Trondheim, Norway



Anthony Beckmand | Board member

- More than 20 years' experience from various roles within the mining industry
- CEO of Kuniko Limited in Australia and has previous experience within the mining industry with Kalium Lakes Ltd, Exxaro Resources, Perilya Ltd and Robe River
- Bachelor of Commerce from University of Western,Australia and Graduate Diploma in Applied Finance and Investment from the Securities Institute of Australia

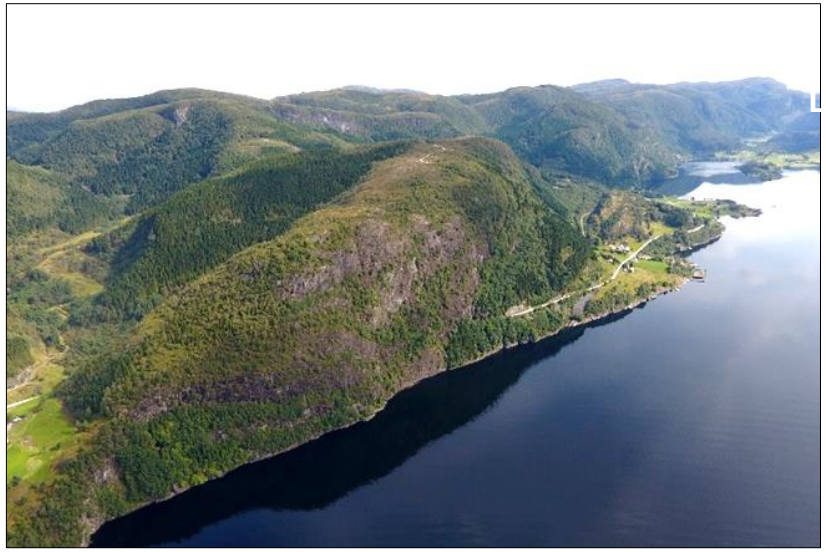
Favorable location with available infrastructure

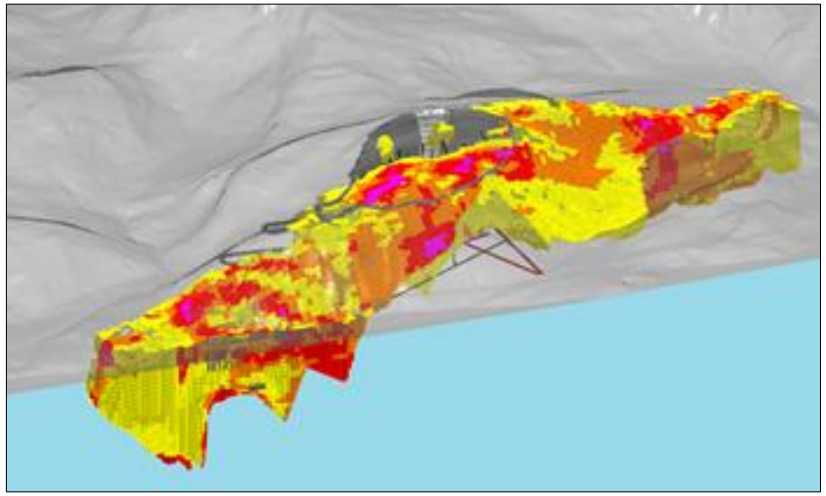
Location highlights

- **Norway, a politically stable jurisdiction**
- **Location by the North Sea provides advantageous logistics**
- **Road access and two local airports**
- **Deep-sea, ice-free quay on site**
- **Renewable hydro power**
- **Power supply readily available at site**
- **40 minutes from Førde regional centre**
- **Region with skilled, industrial labor**
- **Maintenance and service vendors available in the region**

Area overview

Large deposit with unique characteristics





Mineral resources (2% TiO_2 cut-off)

	Tonnes (Mt)	TiO_2 grade (%)	Garnet grade (%)
Measured (M)	29.2	3.60	44.5
Indicated (I)	104.0	3.48	43.9
Total M&I	**133.2**	**3.51**	**44.0**
Inferred	254.1	3.15	41.3

Ore reserves

	Tonnes (Mt)	TiO_2 grade (%)	Garnet grade (%)
Open Pit			
Proven (P)	19.33	3.56	44.25
Probable (Pr)	10.33	3.29	44.45
Total P&Pr	**29.65**	**3.47**	**44.32**
Underground			
Proven (P)	2.55	3.78	44.92
Probable (Pr)	24.75	3.66	44.42
Total P&Pr	**27.30**	**3.68**	**44.47**

133 mt
M&I Mineral resources[1]

