Non-Independent Research
***SP Angel acts as Nomad and Broker**
MiFID II Exempt
12 July 2023

Mining Flash Note

Bushveld Minerals*

BMN LN

BUY
TP 15.8p

V shaped recovery

Bushveld Minerals is an integrated vanadium business with established South Africa based upstream mining and processing operations, electrolyte production facility in development and an investment in VRFB OEMs. The Company is one of the three operating primary vanadium producers owning two of the world's four operating primary vanadium processing facilities focused on ramping up operations to 5.4ktV in the medium term and potentially 8.0ktV in the long run as well as addressing growing energy storage related demand through downstream business solutions.

- We release an updated valuation on the Company accounting for the latest FY23 guidance with current upstream business (Vametco/Vanchem) accounting for ~65% of Group NPV, a potential brownfield expansion to 8ktpa accounting for further ~25% with the balance attributed to Bushveld Energy, a nascent downstream business unit.
- FY23 guidance is for 4.2-4.5ktV (FY22: 3.8ktV) at $26.1-27.0/kgV (17 USDZAR FX) as production ramps up at Vanchem Kiln 3 supported by better-quality third-party feed and the electricity curtailment solution with the local municipality.
- We err on a conservative side estimating 4.2kt FY23 and 4.4kt FY24 due to deteriorating power generation situation in SA, while leaving room for upgrades to our valuation should operations surprise on the upside.
- New management focused on key immediate priorities including Vanchem ramp up to design 2.6ktpa rates (FY23 guidance 1.5-1.8kt; FY22: 1.1kt) and operational stability, Orion convertible note refinancing and Bushveld Energy carve out.
- Orion convertible loan note ($45m) and a recently flagged requirement for additional funding over the next 12 months is expected to weigh on share price momentum in the short term.
- Strong volatility in vanadium prices YTD driven by a change in sentiment as strength of a post Covid rebound in China underperformed expectations and local property market continued to struggle while Western economies pressed on with monetary tightening as inflation proved to be stickier than envisaged.
- We assume prices to consolidate around $35/kgV through the remainder of the year, before recovering towards $40/kgV levels in 2024 onwards led by stimulus measures in China and easing of monetary tightening cycle in Europe / the US.

Valuation: We value portfolio of upstream and downstream assets at ~$280m equivalent to 15.8p target price and reiterating BUY recommendation. Valuation is predominantly driven by upstream business unit that in turn is strongly leveraged to vanadium prices and USDZAR exchange rate, exacerbated by strong cost inflation in the sector. Near term rerating catalysts are vanadium price and FX changes, operations performance and debt refinancing.

(Dec year end)		FY20	FY21	FY22	FY23E	FY24E
USDZAR	R	16.5	14.8	16.4	17.9	18.0
FeV price	US$/kgV	23.5	32.2	41.4	36.5	40.0
Production	V kt	3.6	3.6	3.8	4.2	4.4
Sales	V kt	3.8	3.3	3.6	4.3	4.4
C1 cash cost	US$/kgV	18.6	26.1	27.7	25.2	24.8
Revenues	US$m	90	107	148	156	177
EBITDA	US$m	-15	-7	22	16	34
PAT	US$m	-31	-34	-35	-12	5
FCF	US$m	-28	-32	2	7	21
EV/EBITDA	X	-	-	10.5	10.2	4.8
PER	X	-	-	-	-	-
Net debt/(cash)	US$m	25	69	76	71	59

Projections are ex BELCO

Stock Data

Ticker	BMN LN
Share Price	3.1p
Market Cap	£39m

Price Chart

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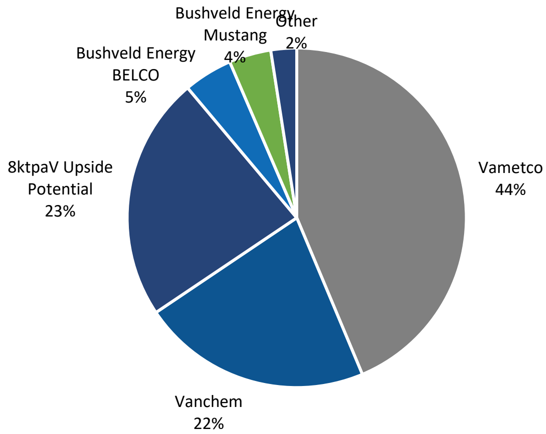
Valuation

We update our valuation using FY23 guidance on production and costs for upstream mining and processing business at Vametco and Vanchem that together with a heavily risked estimate (0.5x multiple) for a potential expansion to 8ktpaV project accounts for ~90% of our NPV estimate. Bushveld Energy representing downstream side of the business including electrolyte production and a potential renting solution as well as investments in VRFB original equipment manufacturers (OEMs) is valued based on a mix of DCF and transaction implied methods delivering ~10% of the remaining Group NPV.

