

**Company Update**

Share price: NOK2.0

**OUTPERFORM**

Target price: NOK3.5

# Nordic Mining

## Very attractive play on record high rutile prices

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With its Engebø deposits, Nordic Mining is a very attractive play on tight rutile markets. The world's largest rutile producer, Iluka, said in early June that its customers had accepted a 70% price increase in rutile for the second half of 2011, which would take rutile prices up to a record USD1,100/tonne. Rutile is used in the production of titanium dioxide, which in turn is used mainly in pigments, but also in plastics and paper. It is also used to make titanium metal.

In early May, the two Norwegian municipalities Naustdal and Askvoll approved the industrial plans for rutile production in Engebø. The next step is to obtain approval from the Ministry of the Environment, followed by a waste disposal permit from the Norwegian Climate and Pollution Agency. This summer's shock price hike for rutile allows Engebø to achieve profitability even without contribution from the by-product garnet, which is used in abrasives. When approval is received, Nordic Mining targets a 2015 production start.

In addition to rutile, Nordic Mining has lithium resources in Finland and quartz deposits and an anorthosite mining operation in Norway. Production of lithium could start in 2014.

We initiate coverage with an OUTPERFORM rating and see 80% upside to our risked NOK3.5/share target, which is based on a USD900/t price assumption for rutile. There is further upside as milestones towards the development of the Engebø deposit are reached.

**Changes in this report**

	From	To	Chg
EPS adj. 2011e		-0.2	
EPS adj. 2012e		-0.2	
EPS adj. 2013e		-0.2	

**Upcoming events**

Comment	Date

**Key facts**

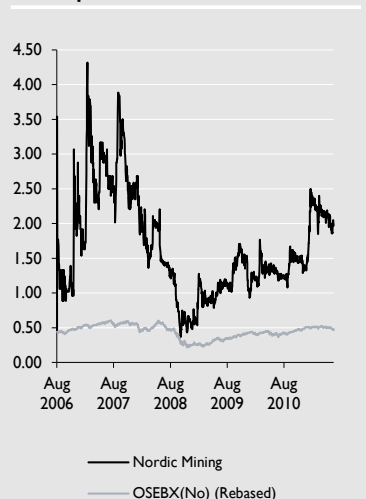
No. shares (m)	145.5
Market cap. (NOKm)	291
Market cap. (USDm)	53
EV (2011e)	305
Free float	100.0%
Risk	Medium Risk
Reuters	NOM.O.L
Bloomberg	NOM.NO

Source: Carnegie Research

Key figures (NOK)	2010	2011e	2012e	2013e
Sales	22	26	30	34
EBITA	-25	-22	-22	-21
Pre-tax profit (m)	-27	-24	-25	-25
EPS	-0.21	-0.17	-0.17	-0.17
EPS adj.	-0.23	-0.17	-0.16	-0.17
DPS	0.00	0.00	0.00	0.00
Sales growth Y/Y	10%	15%	15%	15%
EPS adj. growth Y/Y	+chg	+chg	+chg	-chg
EBITA margin	-110.2%	-86.7%	-73.9%	-62.1%
P/E adj.	neg.	neg.	neg.	neg.
EV/EBITA	neg.	neg.	neg.	neg.
P/BV	4.53	7.07	17.50	neg.
Dividend yield	0.0%	0.0%	0.0%	0.0%
FCF yield	-16.5%	-8.0%	-7.6%	-7.5%
Equity/Total Assets	49.5%	50.6%	26.1%	-1.2%
ROE adj.	-66.5%	-57.8%	-81.5%	-579.6%
Net IB debt/Equity	9.2%	14.2%	135.9%	
Net IB debt/EBITDA	-0.2	-0.4	-1.7	-3.3

Price NOK2.0

**Share price -5Y**



High/Low (12M) NOK2.5/1.1

Perf.	3M	6M	12M	YTD
Abs.	-13.2	45.4	54.4	40.3
Rel.	-5.7	57.9	37.1	52.8

Source: Carnegie Research, Factset

Performance & valuation

Price relative to market – 1Y



— Nordic Mining  
— OSEBX(No)

Source: Factset

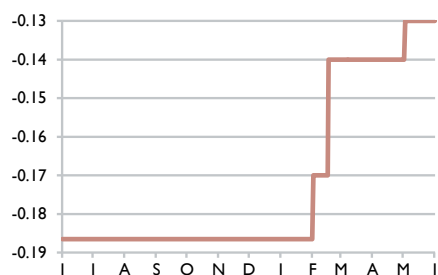
Price relative to sector – 1Y



— Nordic Mining  
— Materials

Source: Factset

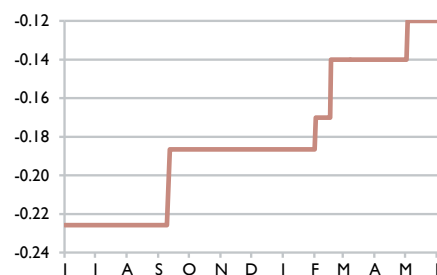
Adj. EPS expectations – 2011e



— Carnegie

Source: Factset, Carnegie Research

Adj. EPS expectations – 2012e



— Carnegie

Source: Factset, Carnegie Research

Performance

snapshot	1M	3M	12M	YTD
Nordic Mining %	1.0	-13.2	54.4	40.3
Peer group %	-17.0	-17.2	29.4	-17.5
Carnegie Materials %	-9.3	-9.3	8.5	-12.5
OSEBX %	-5.5	-8.0	12.6	-8.8
MSCI Nordic %	-9.6	-10.3	15.9	-7.1
MSCI Europe %	-4.5	-4.4	1.5	-4.1
S&P 500 %	-4.1	-2.2	-0.2	-2.9
MSCI World %	-4.0	-3.4	-0.7	-4.8

Source: Factset

Valuation

snapshot	2010	2011e	2012e	2013e
P/E	neg.	neg.	neg.	neg.
P/E adj.	neg.	neg.	neg.	neg.
EV/EBITDA	neg.	neg.	neg.	neg.
EV/EBITA	neg.	neg.	neg.	neg.
P/BV	6.46	7.07	17.50	neg.
P/BV ex. GW	7.94	8.60	31.16	neg.
Dividend yield	0.0%	0.0%	0.0%	0.0%
FCF yield	-10.1%	-8.0%	-7.6%	-7.5%

Source: Carnegie Research

Peer group

comparison	Rat.	Curr.	Price	P/E Adj. Carnegie		P/E bef.GW Consensus		EV/EBITA Carnegie		EBITA Margin		Div. Yield
				11e	12e	11e	12e	11e	12e	12e	11e	
Boliden	U	SEK	106.1	7.9	8.6	7.0	6.4	6.5	7.1	13.0%	4.7%	
Lundin Mining	OP	SEK	43.8	8.7	6.9	9.4	7.2	n.a.	n.a.	n.a.	0.0%	
Nordic Mines	OP	SEK	61.5	19.2	5.5	16.8	5.0	14.9	3.5	56.3%	0.0%	
Nordic Mining	OP	NOK	2.0	neg.	neg.	n.a.	n.a.	neg.	neg.	neg.	0.0%	
Northland Resources	OP	NOK	14.0	neg.	neg.	n.a.	n.a.	neg.	neg.	n.m.	0.0%	
<b>Weighted avg.</b>				<b>9.4</b>	<b>8.5</b>			<b>7.9</b>	<b>8.1</b>	<b>13.6%</b>	<b>2.2%</b>	

Source: Carnegie Research

## The mineral sands market is booming

Nordic Mining is an exciting play on the tight market for rutile, one of the key minerals used in the production of titanium dioxide, which is used mainly in paint but also in plastics and paper manufacturing. Rutile is also used to make titanium metal, which is used in the aerospace industry. The company is in the early stage of developing its Engebø deposit in Norway, with start-up likely in 2015 if the appropriate waste disposal approvals for depositing tailings in Førdefjord are obtained.

Capex for the project would probably be NOK1,500m, with one-fifth of that in equity financing as a likely alternative. Debt would finance the rest, with the timing of a bankable feasibility study in about a year, assuming the necessary approvals are obtained.

Aside from rutile, we see value in Nordic Mining's lithium and quartz assets. Its anorthosite mining operation contributes modestly to earnings, and the company is looking into the possibility of extracting alumina from anorthosite, although that is more of a long shot.