<5 years
Payback period

USD 453m
Post-tax unlevered NPV8

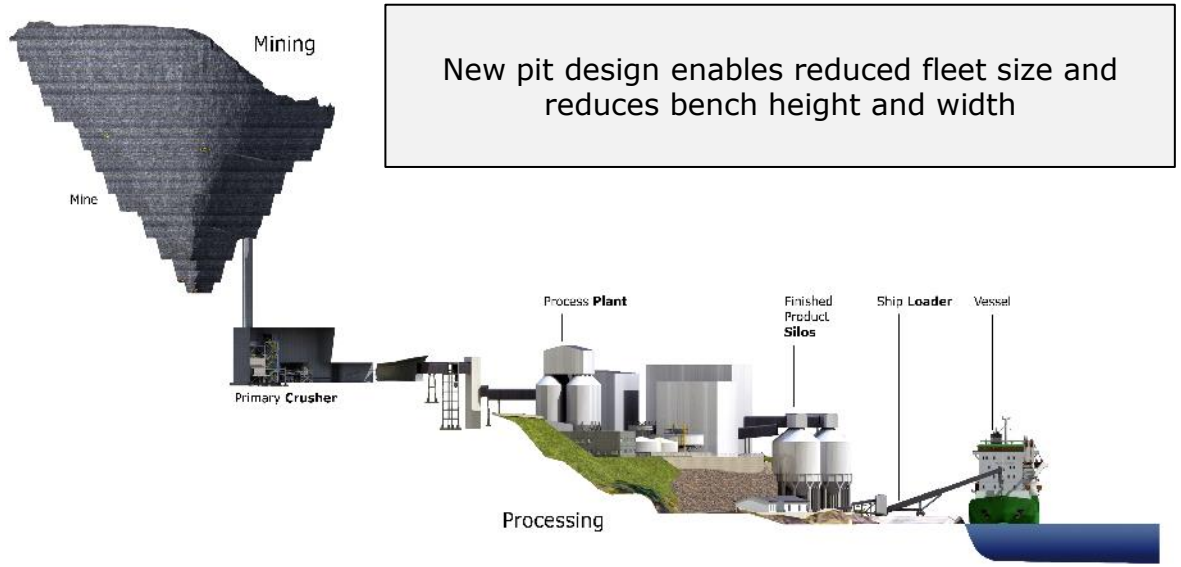
39 years
Life of Mine

Location and topography offers efficient design and solutions

Operations and plant layout

- Stick-build methodology enables compact plant layout
- Fit-to-purpose design to optimize use of land and infrastructure
- Footprint for process plant reduced by +40% compared to initial DFS
- Reduction of civil and earthworks
- Reduction in total initial project investment of USD 93 million

Simplified infrastructure reduces risk and capex

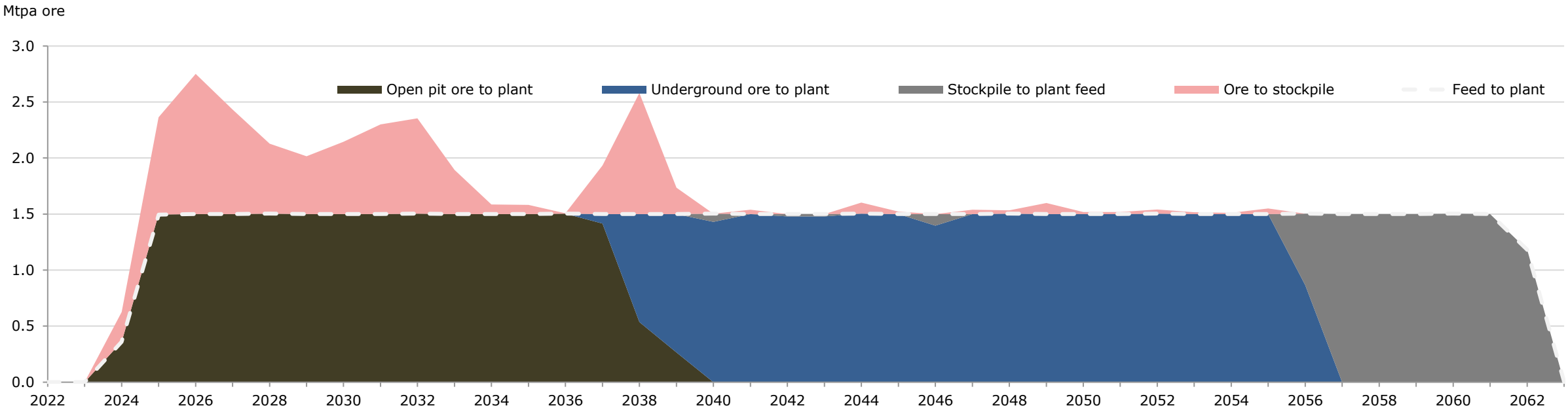


New pit design enables reduced fleet size and reduces bench height and width

- Optimized mine access and pushback design
- Improved ore logistics from mine to process plant
- Overall mass flow supported by gravity from mine to ship

39 years mine-life with rapid ramp-up of production

Production profile



Open pit	
Ore to plant	20.39 Mt
Ore to stockpile	9.26 Mt
Plant feed grade	3.85% TiO_2 / 45.44% Garnet
Life	15 years