NPV breakdown between assets (attributable basis, risked)



Source: Company, SPA

We arrive at ~$280m risked NAV equivalent to 15.8p target price using the following set of assumptions:

- Realised ferrovanadium prices of $35/kgV in H2/23 yielding an average of $36.5/kgV for FY23; flat $40/kgV from 2024 onwards;
- USDZAR exchange rate of 18.0 flat;
- Production of 4.2ktV in FY23 and 4.4ktV onwards with load shedding in South Africa remaining an issue offering a potential upside to valuation should operations at Vanchem ramp up stronger than expected;
- Orion convertible refinancing is completed with ~$4.5m worth of new equity issued at 6p/share translating into ~58m new shares.

Valuation	Method	Stage	NPV 100%	Interest	P/NAV	Att US$m	GBp/shr
Vametco	DCF10%	Production	239	74%	1.00	177	10.1
Vanchem	DCF10%	Production	88	100%	1.00	88	5.1
8ktpaV Upside Potential	DCF10%	PFS/FS	187	Mixed	0.50	94	5.4
Bushveld Energy BELCO	DCF10%	Development	54	46%	0.75	19	1.1
Bushveld Energy Mustang	Tx Implied	Production	19	84%	1.00	16	0.9
Other	Nominal	Other	10	100%	1.00	10	0.6
Project Value						**404**	**23.1**
Adjustments							
Net Cash/(Debt)						-72	-4.1
Other (Corporate Overheads 5y Discounted)						-57	-3.2
Company NAV						**276**	**15.8**

GBPUSD 1.3
Source: SPA

The business is highly leveraged to the vanadium price and the exchange rate that have proven to be quite volatile in the past.

Vanadium prices have been on a falling trend lately as strength of a post Covid rebound in China underperformed expectations, although, the Company is maximising sales into premium sectors with ~70% of its volumes delivered into the US and European markets. Realised prices in H1/23 are reported to have averaged ~$38.0/kgV (FY22: $41.4/kgV). We assume prices to consolidate around $35/kgV through the remainder of the year, before recovering towards $40/kgV levels in 2024 onwards led by stimulus measures in China and the end of monetary tightening cycle in Western economies.

We provide NAVPS sensitivity to vanadium prices (2024 onwards), USDZAR exchange rate and the discount rate below.

NAVPS sensitivity to changes in FeV price / Discount Rate

	8%	9%	10%	11%	12%
30.0	0.3	-0.4	-1.0	-1.5	-1.9
35.0	10.6	9.0	7.6	6.3	5.3
40.0	20.5	18.0	15.8	13.9	12.2
45.0	30.4	27.0	24.0	21.4	19.2
50.0	40.4	36.0	32.2	28.9	26.1

NAVPS sensitivity to changes in USDZAR / Discount Rate

	8%	9%	10%	11%	12%
16.0	14.5	12.5	10.7	9.2	7.9
17.0	17.7	15.4	13.4	11.7	10.2
18.0	20.5	18.0	15.8	13.9	12.2
19.0	23.0	20.3	17.9	15.8	14.0
20.0	25.3	22.4	19.8	17.6	15.7

NAVPS sensitivity to changes in FeV / USDZAR (@10% DR)

	16.00	17.00	18.00	19.00	20.00
30.0	-6.9	-3.7	-1.0	1.3	3.3
35.0	2.3	5.1	7.6	9.7	11.6
40.0	10.7	13.4	15.8	17.9	19.8
45.0	18.9	21.6	24.0	26.1	28.0
50.0	27.2	29.8	32.2	34.3	36.2

Source: SPA

FY23 guidance reiterated at 4.2-4.5ktV at $26.1-27.0/kgV C1 cash costs

The Company reiterated its FY23 guidance for 4.2-4.5ktV (FY22: 3.8ktV) at $26.1-27.0/kgV (R447-438/kgV) C1 cash cost split between:

- Vametco of 2.7ktV at $23.6-24.0/kgV (FY22: 2.7ktV and $23.4/kgV);
- Vanchem of 1.5-1.8ktV at $29.7-30.8kg/V subject to power availability (FY22: 1.1kt and $37.2/kg).

Both operations are scheduled for ~25-30d annual maintenance work in Q3/23.