We initiate coverage with an OUTPERFORM rating and see 50% upside to our risked NOK3.50/share target, which is based on a USD900/t price assumption for rutile. There is also further upside as milestones towards the development of the Engebø deposit are reached.

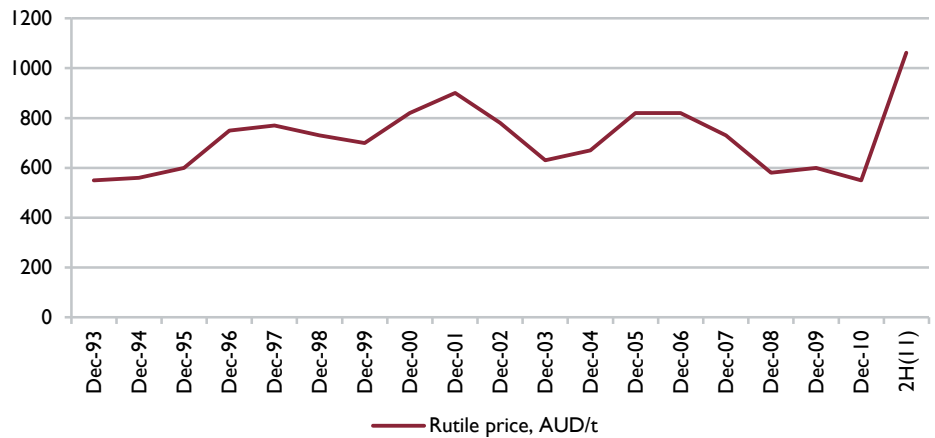
### Attractiveness of investment case

Nordic Mining was able to buy DuPont-related titanium assets in Norway at a time when rutile prices were below the levels needed to assure profitability. With Iluka's 70% price hike on 1 July, mineral sands should move onto the radar for more investors, as investors realise some of the value that exists in undeveloped mineral deposits that companies such as Nordic Mining own and plan to develop.

- Spot prices for rutile (USD1,100 according to Iluka) imply a target value of NOK7, compared with our NOK3.5/share base case valuation.
- The two municipalities involved in Engebø have approved the industrial plan with 31 votes in favour and 13 against. It is very positive that the plan was passed despite some local opposition.
- The ore grade for TiO<sub>2</sub> at Engebø is 3.75%, well above the competing projects of four competitors.
- Nordic Mining has an agreement with Cristal, the world's number two producer of titanium pigments, to develop and optimise the production process for rutile resources at Engebø in order to meet its feedstock quality requirements. We consider Cristal a potential customer for long-term supply and off-take agreements for rutile.
- Nordic Mining has an experienced management team.
- The company operates in Norway and Finland, countries with low political risk.

The graph below illustrates the price development of rutile, with the prices for H2(11) plotted based on Iluka's comments. Rutile has had a system of long-term price contracts, with caps and collars, but unlike iron ore, the system did not change until this year. Iluka signalled in early 2010 that the pricing system would change.

**Rutile price, AUD/t**



Source: ABARE, Iluka, Carnegie Research

Assuming all approvals are received, we estimate that Nordic Mining can commission the mine in 2015.

Iluka said rutile prices will rise 70–75% on 1 July

On 5 June 2011, mineral sands producer Iluka announced that it expected average prices for its titanium dioxide products to rise 70–75% in the second half of the year and zircon prices by up to 40% for Q3(11). It said rutile prices were averaging USD770/t before the increase. Iluka stated the increases were for most of its titanium dioxide sales, which could imply that some longer-term contracts are still in place. Zircon prices were said to rise from a level of USD1,600. More than half of zircon is used in the production of ceramics, including tiles, sanitary ware and tableware. Many rutile mines, including Iluka’s, produce both rutile and zircon.

Our valuation model indicates a risk-adjusted value of NOK3.50/share, indicating 50% upside from the current NOK1.90 share price. Hence we initiate coverage with an OUTPERFORM rating and a 6–9-month target price of NOK3.50.

### Company overview

Nordic Mining is an anorthosite mining company with three development stage mining projects – rutile and quartz in Norway, and lithium in Finland.

The rutile project is potentially the most profitable. Estimated capex is NOK1,500m, with start-up in mid-2015 if all approvals are received. We estimate a very high net present value for the project and have made some alternative estimates with lower price assumptions for rutile or lower prices and volumes for by-products to illustrate that the project is robust.

### Company history

Nordic Mining was incorporated on 8 May 2006 through the demerger of Rocksource’s business in metals and minerals exploration. This left Rocksource an oil company and Nordic Mining a metals and minerals company.

Rocksource transferred all its assets and liabilities related to mining and minerals to Nordic Mining. This included perpetual global rights to utilise Rocksource’s advanced electromagnetic technology (EM technology) within the mining industry and economic interest in four gold/copper mining licences in Ecuador.

Rutile assets bought in 2006

In September 2006, Nordic Mining acquired nine mineral claims to the Engebøfjellet rutile deposit from Conoco Phillips Investment Norway AS. Final approval of the acquisition was given by Norwegian authorities in January 2007.

Nordic Mining acquired 85% of the shares in Gudvangen Stein AS, a producer of the industrial product anorthosite, in June 2007. It raised NOK57.3m in April–May 2007 in a private placement and subsequent rights issue.

**Lithium assets bought in 2008**

In June 2008, the company acquired 68% of the shares in Keliber Oy, a Finnish company with the rights and plans for extraction and production of lithium carbonate in Finland.

In September 2008, Nordic Mining and StatoilHydro entered into a strategic cooperation agreement on the development of new technology for use of CO<sub>2</sub> in mineral processing.

In 2008 Nordic Mining also raised NOK55m through a directed share issue.

In 2009, Nordic Mining bought the remaining 15% of Gudvangen Stein AS.

**Quartz assets bought in 2011**

In January 2011, the company entered into an agreement with landowners and secured exclusive rights for the investigation and development of a quartz deposit in the Kvinnherad municipality in Hordaland County, Norway.

In January–February 2011, the company conducted two share issues at NOK1.45/share, which raised NOK29m.

**Key approval for rutile project received in May**

In May 2011, the two municipalities involved in the Engebø rutile deposit approved the industrial plan for the area. The next step is to obtain approval from the Ministry of the Environment, followed by a waste disposal permit from the Norwegian Climate and Pollution Agency.

The shares are listed on the Oslo Axess exchange.

## Mineral reserves and resources

A JORC-compliant resource estimate for Engebø using a cut-off grade of 3% TiO<sub>2</sub> pointed to 31.7m tonnes of indicated resources with a grade of 3.77% total TiO<sub>2</sub>. A further 123m tonnes of inferred resources has also been estimated, which would involve underground mining. JORC refers to the Australasian Joint Ore Reserves Committee, which has a code for Reporting of Mineral Resources and Ore Reserves (the JORC Code) that is widely accepted as a standard for professional reporting purposes.

Nordic Mining is planning further drilling later this year and hopes to upgrade its estimates of titanium dioxide resources.

A JORC-compliant resource estimate for Länntä and Outovesi in the Keliber deposit in Finland using a cut-off grade of 0.5% Li<sub>2</sub>O indicates lithium resources of 1.69mt at ore grades of 1.08% to 1.49% LiO<sub>2</sub>. Of the 1.69mt, 1.26mt are classified as reserves.

According to JORC standards, an ‘ore reserve’ is the economically mineable part of a measured and/or indicated mineral resource. It includes diluting materials and allowances for losses, which may occur when the material is mined. Appropriate assessments and studies have been carried out and include consideration of and modification by realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors.

These assessments demonstrate that, at the time of reporting, extraction could reasonably be justified. Ore reserves are divided in order of increasing confidence into probable ore reserves and proved ore reserves.

**Area near Kokkola, Finland**



Source: Tele Atlas

Nordic Mining does not yet have a JORC-compliant resource estimate for its quartz assets in Norway, but the Geological Survey of Norway (NGU) has estimated 2.7mt.

The anorthosite resource in Gudvangen Stein in Norway is estimated to be at least 500m tonnes. Gudvangen Stein is currently producing a total of around 200,000 tonnes per year.