Underground	
Ore to plant	27.42 Mt
Ore to stockpile	0.00 Mt
Plant feed grade	3.69% TiO_2 / 44.49% Garnet
Life	18 years

Stockpile	
Stockpile to plant	9.26 Mt
Plant feed grade	2.70% TiO_2 / 41.84% Garnet
Life	6 years

Integrated owners' team ensures control and reduces execution risk

Carefully selected project organization
with significant experience within project execution and mining operations

Key persons identified
for engineering, construction and commissioning management reduces risk of delays

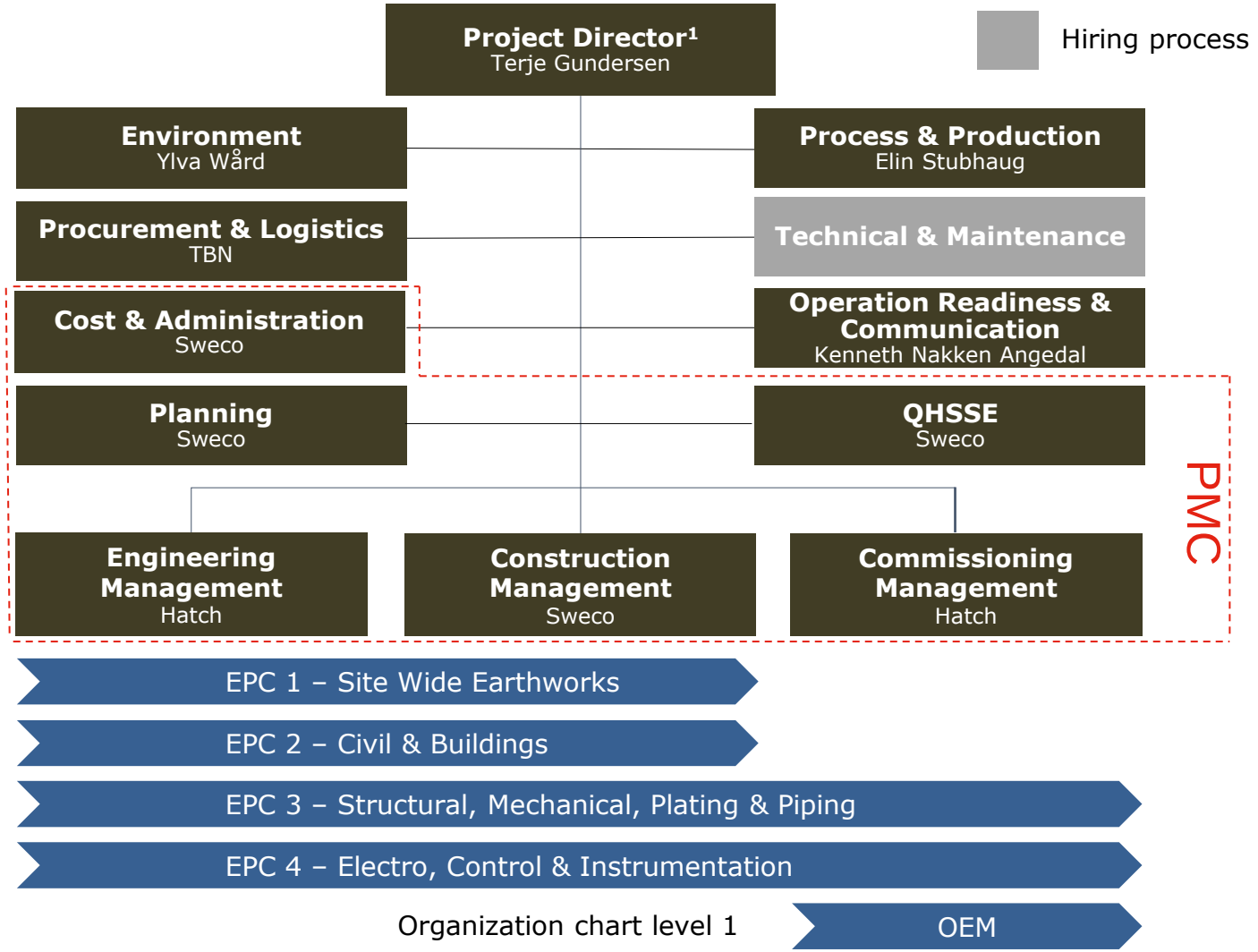
Shortlist of candidates
lined up for unfilled positions

Integrated owners' team
through Project Management Consultant ("PMC") agreement with Hatch and Sweco

PMC agreement

HATCH
Hatch is a global multidisciplinary management, engineering and development consultancy with more than 9,000 staff in 150 countries.

SWECO
Sweco is Europe's leading engineering and architecture consultancy, with 17,500 employees.



1) Mine Construction Manger to be appointed to support Project Director and Operations Director in managing owners' team in construction and preparation for operation.