Production growth is to be driven by Vanchem on the back of better third party feed (ie lower silica content) secured as well as the electricity curtailment solution agreed with the Emalahleni municipality in Nov/22. The agreement allows for advance notices of a reduction in power supply during load shedding hours rather than outright loss of power with is costly and translates into a significant loss of production at power intensive milling/roasting stages. Nevertheless, the Company highlights FY23 production guidance is heavily reliant on the consistency of power supply.

Commissioning of the mini-grid project at Vametco in H2/23 that combines 3.5MW solar PV plant with a 1MW/4MWhVRFB (supplied by CellCube) accounting for just under 10% of Vametco energy use should help at times of load shedding.

Medium term target is to ramp up and stabilise Vanchem taking Group run rates to 5.0-5.4ktpa

Having acquired Vametco and Vanchem over 2017-19 for ~$120m and investing ~$60m in refurbishment and maintenance of operations, the Company is past capital-intensive period with the team focused on maximising output at available production capacities.

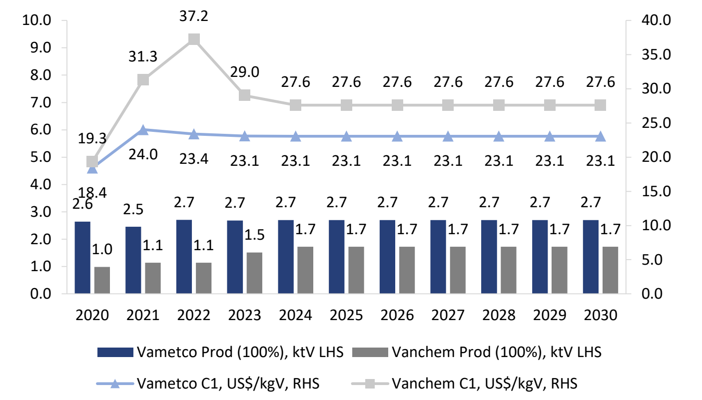
Short to medium target is to ramp up Vanchem operations to up to 2.6ktpa design rates that together with 2.8ktpa at Vametco would deliver annal target production rate of 5.0-5.4kt.

Higher rates of production should also see unit costs come down with fixed costs accounting for up to 40% of production costs.

Major risks to 5.0-5.4ktpa guidance is security of power supply.

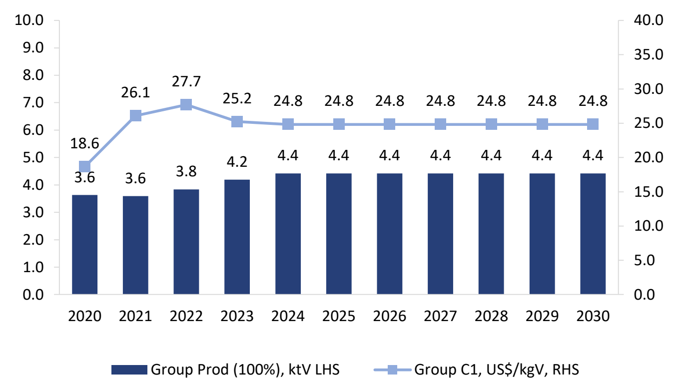
We err on a conservative side and see Group production running at 4.4ktpa in the medium term (2.7ktpa Vametco and 1.7ktpa Vanchem) given deteriorating power generation situation in South Africa (see further in the note) while leaving room for upgrades to our earnings estimates and valuation should operations surprise on the upside.

Vametco and Vanchem production and C1 costs estimates (ktV and US$/kgV)



Source: Company, SPA

Group wide production and C1 costs estimates (ktV and US$/kgV)



Source: Company, SPA

Longer term target is a ~$150m brownfield staged expansion at Vametco and Vanchem to 8.0ktpa

The Company released a summary of key findings of feasibility studies for a potential expansion at Vametco and Vanchem in June 2022.

The plan envisages a staged expansion reducing upfront funding commitments, development and commissioning risks as well as allowing the Company to tailor addition of new capacities to market conditions.

Total expansion was estimated to cost ~$150m taking total production capacity to 8.0ktpa and delivering a 20% reduction in unit costs to ~$21/kgV (-20% on $26/kgV in 2021).

The Company is not committing to new expansion plans until existing operations reach target 5.0-5.4ktpa and the balance sheet is deleveraged.