Nordic Mining has a perpetual global licence for all EM and reservoir management technology owned or licensed by Rocksource and applied to resources and materials other than hydrocarbons.

The Nordic Mining Group has various mineral exploration rights for molybdenum, nickel, palladium and platinum in Norway. It received the economic interest in four gold/copper concessions in Ecuador in connection with its demerger from Rocksource. It has sold two, and has retained two.

This is our best estimate of the value of Nordic Mining’s different parts:

<b>Nordic Mining, Est. Sum of the Parts</b>	
Rutile	325
Lithium	47
Quartz	40
EM rights	15
Other mineral rights	10
Anorthosite	25
Contingent debt, ConocoPhillips	-40
Net cash	17
VALUE	439
<b>Target Price</b>	<b>3.50</b>

Source: Carnegie Research

**Rutile and Titanium/Engebø**

Rutile, along with ilmenite, is one of the main products used in the production of titanium dioxide, which is used in paint, plastics and paper manufacturing. It is also used to make titanium metal, which in turn is used in aircraft.

In September 2006, Nordic Mining acquired nine mining rights to the Engebøfjellet rutile deposit from Conoco Phillips Investment Norway AS. Final approval of the acquisition was given by Norwegian authorities in January 2007.

Nordic Mining has invested over NOK40m in pre-studies, environmental impact analysis and verification of the rutile deposit.

**Area of Engebø, Førdefjord**



Source: Google

In May 2011, both the Naustdal and Askvoll municipalities passed resolutions in support of the industrial development plan for the Engebø rutile project. The next step is to obtain approval from the Ministry of the Environment, followed by a waste disposal permit from the Norwegian Climate and Pollution Agency. The plan is to deposit the tailings in the fjord, and Nordic Mining expects approval since the tailings are inert, harmless silica minerals.

The company aims to extract 4–6mt of ore each year using a beneficiation process and sell 70,000–100,000 tonnes of rutile concentrate (94–96% TiO<sub>2</sub>) mainly to the pigment industry. It also intends to sell 100,000 tonnes of the by-product garnet to the abrasives industry.

The TiO<sub>2</sub> ore grade at Engebø is 3.75%, well above the competing projects of four competitors.

Projects	Country	Total ore MT	Grade % % TiO <sub>2</sub>	Capex Other MUSD products
Engebø	Norway	154	3.75%	50 Garnet
White Mountain	Chile	165	2.10%	59 Feldspar
Mineral Deposit Ltd	Senegal	751	1.80%	471 Zircon/ilmenite
Coburn Zircon	Australia	414	1.20%	65 Zircon/ilmenite
Kwale (rutile only)	Kenya	262	0.65%	102 Ilmenite/zircon

Source: Nordic Mining

Nordic Mining has an agreement with Cristal, a Saudi Arabian company and the world’s number two producer of titanium dioxide, to develop and optimise the production process for rutile resources at Engebø in order to meet its feedstock quality requirements. We consider Cristal a potential customer for long-term supply and off-take agreements for rutile.

Using a USD900/tonne price assumption for rutile (from 1 July the price will be USD1,100 according to Iluka) and USD300/tonne for garnet, we get extremely high net present values for the project.

Since the project is still awaiting environmental approval and a Definitive Feasibility Study (DFS), and capex estimates are tentative, we have only included about 20% of the NPV in our sum-of-the-parts consideration. We have also taken into consideration different price assumptions for rutile (the current price will not necessarily be the price in 2015) and different volume assumptions for the by-product garnet. So, although our NPV gives a value of NOK12.5/share, we have assumed a discount of 79% and used NOK2.6/share.

Discount Rate	NPV (USDm)	Value per share USD	Value per share NOK	Discount	Value in Analysis
8%	309	2.5	16.0		
10%	241	1.9	12.5	79%	2.6
12%	185	1.5	9.6		
14%	140	1.1	7.2		
16%	102	0.8	5.3		

Source: Carnegie Research

We estimate 2016 as the first year of full production

For the production profile, we have assumed 4.5mt of annual ore production, with a 3.75% titanium dioxide ore grade and a 55% recovery factor. That should yield 93,000 tonnes of rutile in 2016, the first year we estimate of full production. For garnet, the by-product, we estimate 100,000 tonnes of annual production, rising by 2% a year. Aggregate production, not shown in the graph, should be 3.1–3.2mt a year. For garnet, we have assumed USD300/tonne, for aggregates, USD7/tonne.

Here are some of the milestones we see:

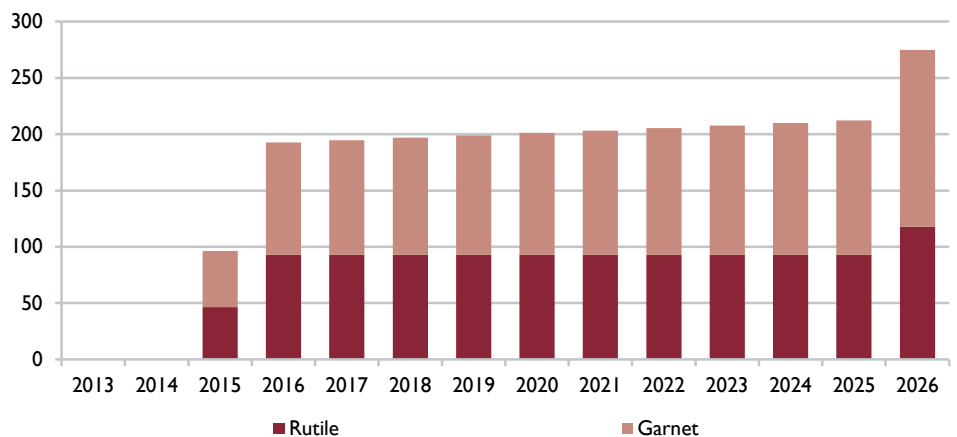
Potential milestones and triggers	Timeline	Details
Approval, Ministry of the Environment	Q4(11)	
Approval, Waste, Norw. Pollution Authority	Q4(11)	
Drilling for JORC resource estimates	1H(12)	Preferably after both above permits received
Pre-feasibility study	Q4(12)	
Off-take agreements	1H(13)	Can come earlier, but should come before DFS
Definitive Feasibility Study	mid(13)	
Production	mid(15)	

Source: Carnegie Research

Production could switch to underground mining around 2026

In our NPV estimate, we have used USD900/t for bulk rutile, which is mid-way between the H1(11) price and the H2(11) price. We have calculated NPV to 2026, the end of the surface mining period, and left out the switch to underground mining, which includes higher costs and possibly a new period of capex as well.

**Engebo, Estimated Production Profile, 1000 mt**

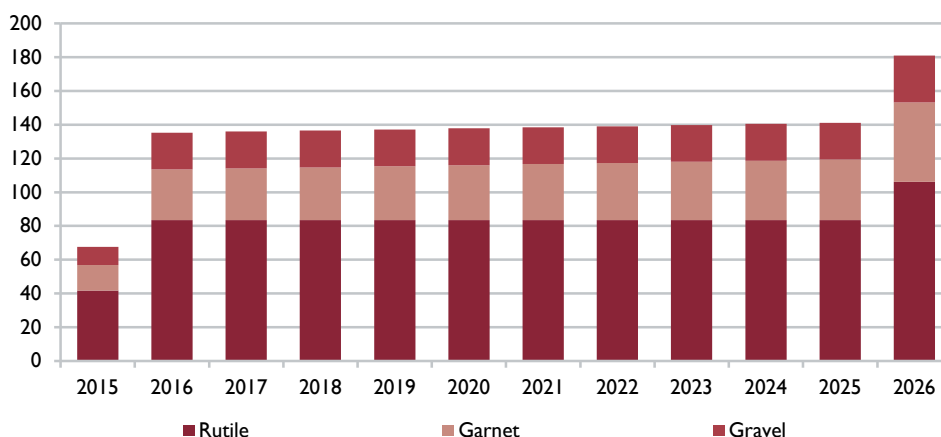


Source: Nordic Mining, Carnegie Research

Since the relative contribution of the main product (rutile) and by-products (garnet, gravel) is often of interest in mining projects, we illustrate our sales assumptions for the three main product groups. With our cost assumptions, and USD900/tonne for rutile, the contributions from the two other products are not needed, which means that Nordic Mining could produce more garnet than we estimate as long as it makes a gross contribution. But at rutile prices of USD700, for instance, a contribution from garnet is needed.