Lump-sum EPC agreements in place with experienced regional contractors

Sunnfjord Industripartner AS

Sitewide Earthworks and Underground Infrastructure

- A combination of four local civil and earthworks companies in Sunnfjord municipality formed to compete for larger scale contracts
- Employs around 150 people with a combined turnover of ~NOK 500m in 2020

Åsen & Øvrelid AS

Civil and Buildings

- Established as a logging company in 1988
- Grown to one of the largest civil and building contractors on the west coast of Norway
- Specialized in larger EPC contracts towards the governmental and private sector
- Around 180 employees of which around 120 are locally based in Sunnfjord municipality

January 2022

- Nordic Mining ASA secured first part of Engebø Project Financing through a NOK 132.5m mandatory convertible loan (dependent on certain terms and milestones)
- The project financing was fully covered by a group of local Sunnfjord investors led by two of the EPC partners for the Engebø Project

Nordic Bulk AS

Structural, Mechanical, Pipework and Plating

- More than 30 years of operational experience designing and delivering turn-key bulk material processing plants
- Strong operational track record delivering unique, client-specific solutions with strong focus on HSE

Normatic AS

Electrical, Control and Instrumentation

- 24 years providing control systems, instrumentation, electrical cabinets, electrical systems and SCADA systems
- Delivered software solutions used in maritime, marine, water & sewage, buildings, and industrial process plants all over Norway and internationally

Reduced execution and cost overrun risk

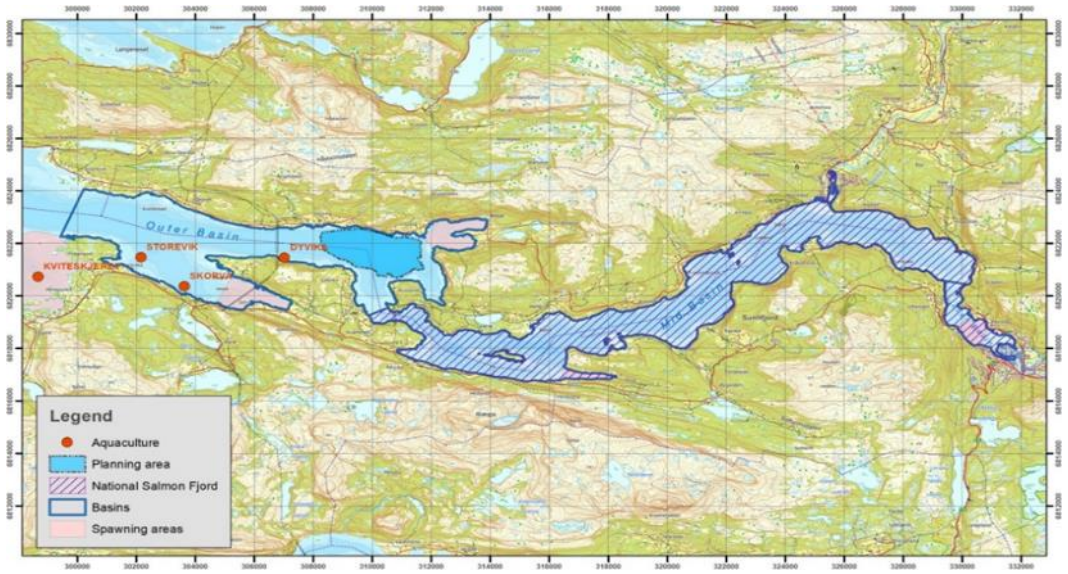
- Early engagement from EPC partners to ensure joint project focus and reduce overall project risk
- Project entail 4 major EPC contracts comprising >60% of the total project capex
- Owner's team responsible for procurement of process equipment – to be installed by EPC contractors