8ktpa expansion parameters

Stage	Extra capacity	Total capacity	Capex	Construction	Comment
Stage 1	-	-	33	24m	SAG mill at Vametco to produce concentrate feed for Vametco and Vanchem (~6,800mtV)
Stage 2	1,000-1,1000	6,400-6,500	53	18-24m	Vanchem Kiln 2 refurbishment extra 1,000-1,100mtV
Stage 3	1,000	7,400-7,500	37	18-24m	Vanchem Kiln 1 refurbishment
Stage 4	600	8,000	28	12-18m	Vametco Single kiln capacity expansion
Total	**2,600**	**8,000**	**151**		
C1 cash costs reduction vs 2021 US$/kgV	-20%	21.0			

Source: Company

Carve out of Bushveld Energy (84%) expected H2/23

The Company is planning to complete the carve out process for Bushveld Energy, a 84% owned subsidiary promoting VRFB adoption through development of electrolyte production capacities and investments into VRFB EOMs, into a standalone business in H2/23.

At the moment, Bushveld Energy holds an effective 25% interest in Enerox, an owner of VRFB OEM CellCube, and a 55% interest in BELCO (Bushveld Electrolyte Company), a downstream business currently building the first electrolyte production facility (8mlnL / 200MWh capacity) in South Africa.

BELCO is expected to remain with Bushveld Minerals post the carve out.

Separating Bushveld Energy from mining and processing operations should help downstream business attract new investors and align its valuation with other companies within the energy storage sector.

Bushveld Minerals to hold a ~20% interest in Enerox (CellCube) through a shareholding in Mustang Energy once consolidation process is completed

Bushveld Minerals currently holds an indirect ~21% interest in Enerox through Bushveld Energy, a 84% owned subsidiary, that in turn owns a 50.5% interest in VRFB Holdings Limited that owns a 50% interest in Enerox (Garnet Commerce Ltd holds other 50% in Enerox).

Enerox is an Austrian-based vanadium redox flow battery manufacturer with more than 20 years of research and development invested into its CellCube energy storage systems. The Company deployed >23MWh in 130 systems across five continents and recently announced five new orders for 34MWh including its largest battery order to date for 16MWh system for an Australian based renewable project developer.

Mustang Energy, a London listed investment vehicle, is currently in the process of consolidating interest in Enerox with a series of conditional share purchase agreements signed with Enerox equity holders. Bushveld Energy is expected to be issued $19.4m worth of shares (at 20p/sh) for its stake in Enerox, while Garnet is planned to be paid $33.2m for its 50% stake in Enerox through a combination of cash ($7.5m) and new shares in Mustang. As such, Enerox implied value is estimated at ~$66m. Respective transactions constitute a reverse takeover and Mustang is currently in the process of completing the transaction while also aiming to raise at least $15m and resume trading in shares. The process is expected to be completed in early H2/23.

In addition, to an equity interest in Enerox that is expected to be converted into a stake in Mustang Energy, Bushveld Minerals holds a ~$3m unsecured 10% convertible loan note in Mustang that converts into its shares at 17p/sh.

In total, Bushveld Minerals is expected to hold 21-23% in Mustang Energy depending on the final amount raised by Mustang.

We value investments in Mustang Energy using ~$19m to be paid to Bushveld Energy once consolidation and reverse takeover process is completed. Value of convertible loan notes in Mustang are accounted for separately.

BELCO 8mlnL / 200MWh electrolyte plant first production due H2/23

BELCO electrolyte plant construction started in Jun/21 and is expected to be completed later this year. The ~$15m project is designed for 8mlnL of electrolyte per annum (200MWhpa) using ~0.7ktV per annum sourced from Bushveld upstream arm.

The facility represents the Company’s investment into downstream processing adding the missing link between its mining operations and investments in the VRFB OEMs.

We would expect the team to provide details on projected economics of the project as well as the progress on potential electrolyte qualification processes with VRFB OEMs in due course

We currently value BELCO at ~$55m or $19m on risk adjusted (0.75x NPV) and attributed basis (46% indirect interest).

Management change

Craig Coltman is joining as new CEO and the Board from July 1 taking over from Fortune Mojapelo, a co-founder of the Company who oversaw development of Bushveld Minerals from an explorer into a multi asset vanadium producer with interests in downstream vanadium technology and energy businesses.

Craig brings a wealth of experience in the sector having spent 32 years with De Beers Consolidated Mines in South Africa, both in operational and commercial roles with most recent roles being that of CFO and Executive Director.

Immediate priorities of the incoming CEO are:

- New management take-on process completion (CEO is visiting operations to identify operations' and cost optimisation initiatives);
- Vanchem ramp up and operational stability;
- Orion convertible note refinancing completion;
- Bushveld Energy carve-out.

Orion convertible and flagged cash gap to weigh on share price in the near term

The Company is in the process of refinancing the $35m Orion convertible loan note (~$45m including accrued interest; 10% coupon; 17p conversion price; due November 2023) announcing a non-binding agreement with Orion Mine Finance.