We have included 2026 for illustrative purposes, as the first year of a shift from surface mining to underground mining. This could enable higher volumes of rutile, but raises mining costs due to higher overburdening per each tonne of titanium dioxide recovered. Of course, as commodities, rutile and garnet are likely to see volatility in prices, and rutile is likely to see rising real prices over time. We have modelled flat prices and costs in our model.

**Revenues by Product, USDm**



Source: Carnegie Research

If the rutile project is successful on certain milestones, Nordic Mining has a contingent liability of NOK40m to ConocoPhillips.

After examining Nordic Mining’s various mining areas, we look at overall market trends for rutile and garnet. It seems that all the companies in the rutile peer group have performed strongly this year.

Company	Price (USD)	Mkt. Cap (USD) mn	Price YTD, US	Sales(12)E, USDbn	EPS(12)E	PE(12)
Exxaro Resources Ltd.	24.55	8799	19.2%	3.6	3.80	6.5
Iluka Resources Ltd.	18.80	7872	100.7%	2.4	2.30	8.2
Kenmare Resources PLC	0.76	1821	48.6%	0.5	0.08	9.8
Mineral Deposits Ltd.	7.37	448	29.6%	0.1	-0.21	-34.9
Astron Ltd.	3.20	206	22.5%	N/A		N/A
Sierra Rutile Ltd.	0.25	127	58.3%	N/A		N/A
Base Resources Ltd.	0.66	109	77.8%	0.1	-0.02	-37.5
Gunson Resources Ltd.	0.22	47	-24.6%	N/A		N/A
Nordic Mining ASA	0.34	39	40.3%	0.0	-0.02	-15.5

Source: Factset, Carnegie

**Lithium/Keliber**

A JORC-compliant resource estimate for Lantta and Outovesi in the Keliber deposit in Finland using a cut-off grade of 0.5% Li2O indicates lithium resources of 1.69mt at ore grades of 1.08% to 1.49%. The reserve estimate is 1.26mt. Nordic Mining has bid on Finnish government auctions for further areas with lithium potential and is awaiting the results.

The two biggest uses of lithium are in ceramics/glass and batteries. Batteries for electric cars, electronics, electric bikes and hand tools are the biggest growth drivers in demand. That means that major commitment of carmakers to increase production of electric cars could be a trigger for higher lithium carbonate prices and off-take deals to secure supply.

Keliber plans to produce around 125,000 tonnes per year by the following product categories: lithium carbonate 4,000 tonnes, tantalum pentoxide 1,000 tonnes, quartz and feldspar concentrates or a combination 120,000 tonnes/year.

Keliber will also evaluate possible market opportunities for spodumene concentrate, a semi-finished product in the production of lithium carbonate. Talison Lithium is a peer that mainly sells spodumene concentrate, rather than upgrading to lithium carbonate.

Keliber's production in Central Ostrobothnia, Finland, is preliminarily scheduled to start in 2014. The planned operation consists of open pit mining, enrichment, conversion, leaching and precipitation. Outotec and Metso are two companies that sell some of the equipment that would be needed. The process plant will be located at Kalavesi in the municipality of Kaustinen. The distance from the Länttä deposit to the process plant is about 20km.

#### **Area near Kaustinen, Finland, inland from Kokkola**



Source: Tele Atlas

Nordic Mining has not yet committed capital expenditure investments for Keliber, but estimates capex at NOK400m, or EUR50m. In Finland, all permits are in place to start mining and production of lithium carbonate. The permits in Finland also cover environmental issues at the mine site and relate to the planned process plant. Nearly NOK10m was spent on exploration work and feasibility studies.

Several other lithium deposits, for example Emmes and Jänislampi, are known to occur in the surroundings of Länttä. The Geological Survey of Finland (GTK) has also been carrying out lithium investigations in the area recently, but they are not yet complete. Resources of other deposits hold potential exploitation in the future.

We believe Nordic Mining may be considering a spin-off of the lithium business. In our sum of the parts, we estimate the lithium value at NOK50m. Triggers for higher forecasts could be higher resource estimates which may extend mine life and reduce mining costs per tonne, and off-take agreements for lithium carbonate or for by-products.

### **Quartz and other minerals in Norway**

Nordic Mining is conducting exploration in south-west Norway for a hydrothermal quartz deposit. Early indications are that the quartz is high purity, containing low amounts of impurities such as Ti, Al, Fe, P, Na, K, Li and B. The deposit is estimated by the Geological Survey of Norway (NGU) at up to 2.7m tonnes of quartz in a 12 x 600-metre long quartz vein, reaching a depth of at least 150 metres. Nordic Mining is planning a detailed mapping of the deposit's variations and dispersion, to be carried out jointly with NTNU. More drilling needs to be done before this can become a JORC-compliant resource.

The electronics sector is a buyer of high purity quartz for use in silicon metal, which is used in semiconductor and solar cell production.

In November 2010, Nordic Mining announced it was granted 24 new mineral pre-claims in the Seiland Igneous district in Finnmark. The claim area covers 227 square km. The province is known for its massive layered mafic and ultramafic intrusions and is interesting in terms of copper, nickel and platinum group elements. In addition, the company holds three pre-claims in the region. The group is studying the geology so that areas for investigation can be targeted. The company hopes to know more in August.

#### Seiland, Finnmark, Norway



Source: Tele Atlas

We have not found a listed peer for quartz, but the family-owned, Belgian company Sibelco produces a wide range of industrial minerals, including quartz. Sibelco owns Unimin, the largest US producer of silica sand.

### Anorthosite/Gudvangen

Nordic Mining acquired 85% of the shares in Gudvangen Stein AS, a producer of anorthosite, in June 2007 and it typically produces about 200,000 tonnes/year. In 2009, Nordic Mining bought the remaining 15% of Gudvangen Stein AS. The anorthosite is predominantly used in the construction industry for stonewool insulation and top layers of asphalt.

Nordic Mining is exploring alternative uses of anorthosite in more value-added products, since the contribution to earnings is still fairly modest and it could produce up to 400,000 tonnes a year. In January 2011 it announced that it had initiated project work with the Institute for Energy Technology (IFE) to develop new technology for the production of alumina from anorthosite with use of CO<sub>2</sub>. Tests will be carried out at IFE's laboratory at Kjeller. The aim is to extract alumina by chemical leaching with the addition of CO<sub>2</sub>. Anorthosite from Nordic Mining's Gudvangen mine will be used as raw material. The alumina content of the anorthosite is about 30% and it is therefore a potentially major alumina source.

In addition to processing anorthosite with CO<sub>2</sub>, Gudvangen Stein is developing anorthosite concentrates as feedstock for various industrial applications, such as ceramics, glass-related products and as filler in various industries.

The results have been positive so far. In 2010 Gudvangen Stein entered into a development cooperation agreement with a leading producer of advanced mineral products to investigate the possibility of processing and using concentrates from its anorthosite as raw material in the production of advanced mineral products. Industrial testing will be done in 2011 at the producer's plant. The two companies intend to negotiate a long-term supply/off-take agreement.

Gudvangen Stein intends to establish a new production plant which can produce the quantity and quality of anorthosite concentrate necessary under the supply/off-take agreements. Dialogue has also commenced with other interested parties for similar test programmes.

If the tests for upgraded products are successful, Nordic Mining could invest NOK40m–50m in a process plant for upgrading anorthosite. We do not have a peer group for anorthosite miners. A company called Exploration Orbite is trying to extract alumina from aluminous clays (‘chat’ clay) in Canada, and several companies in China are trying to extract alumina from red mud, alumina smelter waste. Those are alternative routes to producing alumina from bauxite. We do not consider Exploration Orbite a true peer to Nordic Mining, but list it as the only company we know of claiming success in an alternative alumina production method.