1) Source: Companies, Oslo Børs NewsWeb

Fully permitted, well-proven tailings solutions

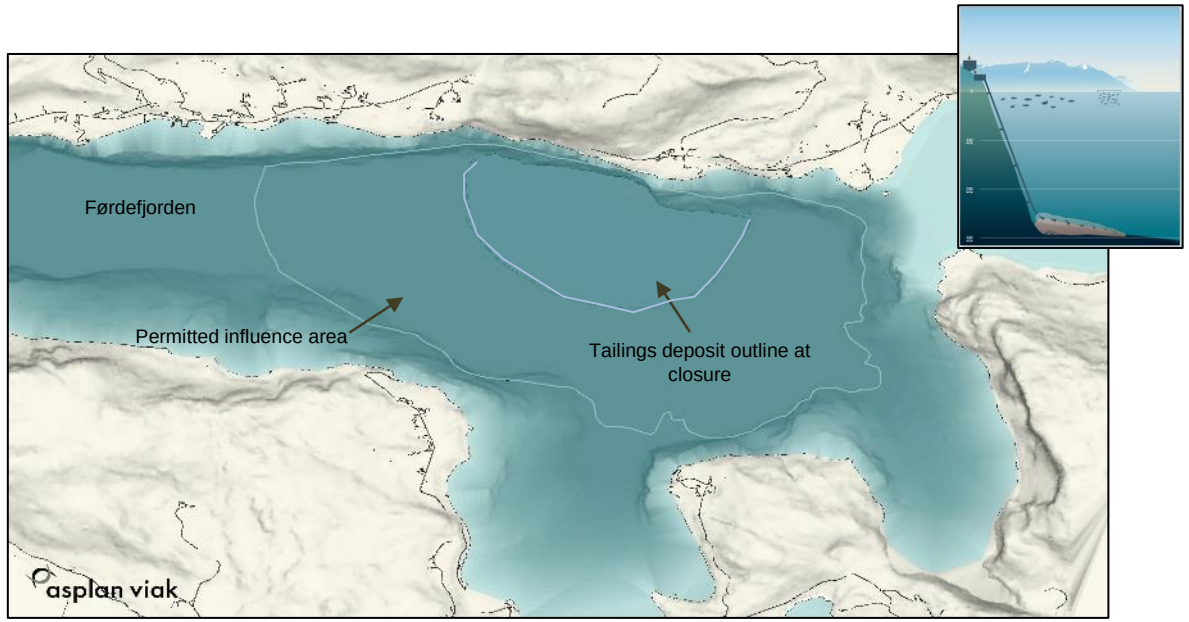
Seabed Tailings Disposal "STD"

- Seabed Tailing Disposal 'STD' is a well-proven solution with 5 operative and several historical STDs in Norway
- A STD solution has been fully permitted by Norwegian environmental authorities for the Project based on extensive environmental impact assessments
- Tailings is discharged at 300m depth in a confined deep fjord basin comprising 5% of total fjord seabed
- Effects are mainly related to smothering of bottom dwelling organisms
- There is low risk of effects on spawning grounds, red listed species, fisheries and fish farms



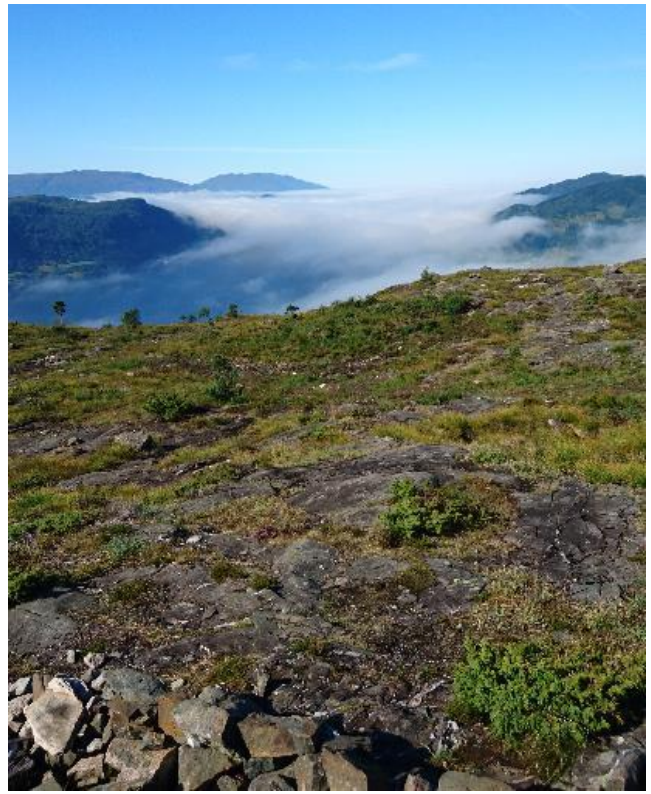
Design measures to reduce risk

- Tailings is conditioned by seawater to increase density of the discharge plume and allow for efficient sedimentation
- The System is designed to avoid air entrainment and updrift
- The discharge arrangement is flexible to ensure optimal positioning of tailings pipe
- Flocculation ensures high sedimentation rates
- Comprehensive 'state of the art' monitoring system will be implemented
- Recolonization of the STD is expected within few years after closure



Engebø will report according to TSM from day one

COMMUNITIES AND PEOPLE				ENVIRONMENTAL STEWARDSHIP			ENERGY EFFIENCY
Indigenous and Community Relationship	Crisis Management and Communication Planning	Safety and Health	Preventing Child and Forced Labor	Tailings Management	Biodiversity Conservation Management	Water Stewardship	Energy Use and GHG Emissions Management
Community of Interest (COI) identification	Crisis management preparedness	Policy, commitment and accountability	Preventing forced labor	Tailings management policy and commitment	Corporate biodiversity conservation commitment, accountability and communications	Water governance	Energy use and GHG emissions management systems
Effective COI engagement and dialogue	Review	Planning, implementation and operation	Preventing child labor	Tailings management systems	Facility-level biodiversity conservation planning and implementation	Operational water management	Energy use and GHG emissions reporting systems
Effective Indigenous engagement and dialogue	Training	Training, behaviour and culture		Assigned accountability and responsibility for tailings management	Biodiversity conservation reporting	Water scale planning	Energy and GHG emissions performance targets
Community impact and benefit management		Monitoring and reporting		Annual tailings management review		Water reporting and performance	
COI response mechanism		Performance		Operation, maintenance and surveillance manual			