Under the terms of the deal $45m will be replaced with:

- ~$27m in a three year secured term loan (6% + greater of 3m SOFR and 3%; interest paid quarterly; phased repayment schedule with 25%/30%/45% of the facility repaid in Jun24/Jun25/Jun26; early repayment options available);
- ~$13.5m in new convertible loan note (12% coupon, 8p conversion price; due 30 June 2028; forced conversion option and early repayment options available);
- ~$4.5m in new equity at 6p/share.

Additionally, Orion will be granted a Production Financing Agreement (PFA) top up to the existing PFA from Nov/20. The supplemental PFA includes:

- 0.22% of gross revenues for prices <$47/kgV;
- 0.18% of gross revenues for prices >$47/kgV;
- Percentage set to be reduced by 80% for the life of mine once Term Loan matures.

Under the existing PFA agreed in Nov/20 as part of the $65m funding package, Orion is paid a 1.45% gross revenue rate and a $0.44/kgV unit rate on vanadium sales.

The deal has not been completed yet and is conditional on final investment committee approval as well as Bushveld shareholders' approval.

Separately, the Company flagged in FY22 accounts that on its projections using $36.2/kgV and $35.5/kgV price assumptions for FY23 and FY24, the Company will need external funding over the next 12 months (ie through Jun/24).

Until both convertible refinancing is completed and one has more clarity on the amount and form of additional funding required pressure on the share price is likely to remain.

Vanadium prices – a bet on economic recovery in near term and battery related demand in longer term

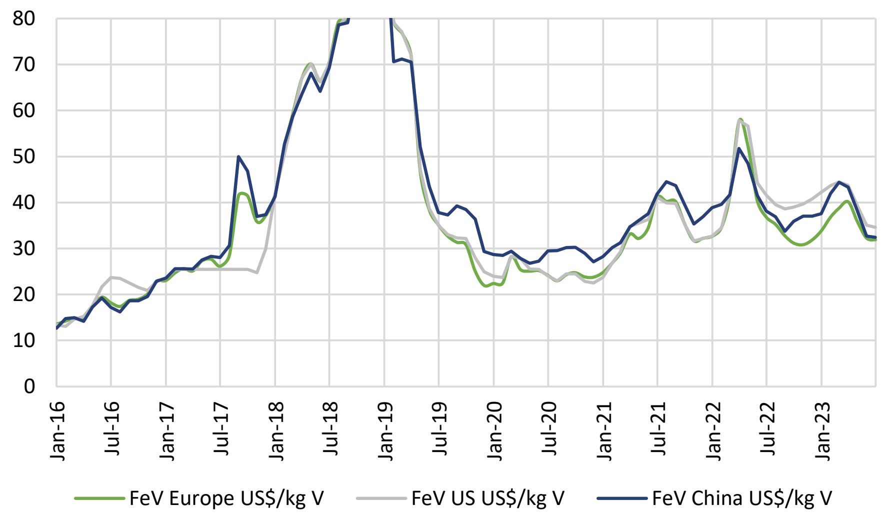
2022 price fluctuations have been first driven by concerns over Russian supply, the second largest source of vanadium, on the back of an invasion into Ukraine in Feb/22 with a post-COVID recovery seeing prices well supported before the sentiment started to pull back on continuing Chinese property sector struggles amid zero-Covid policy as well as weakening growth outlook in general led by high inflation and tighter monetary policy conditions.

European FeV prices peaked at ~$63/kgV in Q1/22 before coming all the way down to $31/kg in Q4/22.

Prices picked up in the beginning of 2023 after China dropped its Covid zero strategy. Chinese rebar production, construction starts, steel and property prices climbed on quick recovery hopes. However, positive momentum did not last as domestic demand underperformed while economies overseas struggled with strong inflation pressures and tightening monetary conditions. Chinese rebar prices pulled back and are currently trading close to multi year lows outside the pandemic related slump, new and secondary property prices returned back on a falling trend while the government has yet been reluctant to step up investments in the sector (see Appendix 1 for Chinese steel and property market data). Weakening sentiment puts pressure on Chinese authorities to implement stimulative measures to 'defend' the ~5% 2023 GDP growth target.

We would expect vanadium prices to gain traction as year progresses and Chinese authorities step up fiscal support measures helping property market to bottom out with investment returning to the sector.