Company	Price (USD)	Mkt. Cap (USD) mn	Price YTD, USD	Price 3Y, USD	Sales(12)E, USDbn	EPS(12)E	PE(12)
Exploration Orbite VSPA Inc. (CI A)	3.40	491	271.1%	1785%	0.7	0.27	12.7
Nordic Mining	0.35	40	44.5%	27%	N/A	N/A	N/A

Source: Factset, Carnegie

### More about rutile and titanium dioxide

Strong demand from developing countries and limited supply growth has led to a sharp 70% price increase for rutile, effective 1 July 2011 according to Iluka, the leading rutile producer. Analysts who follow Iluka have raised earnings estimates for 2012 by roughly USD250m since 1 June – such is the earnings power of rutile.

Rutile is the preferred material for making titanium dioxide

Titanium mineral concentrates of economic importance include rutile (94–96% TiO<sub>2</sub>), leucoxene (65–90% TiO<sub>2</sub>), pseudorutile (60–65% TiO<sub>2</sub>), altered ilmenite, ilmenite (35–65% TiO<sub>2</sub>) and anatase (over 90% TiO<sub>2</sub>). Producing titanium dioxide from rutile is more environmentally friendly than producing it from ilmenite, which uses a sulphate process. China has been the biggest growth driver in market demand and primarily uses ilmenite. Supplies of ilmenite have tightened partly because of lower ore grades at Iluka, which has shifted output from ilmenite to zircon and squeezed pigment manufacturers in China.

Mineral sands like titanium are not like gold or base metals, but have similarities to iron ore and phosphate. The most valuable minerals must be extracted and processed, and the rest needs to be discarded. Heavy minerals have a specific gravity above 2.9t/m<sup>3</sup>. Zircon and rutile are the most valuable heavy minerals, followed by ilmenite.

Mining of titanium minerals is usually performed using surface methods. Dredging and dry mining techniques are used for the recovery of heavy minerals. Gravity spirals are used to separate the heavy-mineral suite, while magnetic and high-tension separation circuits are used to separate the heavy-mineral constituents.

The biggest use of titanium is in pigments for painting. Paint and coatings account for about 58% of usage, plastics 23% and paper 11%. Titanium metal is closely related to titanium dioxide, but is a much smaller market at less than 200,000 tonnes, with major use in aeroplanes.

Nordic Mining’s TiO<sub>2</sub> grade is 3.75%

Nordic Mining’s TiO<sub>2</sub> grades will be about 3.75%. Industry leader Iluka has an ore grade of 7.4%, but that is the grade of valuable heavy minerals, so most of that grade consists of ilmenite, with small amounts of zircon and rutile. Nordic Mining will produce rutile and garnet, while Iluka’s main product is ilmenite, followed by zircon and rutile.

Nordic Mining bought its titanium mining rights from ConocoPhillips. Conoco has a historical link to titanium dioxide because it was owned by Dupont from 1981 to 1999, and Dupont has mined the huge Trail Ridge ilmenite mine in Florida since 1947. If commercial production is realised, Nordic Mining has a contingent liability of NOK40m to ConocoPhillips.

The leading producers of raw materials for titanium dioxide are Rio Tinto, Iluka and Exxaro. Major producers of titanium dioxide are Cristal Global, Dupont, Huntsman, Tronox and Kronos. China's market is more fragmented, but Sichuan Lomon and Panzhihua Dongfang are two major producers. Companies such as Akzo Nobel, PPG, Sherwin Williams and Jotun are major paint manufacturers. Dupont owns a large ilmenite mine in Florida, while Cristal has a mining subsidiary (Bemax) and Kronos has ilmenite mines. Dupont, Cristal and Kronos have a higher share of integration with raw materials than other titanium dioxide producers.

The following is a list of mineral sands peers. Some, like Exxaro, produce ilmenite, an alternative material for making titanium dioxide that commands a lower price than rutile.

Company	Price (USD)	Mkt. Cap (USD) mn	Price YTD, US	Sales(12)E, USDbn	EPS(12)E	PE(12)
Exxaro Resources Ltd.	24.55	8799	19.2%	3.6	3.80	6.5
Iluka Resources Ltd.	18.80	7872	100.7%	2.4	2.30	8.2
Kenmare Resources PLC	0.76	1821	48.6%	0.5	0.08	9.8
Mineral Deposits Ltd.	7.37	448	29.6%	0.1	-0.21	-34.9
Astron Ltd.	3.20	206	22.5%	N/A		N/A
Sierra Rutile Ltd.	0.25	127	58.3%	N/A		N/A
Base Resources Ltd.	0.66	109	77.8%	0.1	-0.02	-37.5
Gunson Resources Ltd.	0.22	47	-24.6%	N/A		N/A
Nordic Mining ASA	0.34	39	40.3%	0.0	-0.02	-15.5

Source: Factset, Carnegie

According to a recent presentation by Mineral Deposits, the main capacity expansions anticipated were from Exxaro and Richards Bay (partly owned by Rio Tinto) in South Africa, Kenmare in Mozambique, Mineral Deposits in Senegal, Base Resources in Kenya, and Gunson Resources, Matilda Zircon and Astron in Australia. As the table above shows, all of these companies have had a strong share performance this year, with the exception of Gunson Resources.

## Garnet

World production of garnet was 1.4mt in 2010, according to USGS data, with India production 700,000 tonnes, followed by 470,000 tonnes in China and 150,000 in Australia. In the US market, average prices were USD50–2,000 in 2010, depending on grade. We have assumed a price of USD300/t for Engebø, which Nordic Mining is targeting as an average.

The main use of garnet is in abrasives

Abrasives are used in grinding, polishing, buffing, honing, cutting, drilling, sharpening and sanding. Abrasive blasting accounts for about 60% of garnet usage, water-jet cutting 20%, water filtration 10% and other end uses 10%. Sandblasting is an example of typical garnet usage. Silica sand is the most commonly used mineral abrasive, but it breaks up quickly and produces large amounts of dust, which can cause lung disease. Germany and Britain do not allow silica to be used as an abrasive. Garnet can do the same job, but produces less dust.

There has been increased use of garnet, together with diamond wire and silicon carbide, in the production of monocrystalline silicon and polysilicon, both in solar technology and electronics. We do not know of any listed peers in the garnet business, but GMA Garnet in Australia primarily produces garnet and sells it to the blasting abrasive and the water-jet cutting abrasive sector.

Some producers only produce high grade garnet ores or mineral products with valuable by-products, such as kyanite, marble, mica minerals, sillimanite, staurolite, wollastonite or metallic ores. In the case of Nordic Mining, garnet is the less valuable by-product to rutile.

Other natural and manufactured abrasives can substitute, to some extent, for all major end uses of garnet. In many cases, however, the substitutes would entail sacrifices in quality or cost. Fused aluminium oxide and staurolite compete with garnet as a sandblasting material. Ilmenite, magnetite and plastics compete as filtration media. Diamond, corundum, and fused aluminium oxide compete for lens grinding and for many lapping operations. Emery is a substitute in non-skid surfaces. Finally, quartz sand, silicon carbide and fused aluminium oxide compete for the finishing of plastics, wood furniture and other products.

## More about the lithium market

All forecasters predict strong growth in lithium demand

Market conditions improved for lithium-based products in 2010. Sales volumes for the major lithium producers may have risen by over 30% in 2010. Analysts estimate that demand in 2011 will be in the region of 105,000–115,000/tpy of lithium carbonate equivalent (LCE). Lithium is mainly sold to battery manufacturers in the form of carbonate. Demand forecasts for 2020 vary widely – at the world lithium congress in Toronto in January, Chile-based consultancy signumBOX estimated 187,000 tonnes, while US consultancy TRU Group puts the figure at about 249,000 tonnes and Canada's Byron Capital Markets forecasts 282,842 tonnes. In spring 2011, Metal Bulletin's Global Lithium Market Outlook predicted that the world would require between 290,000 and 380,000tpy of LCE by 2020.

Other new companies continue exploring for lithium on claims worldwide. Some of the claims reported have been in Argentina, Australia, Bolivia, Canada and Nevada (US), according to the USGS. Chile, as well as the Argentinian province of Jujuy, has defined lithium as a national resource, partly due to its use in nuclear power. This may slow production expansion somewhat in those areas. The leftist government of Evo Morales in Bolivia is likely to cool private investors' interest in investing in lithium projects in the country, where reserves are likely to be extensive.

According to Metal Bulletin, in May 2011 prices for lithium carbonate were about USD5,200/tonne. Nordic Mining estimates that battery grade lithium will achieve a significant premium, with prices of about USD11,500/tonne.