Towards Sustainable Mining
Vers le développement minier durable

Source: Mining Association of Canada

Project due diligence processes and verification work conducted

Role	Appointed	Comment
Updated Definitive Feasibility Study (UDFS)	HATCH	• Defines realistic and conservative way to production • Initial DFS announced in 2020 and updated in 2021
Managers' Independent Technical Engineer	GOLDER MEMBER OF WSP	• Provided a technical due diligence and second opinion of geology and resource, engineering, hydrology, mining, processing, infrastructure, environmental, economic assessment/financial modelling, management structure/team and material contracts
Orion's Independent Technical Engineer	SLR	• Independent technical review of the UDFS focusing on overall viability and maturity level, including construction readiness, geotechnical design, flow-sheet, metallurgical viability and environmental impact
Orion's and Managers Market Due Diligence	TiPMC Consulting; PETER W HARBEN Industrial Mineral Consultants	• TiPMC have provided market report on rutile and Peter Harben Inc. on garnet • Both reports evaluate the global market for the products current and future supply/demand estimates with perspectives regarding the Engebø Project
Legal counsel to the Managers	THOMMESSEN	• Advokatfirmaet Thommessen AS has acted as legal advisor to the Managers
Legal counsel to the Issuer	KVALE; NORTON ROSE FULBRIGHT	• Norton Rose Fulbright and Kvale Advokatfirma DA has acted as legal advisor to the Issuer
Legal counsel to Orion	+SIMMONS SIMMONS; Wiersholm	• Simmons & Simmons and Advokatfirmaet Wiersholm AS has acted as legal advisor to Orion
Tax review and support	EY	• Review and tax support related to project, financing, and royalty
Financial Advisors	CLARKSONS; SpareBank 1 MARKETS	• Providing support regarding financing structure, process and market perspectives. • The Issuer has signed a declaration of completeness and conducted a "Bring down due diligence call", amongst other things confirming to Clarksons Securities AS and SpareBank 1 Markets AS (the "Managers"), to the best of the Issuer's knowledge, that the investor documentation is in all material respects adequate and correct
Auditor	EY	• Ernst & Young AS is the auditor of Nordic Mining Group

Independent Technical Engineer

Environmental and Regulatory				
Risk	**Rating**	**Comment**	**Mitigation**	**Residual Risk Rating (Post-Mitigation)**
Seabed Tailings Deposition	High	While STD (seabed tailings deposition) has permits, it will cause some negative ecological effects. STD is not considered good international industry practice. STD is controversial globally and nationally and will likely encounter criticism and generate concerns among stakeholders in the future. NR has stated it will adhere to a comprehensive monitoring program as well as careful planning and dutiful implementation of the deposition, and maintenance of the equipment.	Careful planning and implementation of the deposition equipment and operation, dutiful maintenance. Monitoring to ensure particle dispersal will remain localized as predicted by modelling. Biodiversity offsets are strongly recommended. Good international industry practice requires no net loss offsetting for natural habitats, and net positive offsetting for critical habitats.	Moderate
Use of xanthate	Moderate	Sodium isobutyl xanthate (SIBX) is used in flotation, and some is released into the Fjord with the tailings. SIBX is toxic to the aquatic environment. While current projections predict no harmful concentrations will occur in the STD, it is extremely important to minimize the release of SIBX. Assuming careful control and optimization of dosing and releases, risk can be considered moderate based on the modelling results.	Careful optimization of dosing of SIBX, and prudent control and maintenance of the dosing equipment will help avoid releases of extra SIBX with the tailings. Alternative chemicals must be actively investigated and SIBX substituted for a less harmful option asap.	Low
Closure solution	Moderate	The current closure plan is not considered adequate. At minimum, thicker layer of topsoil and assisted revegetation is expected to be required. Closure is likely to become more expensive than currently projected, however the increased cost is realized at the end of the project. Progressive closure currently deemed unfeasible. However progressive closure during operations is good practice. For masses intended for alternative uses, no progressive closure is required.	Prepare a closure plan corresponding to good practice requirements(c.f. EU's MWEI BREF, ICMM Closure Handbook), with sufficient costing corresponding to appropriate solution. NR has indicated such closure plan is being prepared. Post-closure land use to be developed in dialogue with stakeholder sand a sustainable after use selected.	Very low
Opposition to Project	High	The opposition among some of the locals as well as NGO:s is likely to continue. Protests may lead to bad publicity, security concerns during construction and delays. Some landowners not willing to sell their land. Expropriation is possible if no agreement is reached. Some of the opposition is based to real or perceive interest conflicts. Certain groups oppose mining and/or STD in general for reasons of ideology.	Open communication, provide information, participation. Find solutions to remaining interest conflicts. Plan and implement all operations with minimum harmful environmental impact. Carry out diligent monitoring to be able to demonstrate realized impacts. Ensure safety and security of all persons even during protests. Golder considers it likely that some opposition will remainnotwithstanding any measures Nordic Rutile can take.	Moderate