Regional FeV prices (US$/kgV)



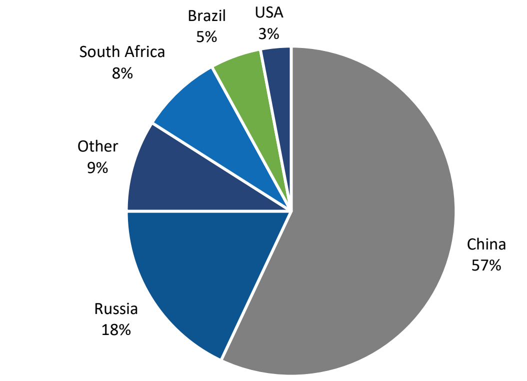
Prices peaked at $144/kgV (China) in 2018 (data left out in the chart)
Source: Asian Metals

Medium to long term, we see VRFB related demand to reach critical mass to start affecting vanadium prices along with more traditional steel market applications. Although, it will have to be a delicate balancing act, as electrolyte currently accounts for up to 50% of VRFB cost with rapid increases in vanadium price limiting potential market penetration rates.

Vanadium supply and demand

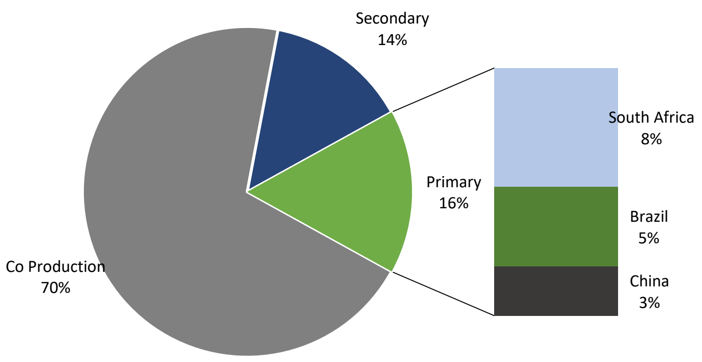
Vanadium supply amounted to 113.4ktV (-3%yoy) in 2022 driven by reduced steel related demand on the back of property market jitters in China as well as inflationary pressures, Ukraine/Russia war disruptions and a shift towards tighter monetary policy in major markets elsewhere dampening growth outlook.

Vanadium supply by region (pp, 2022)



Source: Company

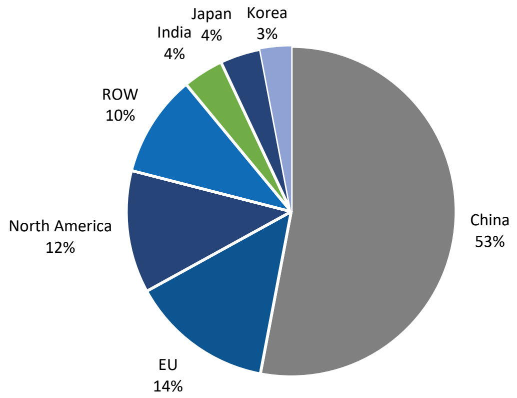
Vanadium supply by source and a regional split for primary production (2022)



Source: Company

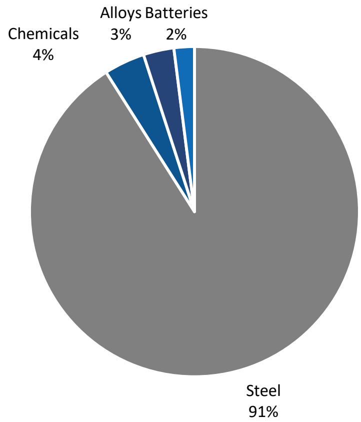
Vanadium demand totalled 112.6ktV (-5%yoy) in 2022 driven by weaker steel production that in turn accounts for >90% of vanadium use. Batteries related demand remained low (~2% of the total), although, that is expected to change with the segment forecast to be the fastest growing market moving forwards.

Vanadium demand by region (pp, 2022)



Source: Company

Vanadium demand by end markets (2022)



Source: Company

Global steel production was 1,879mt (-4%) last year led by declines in all major regions including China, the largest producer accounting for ~54% of world total (-2%), Asia ex China (-2%), North America (-5%), EU (-11%) and major producers in the CIS region, Russia and Ukraine (-21%).

Within the steel sector, production of steel rebar is the largest user of vanadium (~85% of vanadium used in China) with the sector primarily driven by residential and commercial property construction followed by infrastructure spending. Chinese rebar production was 234mt recording a sharper decline (-8.1%yoy) than the general steel output in 2022.