The largest producing countries of lithium carbonate are Chile, the US, Argentina, China, Australia and Russia. SQM, a fertiliser company with lithium as a by-product, is the largest producer with about a 40% market share, followed by Chemetall/Rockwood (33%) and FMC Lithium.

Batteries are the strongest growing market for lithium

Demand for lithium ion batteries is growing, and the automotive sector holds the biggest potential. Power tools increasingly use lithium batteries, such as the new line of Milwaukee Red lithium power tools at Home Depot, which give a 40% longer run-time and 20% more torque.

SQM said at its fourth-quarter conference call that demand for lithium was growing at a rate of 5–8% and that prices were stable. It mentioned Nissan and General Motors as companies moving further than others with electric cars, but said that volumes were still small and it expects 2014 to be the year with big demand from electrical battery producers.

No. 3 FMC Lithium had capacity constraints in lithium in Q1

FMC Lithium reported specialty chemical earnings of USD45m in Q1(11) on sales of USD210m for specialty chemicals, the division which includes lithium. In May it said that it has capacity constraints in lithium and may consider extra capex on capacity expansion. The capacity constraints have caused it to cut back on deliveries to the battery sector and focus more on butyllithium specialties, typically used in the pharmaceutical sector. FMC Lithium said it would increase its lithium capacity by 25% and does not expect that to impact overall market pricing due to strong demand growth.

New capacity in lithium due this year

Three emerging companies will bring fresh supplies of lithium carbonate to the market in 2011 – Galaxy, and the two unlisted companies Rincon Lithium and Simbol.

Company	Price (USD)	Mkt. Cap (USD) mn	Price YTD,		Sales(12)E, USDbn	EPS(12)E	PE(12)
			USD	Price 3Y, USD			
Sociedad Quimica y Minera de Chile S.A.	61.04	16045	7.6%	36%	2.9	2.59	23.5
FMC Corp.	79.02	5669	-1.1%	3%	3.8	6.49	12.2
Rockwood Holdings Inc.	47.31	3615	20.9%	18%	4.2	4.35	10.9
Talison Lithium Ltd.	4.35	461	-37.0%	372%	0.2	0.23	19.1
Orocobre Ltd.	2.30	237	-31.7%	1126%	0.0	-0.04	-60.5
Reed Resources Ltd.	0.55	146	-23.8%	-42%	0.2	0.12	4.6
Nordic Mining	0.34	39	40.3%	23%	N/A	N/A	N/A

Source: Factset, Carnegie

We do not know the reason for the slightly soft share price performance of lithium peers this year, but suspect it is related to the Japanese earthquake. For instance, Nissan has said that it is putting all its efforts into restoring production after the earthquake, which will slow the development of its electric car, the Leaf. Toyota could be facing the same issues. This means the push to develop electric cars by the Japanese will see some delays.

Performance over the past three years has been strong. In the table above we show the 3-year performance as well as the performance year-to-date to give a picture of investor sentiment on lithium since the Keliber purchase.

Interim figures

Nordic Mining Carnegie estimates NOKm	2010				2011				2007	2008	2009	2010	2011e
	Q1	Q2	Q3	Q4	Q1	Q2e	Q3e	Q4e					
Sales	3.0	6.0	5.5	7.8	4.4	6.6	6.1	8.6	12	18	20	22	26
EBITDA	-5.7	-7.4	-4.7	-4.1	-5.1	-5.3	-5.8	-3.2	-28	-25	-22	-22	-19
EBITDA margin	-188%	-123%	-86%	-52%	-117%	-79%	-96%	-38%	0%	0%	0%	0%	0%
EBITA	-6.3	-8.1	-5.5	-4.8	-5.8	-6.0	-6.5	-4.0	0	0	0	0	0
EBITA margin	-208%	-135%	-99%	-61%	-133%	-90%	-108%	-46%	0%	0%	0%	0%	0%
Net financials	-1	0	0	-1	0	0	0	0	-8	0	-1	-2	-2
EAFI	-7	-8	-6	-5	-6	-6	-7	-4	-39	-42	-28	-27	-24
Tax	0	0	0	1	0	0	0	0	5	-1	1	1	0
Tax rate	0%	0%	0%	-15%	0%	0%	0%	0%	-13%	2%	-4%	-3%	0%
Net profit	-6.9	-8.5	-6.0	-4.5	-6.2	-6.4	-7.0	-4.4	-33	-43	-27	-26	-24
EPS (NOK)	-0.06	-0.07	-0.08	-0.04	-0.04	-0.04	-0.05	-0.03	-0.75	-0.55	-0.28	-0.21	-0.17
DPS (NOK)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Financial statements