Independent Technical Engineer

Environmental and Regulatory				
Risk	**Rating**	**Comment**	**Mitigation**	**Residual Risk Rating (Post-Mitigation)**
Future permitting needs	High	The Project currently has required permits in place. Legislation changes in the future, including EU legislation, will likely cause need to renew and / or modify the permits over the LOM of several decades. The controversy related to STD is expected to create challenges in future permitting.	Plan and implement all operations with minimum harmful environmental impact. Substitute xanthate with less harmful alternative. Carry out diligent monitoring to be able to demonstrate realized impacts.	Moderate
Water management	Moderate	No water management plan, surface water management structures and sedimentation dam not designed or permitted yet. Unclear how climate change adaptation has been taken into consideration.	Prepare comprehensive water management plan. Increased rainfall due to climate change must be taken into account inall surface water design. Runoff diverting structures and sedimentation dam to be designed by skilled professionals and built with due care.	Very Low
Landscape: visual impact	Low	Stakeholders have voiced concern over visual impacts. Screening vegetation will help towards E, N and W but cannot be used towards. Industrial area will be clearly visible to the Fjord and Askvoll on the southern side, including areas popular for recreation. Planning under way to minimize visual impact.	Screening vegetation (park belt). Final design of industrial area must take visual impact into account (e.g. colouring choices, height of structures). Such planning is under way.	Very Low

Geology and Resources				
Risk	**Rating**	**Comment**	**Mitigation**	**Residual Risk Rating (Post-Mitigation)**
Sample weighting	Moderate	5-m drill hole composite samples given the same weighting as individual surface samples during estimation process.	Use sample length weighting during estimation process and SMU block regularization for Reserves.	Very Low

Independent Technical Engineer

Geotechnical				
Risk	**Rating**	**Comment**	**Mitigation**	**Residual Risk Rating (Post-Mitigation)**
Too optimistic pit design parameters Stability problems/delays/ rock falls/change of pit design	High	-	Special attention to blasting in order to minimize crest loss and formation of hard toe. Pre-splitting or good quality limit blasting. In order to maximize berm retention, all berms must be kept clean and free of loose blocks (SRK 2019)	Moderate
Road tunnel Interruptions for traffic, expensive repairs	Moderate	Underground mining is considered, however the distance between mining and road tunnel need to be safe	Perform dynamic analyze about effect of blasting vibrations for tunnel. Estimate stress field changes for tunnel and displacement. Analyze safe distance between road tunnel and stopes. During operation monitor blasting vibration in tunnel and inspect tunnel after blasting. If needed have also displacement monitoring in tunnel.	Low

Hydrogeology				
Risk	**Rating**	**Comment**	**Mitigation**	**Residual Risk Rating (Post-Mitigation)**
Significantly underestimate flowrates to excavations.	Low	Weak hydrogeological conceptual model significantly lowers accuracy of inflow rates into excavations.	Undertaking pump tests on existing and/or planned wells.	Low
Unknown flow pathways within rock mass.	Low	Without understanding the flow regimes and interconnectivities there isa chance of contamination or an underestimation of flow rates to excavation.	Undertake site investigations to measure groundwater level over time. Include additional wells to better understand flow behavior.	Low
Incomplete understanding of groundwater behavior in underground excavations.	Low	Calculations for dewatering and groundwater affects in underground mining production unknown and risks unassessed.	Undertake assessment of the impact of groundwater to underground mining operations.	Very Low
Settling pond capacity undesigned.	Low	The extent and capacity for settling ponds is yet to be determined in any detail.	Determine inflow / outflow rates for designing settling pond volumes and capacities.	Very Low