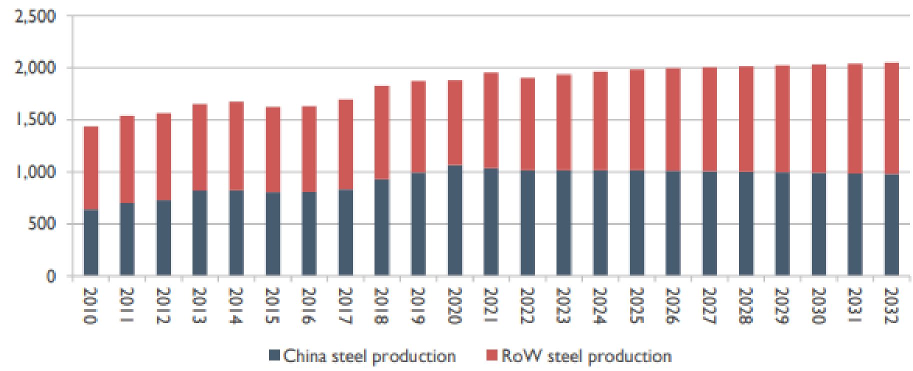
Long term vanadium demand drivers – growing vanadium use intensities in steel and VRFBs

Steel related demand will be more driven by increasing vanadium usage intensities than absolute steel production levels as developing nations are currently running at 0.4-0.6x steel V loadings compared to levels in the EU and North America.

For instance, steel and rebar production in China is expected to have peaked, although, higher vanadium loadings should see demand growing on implementation of new rebar standards launched in 2018 promoting higher quality construction materials following the devastating 2008 Sichuan earthquake. HRB 400 (Grade III rebar), HRB500 (Grade IV) and HRB600 (Grade V) containing 0.03% V, 0.06% V and 0.1% V have nearly completely replaced earlier HRB335 standard. Grade III is currently estimated to account for ~80% of total strength rebar with Grade IV representing the balance and Grade V seeing only marginal application (Project Blue). As a result, vanadium use in China is to be driven by substitution of Grade III rebar with standards IV and V moving forwards.

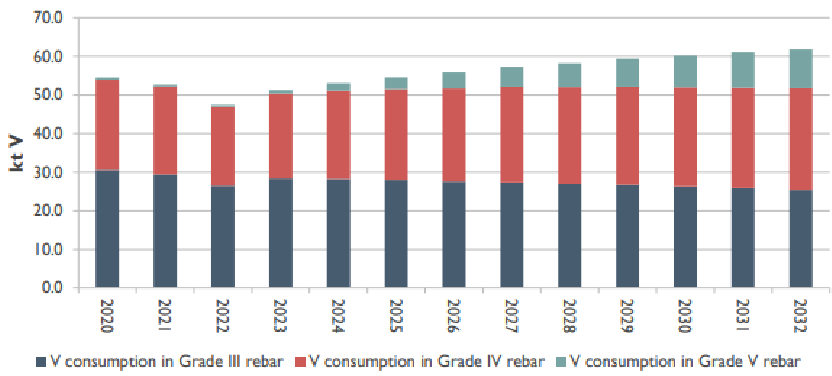
Overall, while steel production is forecast to grow at modest 0.7% CAGR over the next decade through 2032, vanadium demand in steel is expected to grow 2.5% CAGR (Project Blue) reaching >125ktV, up from ~100ktV in 2022.

Crude steel production forecasts with Chinese output ex growth /plateauing and marginal growth recorded ex China



Source: Project Blue (2022)

Chinese rebar related vanadium demand projections show growth being driven by the use of more V intensive rebar standards

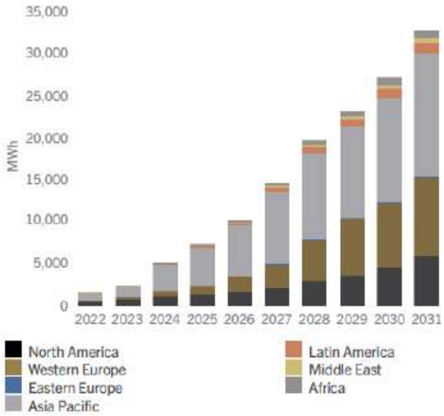


Source: Project Blue (2022)

Vanadium Redox Flow Batteries (VRFB), a technologically proven utility-scale energy storage solution, is due to become the second largest vanadium market (if not already) after steel.