Profit & loss	2004	2005	2006	2007	2008	2009	2010	2011e	2012e	2013e
Sales	0	0	0	12	18	20	22	26	30	34
COGS	na	na	na	-3	-1	-6	-6	-7	-7	-8
Gross profit	0	0	0	9	16	14	16	19	22	26
Other income & costs	0	0	0	-36	-54	-38	-38	-38	-41	-44
<b>EBITDA</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-28</b>	<b>-38</b>	<b>-25</b>	<b>-22</b>	<b>-19</b>	<b>-19</b>	<b>-18</b>
Depreciation PPE	0	0	0	-3	-4	-3	-3	-3	-3	-3
Other amortisation	0	0	0	na	na	na	na	na	na	na
<b>EBITA</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-30</b>	<b>-42</b>	<b>-27</b>	<b>-25</b>	<b>-22</b>	<b>-22</b>	<b>-21</b>
GW amortisation & Impairr	0	0	0	0	0	0	0	0	0	0
<b>EO items in EBIT</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>EBIT</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-30</b>	<b>-42</b>	<b>-27</b>	<b>-25</b>	<b>-22</b>	<b>-22</b>	<b>-21</b>
Net interest	0	0	0	-1	0	-1	-2	-2	-3	-4
Other financial items	0	0	0	-7	0	0	0	0	0	0
Net financial items	0	0	0	-8	0	-1	-2	-2	-3	-4
Share of earnings in ass. cor	0	0	0	0	0	0	0	0	0	0
<b>EAFI</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-39</b>	<b>-42</b>	<b>-28</b>	<b>-27</b>	<b>-24</b>	<b>-25</b>	<b>-25</b>
Other EO items	0	0	0	0	0	0	0	0	0	0
<b>Pre-tax profit</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-39</b>	<b>-42</b>	<b>-28</b>	<b>-27</b>	<b>-24</b>	<b>-25</b>	<b>-25</b>
Taxes	na	na	na	5	-1	1	1	0	0	0
Post-tax minorities interest	0	0	0	0	0	0	1	1	1	1
<b>Net profit</b>	<b>na</b>	<b>na</b>	<b>na</b>	<b>-33</b>	<b>-43</b>	<b>-27</b>	<b>-25</b>	<b>-23</b>	<b>-24</b>	<b>-24</b>
<b>Adj.Net profit</b>	<b>na</b>	<b>na</b>	<b>na</b>	<b>-33</b>	<b>-29</b>	<b>-25</b>	<b>-25</b>	<b>-23</b>	<b>-24</b>	<b>-24</b>
<b>EO items</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Tax on EO items</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Sales growth Y/Y	na	na	na	+chg	47.0%	13.9%	10.5%	14.6%	15.0%	15.0%
EBITA growth Y/Y	na	na	na	-chg	-chg	+chg	+chg	+chg	+chg	+chg
EBITDA margin	nm	nm	nm	-228.8%	-212.9%	-120.9%	-97.7%	-75.5%	-63.2%	-51.9%
EBITA margin	nm	nm	nm	-250.2%	-235.5%	-135.2%	-110.2%	-86.7%	-73.9%	-62.1%
Tax rate	na	na	na	13.2%	-1.6%	3.8%	3.0%	n.a.	n.a.	n.a.
<b>Cash flow</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011e</b>	<b>2012e</b>	<b>2013e</b>
EBITDA	0	0	0	-28	-38	-25	-22	-19	-19	-18
Net financial items	0	0	0	-8	0	-1	-2	-2	-3	-4
Non cash adjustments	0	0	0	10	1	-1	-2	-1	0	0
Change in NWC	na	na	na	0	-1	2	-1	-1	-1	-1
Paid taxes	0	0	0	5	-1	1	1	0	0	0
<b>Operating cash flow (OCF)</b>	<b>na</b>	<b>na</b>	<b>na</b>	<b>-21</b>	<b>-39</b>	<b>-23</b>	<b>-27</b>	<b>-22</b>	<b>-23</b>	<b>-22</b>
CAPEX PPE	0	0	0	-4	-1	-1	-1	-1	0	0
CAPEX other intang. assets	0	0	0	0	0	0	-3	-1	0	0
<b>Net cash flow (NCF)</b>	<b>na</b>	<b>na</b>	<b>na</b>	<b>-26</b>	<b>-40</b>	<b>-24</b>	<b>-30</b>	<b>-24</b>	<b>-23</b>	<b>-22</b>
Other investments/Divestm	0	0	0	0	0	0	0	0	0	0
Dividend paid	0	0	0	0	0	0	0	0	0	0
Share issues & buybacks	0	0	0	57	50	0	27	26	0	0
Other non-cash adjustment	0	0	0	0	0	0	0	0	0	0
Change in LT non-IB liabiliti	0	0	0	7	8	-8	4	-2	0	0
<b>Decrease in net IB debt</b>	<b>na</b>	<b>na</b>	<b>na</b>	<b>39</b>	<b>18</b>	<b>-32</b>	<b>0</b>	<b>0</b>	<b>-23</b>	<b>-22</b>
<b>Balance sheet</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011e</b>	<b>2012e</b>	<b>2013e</b>
Goodwill	0	0	0	0	10	8	7	7	7	7
Other fixed intangible asset	0	0	0	3	3	4	6	8	8	8
PPE	0	0	0	48	85	69	65	66	66	66
Shares & participations	na	na	na	0	0	0	0	0	0	0
Other fixed financial assets	0	0	0	0	0	0	0	0	0	0
Other fixed assets	0	0	0	0	0	0	0	0	0	0
<b>Fixed assets</b>	<b>na</b>	<b>na</b>	<b>na</b>	<b>51</b>	<b>98</b>	<b>81</b>	<b>79</b>	<b>81</b>	<b>81</b>	<b>81</b>
Inventories	na	na	na	1	2	2	2	3	3	4
Receivables	na	na	na	5	5	7	5	6	7	8
Other current assets	0	0	0	0	0	0	0	0	0	0
Cash & cash equivalents	na	na	na	24	40	8	7	6	1	-5
<b>Current assets</b>	<b>na</b>	<b>na</b>	<b>na</b>	<b>30</b>	<b>47</b>	<b>16</b>	<b>15</b>	<b>15</b>	<b>11</b>	<b>7</b>
<b>Total assets</b>	<b>na</b>	<b>na</b>	<b>na</b>	<b>81</b>	<b>146</b>	<b>97</b>	<b>94</b>	<b>96</b>	<b>92</b>	<b>88</b>
<b>Shareholders' equity</b>	<b>na</b>	<b>na</b>	<b>na</b>	<b>46</b>	<b>68</b>	<b>37</b>	<b>39</b>	<b>41</b>	<b>17</b>	<b>-8</b>
Minorities	0	0	0	0	11	9	8	7	7	7
Sub-ordinated loans	0	0	0	0	0	0	0	0	0	0
Convertibles	0	0	0	0	0	0	0	0	0	0
Deferred tax	na	na	na	0	13	10	9	9	9	9
Other IB & Non IB provisio	0	0	0	10	10	10	8	7	7	7
LT IB debt	0	0	0	5	8	8	8	8	28	48
LT non-IB liabilities	0	0	0	7	16	8	12	10	10	10
<b>LT liabilities</b>	<b>na</b>	<b>na</b>	<b>na</b>	<b>22</b>	<b>48</b>	<b>36</b>	<b>36</b>	<b>34</b>	<b>54</b>	<b>74</b>
ST IB debt	na	na	na	4	3	2	3	5	5	5
Payables	na	na	na	3	3	6	4	4	5	5
Other ST non-IB liabilities	0	0	0	6	13	7	4	4	5	5
<b>Current liabilities</b>	<b>na</b>	<b>na</b>	<b>na</b>	<b>13</b>	<b>19</b>	<b>15</b>	<b>11</b>	<b>14</b>	<b>14</b>	<b>15</b>
<b>Total liabilities</b>	<b>na</b>	<b>na</b>	<b>na</b>	<b>81</b>	<b>146</b>	<b>97</b>	<b>94</b>	<b>96</b>	<b>92</b>	<b>88</b>

Share data & key ratios

Per share data (NOK)	2004	2005	2006	2007	2008	2009	2010	2011e	2012e	2013e
Adj. no. of shares in issue Y	0.00	0.00	0.00	53.48	77.47	95.47	125.5	145.5	145.5	145.5
Diluted no. of Shares YE (nr)	0.00	0.00	0.00	53.48	77.47	95.47	125.5	145.5	145.5	145.5
EPS	na	na	na	-0.75	-0.55	-0.28	-0.21	-0.17	-0.17	-0.17
EPS adj.	na	na	na	-1.25	-0.45	-0.28	-0.23	-0.17	-0.16	-0.17
CEPS	na	na	na	-1.16	-0.59	-0.27	-0.20	-0.15	-0.14	-0.14
DPS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BVPS	na	na	na	0.86	0.87	0.38	0.31	0.28	0.11	-0.06
BVPS ex. GW	na	na	na	0.86	0.75	0.30	0.25	0.23	0.06	-0.11
NAVPS	na	na	na	0.86	0.87	0.38	0.31	0.28	0.11	-0.06
NIBDPS	na	na	na	-0.28	-0.37	0.03	0.03	0.05	0.22	0.40
<b>Valuation</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011e</b>	<b>2012e</b>	<b>2013e</b>
P/E YE	na	na	na	neg.	neg.	neg.	neg.	neg.	neg.	neg.
P/E adj. YE	na	na	na	neg.	neg.	neg.	neg.	neg.	neg.	neg.
P/E average	na	na	na	neg.	neg.	neg.	neg.	neg.	neg.	neg.
P/E adj. average	na	na	na	neg.	neg.	neg.	neg.	neg.	neg.	neg.
P/CEPS YE	na	na	na	neg.	neg.	neg.	neg.	neg.	neg.	neg.
P/BV YE	na	na	na	3.01	0.66	2.47	4.53	7.07	17.50	neg.
P/BV ex. GW YE	na	na	na	3.01	0.77	3.13	5.57	8.60	31.16	neg.
Dividend yield YE	na	na	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Dividend Payout Ratio	na	na	na	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
EV/EBIT YE	na	na	na	neg.	neg.	neg.	neg.	neg.	neg.	neg.
EV/EBITA YE	na	na	na	neg.	neg.	neg.	neg.	neg.	neg.	neg.
EV/EBITA adj. YE	na	na	na	neg.	neg.	neg.	neg.	neg.	neg.	neg.
EV/Sales YE	na	na	na	10.2	1.5	5.1	8.4	11.9	11.2	10.5
EV/EBITDA YE	na	na	na	neg.	neg.	neg.	neg.	neg.	neg.	neg.
Share price YE			2.01	2.59	0.58	0.95	1.40	1.97		
Share price high			3.54	4.32	2.69	1.71	1.77	2.50		
Share price low			0.44	1.53	0.36	0.54	0.95	1.44		
Share price average			1.46	2.72	1.36	1.11	1.34	2.10		
<b>Margins</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011e</b>	<b>2012e</b>	<b>2013e</b>
Gross margin	na	na	na	71.3%	92.1%	68.4%	71.0%	72.5%	75.1%	77.5%
EBITDA margin	nm	nm	nm	-228.8%	-212.9%	-120.9%	-97.7%	-75.5%	-63.2%	-51.9%
Adj. EBITDA margin	nm	nm	nm	-228.8%	-138.2%	-110.6%	-97.7%	-75.5%	-63.2%	-51.9%
EBITA margin	nm	nm	nm	-250.2%	-235.5%	-135.2%	-110.2%	-86.7%	-73.9%	-62.1%
Adj. EBITA margin	nm	nm	nm	-250.2%	-160.8%	-124.9%	-110.2%	-86.7%	-73.9%	-62.1%
Pre-tax margin	nm	nm	nm	-318.5%	-236.8%	-138.8%	-119.2%	-93.9%	-83.0%	-73.6%
Net margin	na	na	na	-276.6%	-239.2%	-131.5%	-112.2%	-90.1%	-79.8%	-70.7%
Adj. net margin	na	na	na	-276.6%	-164.5%	-121.1%	-112.2%	-90.1%	-79.8%	-70.7%
<b>Profitability</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011e</b>	<b>2012e</b>	<b>2013e</b>
ROE	na	na	na	na	-75.0%	-51.1%	-66.5%	-57.8%	-81.5%	-579.6%
Adj. ROE	na	na	na	na	-51.6%	-47.1%	-66.5%	-57.8%	-81.5%	-579.6%
Adj. ROCE pre-tax	na	na	na	na	-28.0%	-24.4%	-32.3%	-29.0%	-28.6%	-29.4%
Adj. ROIC aft-tax	na	na	na	na	-37.2%	-26.3%	-28.8%	-26.5%	-25.4%	-24.2%
Adj. ROA pre-tax	na	na	na	na	-22.0%	-19.1%	-25.4%	-23.1%	-22.8%	-23.0%
FCF yield	na	na	na	-8.8%	-13.2%	-8.0%	-10.1%	-8.0%	-7.6%	-7.5%
<b>Capital eff./Solv.</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011e</b>	<b>2012e</b>	<b>2013e</b>
Inventories / Sales	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Receivables / Sales	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Payables / Sales	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
NWC / Sales	na	na	na	na	20.6%	16.9%	14.3%	15.6%	16.8%	18.0%
Asset turnover	na	na	na	na	0.16	0.17	0.23	0.27	0.31	0.38
Sales / Capital invested	na	na	na	na	0.23	0.22	0.27	0.31	0.34	0.39
OCF / Capex	na	na	na	-4.80	-49.31	-44.48	-24.50	-20.05	nm	nm
Capex / Sales	nm	nm	nm	36.4%	4.5%	2.6%	4.8%	4.3%	0.0%	0.0%
Capex / Depreciation PPE	nm	nm	nm	1.70	0.20	0.18	0.39	0.39	0.00	0.00
Dividend payout ratio	na	na	na	0%	0%	0%	0%	0%	0%	0%
Equity / Total assets	na	na	na	57%	54%	47%	49%	51%	26%	-1%
Net IB debt / Equity	na	na	na	-33%	-36%	7%	9%	14%	136%	-5682%
Net IB debt / EBITDA	na	na	na	0.5	0.8	-0.1	-0.2	-0.4	-1.7	-3.3
EBITDA / Net interest	nm	nm	nm	n.m.	n.m.	n.m.	n.m.	n.m.	n.m.	n.m.
EBITA / Net interest	nm	nm	nm	n.m.	n.m.	n.m.	n.m.	n.m.	n.m.	n.m.
<b>Balance sheet data</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011e</b>	<b>2012e</b>	<b>2013e</b>
Net IB debt	na	na	na	-15	-29	3	4	7	33	58
Net working capital (NWC)	na	na	na	3	4	3	4	4	6	7
Capital employed (CE)	na	na	na	64	113	76	74	77	73	68
Capital invested (CI)	na	na	na	54	102	83	83	85	87	88
Enterprise value YE (EV)	na	na	na	123	27	102	188	305	331	356