Independent Technical Engineer

Mining				
Risk	**Rating**	**Comment**	**Mitigation**	**Residual Risk Rating (Post-Mitigation)**
Ore pass limiting production	Moderate	The grizzly set-up will have to be uninstall, drill and blast should occur 8times on 10m bench, loading and hauling, bolting and reinstallation of grizzly. This operation should occur 8 times and will definitely impact the production and may block the ore pass.	Careful consideration must be taken to avoid the ore pass from becoming blocked. This needs to be captured in the operational procedures. Design of grizzly area at Feasibility Study area and develop operational methodology. Review ramp design according to unloading area design. Review costing.	Low
More external dilution than expected	Very Low	Internal dilution is considered in the block model. External dilution and ore loss are considered in regularized block model. We understand that the impact will be limited due to grade in considered waste layer. Final operational and unexpected waste dilution should be considered when the pushback 2 will start being operated as some ore will drop into the lower benches, it will also block the main ramp from time to time. Waste could be send to ore pass accidently	Considering unexpected ore losses and dilution.	N/A
Explosive for pre-splitting not considered	Low	Powder factor is well calculated in ore and waste and results in 0.28kg/t and 0.26kg/t. Difference are in drilling pattern and material density. There is no allowance for emulsion loss in operation. It is on the low range for hard rock. There is no explosive for pre-splitting.	Powder factor is part of contractor services. Includes pre-splitting explosive (Det Cord.).	Very Low
Not enough drilling and auxiliary equipment	Moderate	Auxiliary equipment fleet is not enough to support properly the operation. One drill is not enough. Client provide information that local contractor can supply additional equipment easily and it will be part of the contract.	Adding: -One dozer for waste dump area -One boom truck -One drill that can do pre-splitting and used as a back-up for production drilling	Very low
Waste dump design not at FS level	Moderate	Waste dump design parameters are reasonable with 1:1.5 slope ratio and 20m high between bench. However, stability assessment should be performed.	Perform stability assessment to ensure ground condition are acceptable and that the design could reach the FS level with a good safety factor. Review design, if required.	Very low

Independent Technical Engineer

Processing				
Risk	**Rating**	**Comment**	**Mitigation**	**Residual Risk Rating (Post-Mitigation)**
No stand-by (spare)pumps will lead to lower plant availability than expected.	Moderate	Flowsheet does not take advantage of gravity and most transfers are done via pumps. Dedicated Stand-by pumps are not included in the design, even in high wear areas where pumps require regular maintenance. Stand-by pumps are available in each wet process area, allowing to pump to tailings in case of failure. However, this does not allow to maintain normal operation when a critical pump fails. Plant availability will be lower than 90% due to frequent plant stoppages.	Add stand-by pumps wherever required. Show planned stand-by pumps in engineering documents.	Low
Garnet and rutile annual production not supported by process design values in engineering documents	Low	Rutile and garnet recoveries in BCFMare calculated based on recovery models from metallurgical testwork programmes. The nominal and design throughputs indicated in the stream tables do not reflect the garnet production in the BCFM. The rutile nominal throughput as indicated in the stream tables requires rework and is currently being updated. Inconsistencies in the engineering documents prevent proper validation of equipment capacities. The engineering documents are being updated to reflect correct values.	Complete mass balance and equipment sizing update to confirm production numbers are achievable with selected equipment and feedthrough put.	Low

Independent Technical Engineer

Management Structure, Management Team, Material Contracts, Human Resources, Health and Safety				
Risk	**Rating**	**Comment**	**Mitigation**	**Residual Risk Rating (Post-Mitigation)**
Lack of control and follow-up on the engineering part	Low	Since engineering and the construction work is delivered by EPCs, the technical part must be challenged frequently.	Hiring a technical manager at the first stages of the execution phase will mitigate this risk.	Very low
Responsibilities not clear at overlapping tasks between EPCs, especially EPC 1 and 2	Low	Without understanding the interconnections between packages, misunderstandings and omissions could occur.	Project Coordinators are included in the Owners' cost. Risk is minimal.	Very low
Inadequately communicated work and coordination between EPCs	Low	Interface issues between EPC groups could occur.	Project Coordinators are included in the Owners' cost. Risk is minimal.	Very low
Lack of specialized manpower	Moderate	Specialized manpower as engineers, geologists, mechanics, electricians are vital for a mining operation. Recruiting and retaining skilled workers may be a challenge for HR staffing.	Recruit in other regions or another industry basin of workers. Utilize incentive/perks approach to keep skilled workers at Engebø.	Low
Lack of operating manpower	Moderate	Recruiting locally and providing training will be a good approach in the start.	Consider providing incentives to personnel regarding training programs on other equipment, or rotation programs, to keep skilled manpower interested and present.	Low
Not recruiting more specialized staff or maintenance operators	Moderate	A mining operation of this size will require robust staffing to deliver the targeted production rate.	Add these key players to HR strategy. Offer incentives bonuses to keep turnover low.	Low

Independent Technical Engineer

Management Structure, Management Team, Material Contracts, Human Resources, Health and Safety				
Risk	**Rating**	**Comment**	**Mitigation**	**Residual Risk Rating (Post-Mitigation)**
Time risk allowance not adequate	Moderate	Allowances for debugging bottlenecks must be added to the schedule, otherwise strategic decisions may be made on the initial schedule rather than the final schedule.	Develop a risk analysis on the critical path and specially on the long lead equipment. Allow more contingencies after phases construction for testing.	Low
Ramp-up duration	Low	Ramp-up related to mining operation efficiency of 7 months and plant feed ramp-up of 9 months is included in BCFM.	Considerable allowance for ramp-up is included in financial considerations.	Very low
General execution strategies	Low	Execution strategies must be adapted to lessen the impact to Project profitability since a general approach may not consider Project challenges	Develop more adapted strategies before the next phase. Proof testing is strongly recommended at this stage.	Very low