Source : Carnegie Research

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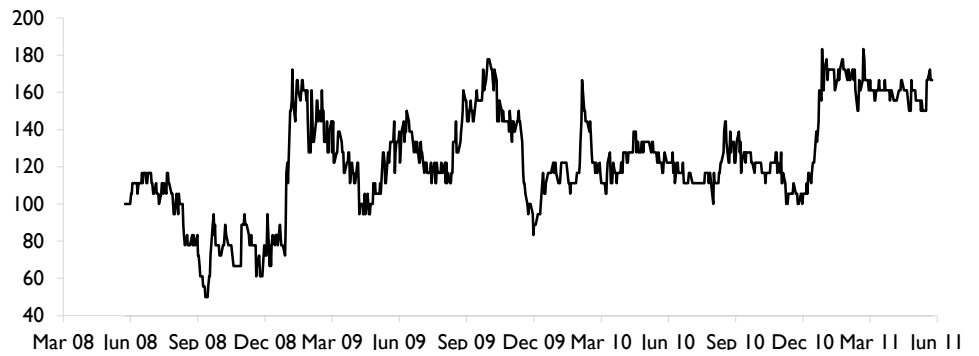
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**Nordic Mining relative to Materials and company rating history (NOM.OL)**



Source: Carnegie Research, Factset

**Stock rating distribution in the previous 12 months**

Ratings	Carnegie coverage universe % of total	Investment banking services* % of total
Outperform(Buy)	47	65
Neutral(Hold)	39	30
Underperform(Sell)	15	5

\*Investment banking services provided by Carnegie in the previous 12 months

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## Nordic Mining Company Summary

<b>Profit &amp; loss</b>	<b>2009</b>	<b>2010</b>	<b>2011e</b>	<b>2012e</b>	<b>2013e</b>
Sales	20	22	26	30	34
EBITDA	-25	-22	-19	-19	-18
EBITA	-27	-25	-22	-22	-21
EBIT	-27	-25	-22	-22	-21
Pre-tax profit	-28	-27	-24	-25	-25
Net profit	-27	-25	-23	-24	-24
EO items	0	0	0	0	0

<b>Balance sheet</b>	<b>2009</b>	<b>2010</b>	<b>2011e</b>	<b>2012e</b>	<b>2013e</b>
Total assets	97	94	96	92	88
Shareholders' equity	37	39	41	17	-8
Goodwill	8	7	7	7	7
Net IB debt	3	4	7	33	58

<b>Cash flow</b>	<b>2009</b>	<b>2010</b>	<b>2011e</b>	<b>2012e</b>	<b>2013e</b>
EBITDA	-25	-22	-19	-19	-18
Operating cash flow	-23	-27	-22	-23	-22
Net cash flow (NCF)	-24	-30	-24	-23	-22
Decrease in net IB debt	-32	0	0	-23	-22

<b>Per share data</b>	<b>2009</b>	<b>2010</b>	<b>2011e</b>	<b>2012e</b>	<b>2013e</b>
EPS	-0.28	-0.21	-0.17	-0.17	-0.17
EPS adj.	-0.28	-0.23	-0.17	-0.16	-0.17
EPS adj. Growth	+chg	+chg	+chg	+chg	-chg
CEPS	-0.27	-0.20	-0.15	-0.14	-0.14
DPS	0.00	0.00	0.00	0.00	0.00
BVPS ex. GW	0.30	0.25	0.23	0.06	-0.11
NIBDPS	0.03	0.03	0.05	0.22	0.40

<b>Ratios</b>	<b>2009</b>	<b>2010</b>	<b>2011e</b>	<b>2012e</b>	<b>2013e</b>
P/E	neg.	neg.	neg.	neg.	neg.
P/E adj.	neg.	neg.	neg.	neg.	neg.
P/BVPS	5.2	6.5	7.1	17.5	neg.
P/BVPS ex. GW	6.6	7.9	8.6	31.2	neg.
P/CEPS	neg.	neg.	neg.	neg.	neg.
EV/Sales	14.9	13.5	11.9	11.2	10.5
EV/EBITDA	neg.	neg.	neg.	neg.	neg.
EV/EBITA	neg.	neg.	neg.	neg.	neg.
Dividend yield	0.0%	0.0%	0.0%	0.0%	0.0%
FCF yield	-8.0%	-10.1%	-8.0%	-7.6%	-7.5%

### Company description

A mining company with rutile, lithium carbonate, quartz and anorthosite assets.

### Company miscellaneous

CEO Ivar S Fossum Munkedamsv. 45 A  
 CFO Lars K Grøndahl +47 22 94 77 90  
 IR Lars K Grøndahl www.nordicmining.com

### Major shareholders

	Capital	Votes		Capital	Votes
Skagen Vekst	8.5%	8.5%	Nordnet Bank AB	6.2%	6.2%
Holberg Norge	8.1%	8.1%	Finnish Industry N\	4.5%	4.5%
Dag Dvergsten AS	6.4%	6.4%	Danske Bank A/S 3	3.5%	3.5%

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