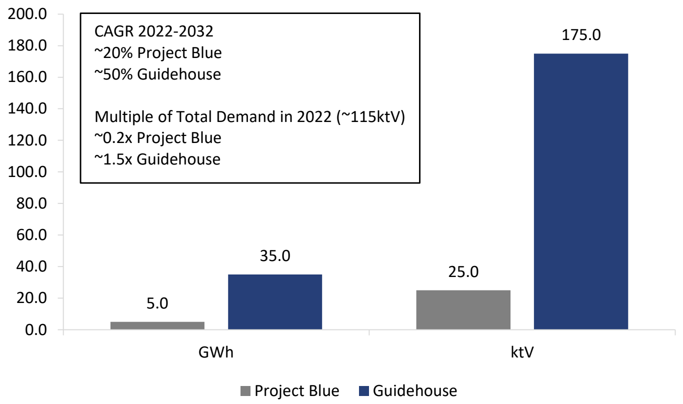
Market growth pace projections vary from more conservative 5GWh market by 2032 (Project Blue) to more optimistic >30GWh (Guidehouse), up from just under 1GWh currently and implying from ~20% to ~50% CAGR, respectively. That is a wide range and translates into a ~25ktV and ~150ktV (assuming 5tV/MWh equivalent) VRFB related market size compared to just 2-3ktV at the moment. Demand is to be driven by Asia and China, in particular. China commissioned the largest VRFB system to date in May 2021 (Dalian-UET/Rongke Power 800MWh) with >3,700MWh of VRFB projects announced in China over the last 18 months.

Installed VRFBs annually by region (MWh)



Source: Guidehouse Insights (2022)

2032 VRFBs end market projections in GWh and ktV terms by Project Blue and Guidehouse (CAGR estimated from 2022, 5tV/MWh conversion assumed)

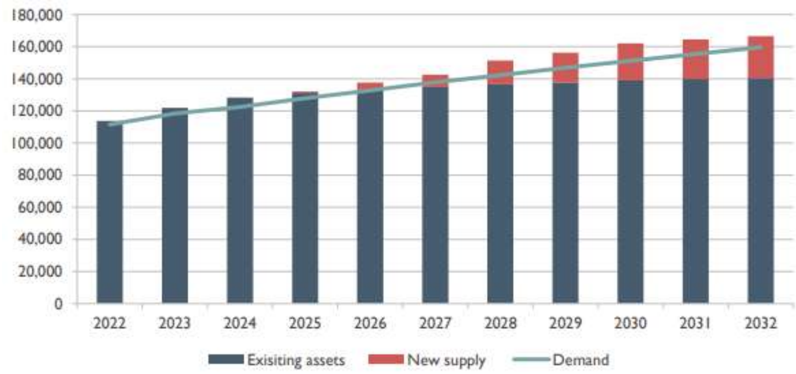


Source: SPA, Guidehouse Insights (2022), Blue Project (2022)

Both factors support the drive to decarbonise the economy as vanadium microalloyed steel is more efficient in coping with stress and corrosive environments than regular steel allowing to reduce the use of steel in construction while VRFBs is an economic energy storage solution that can support the intermittent nature of renewable power generation.

Overall, demand is expected to grow 3.7%pa CAGR over the next decade (2022-32) versus ~2% forecast for supply pointing to a potential for market shortage from mid-2020s and a requirement for new primary or secondary supply.

Crude steel production forecasts with Chinese output ex growth /plateauing and marginal growth recorded ex China

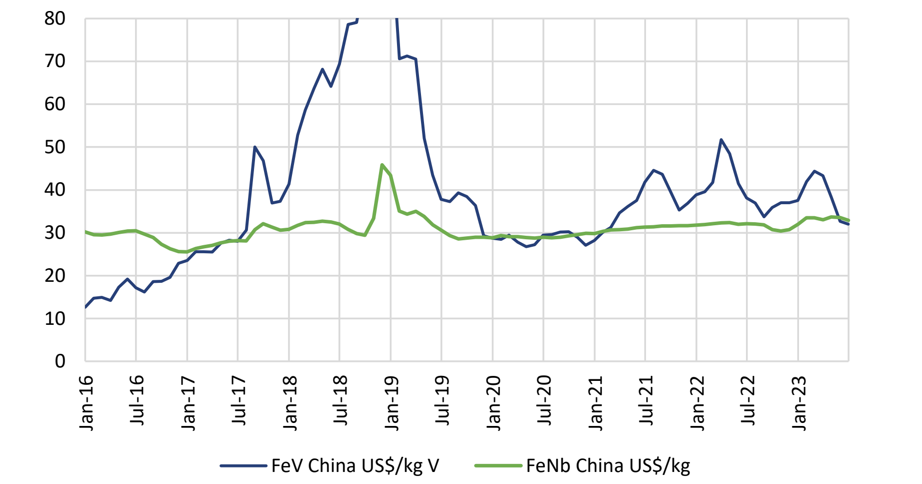


Source: Project Blue (2022)

Limiting factors to vanadium price upside – steel alloy substitutes and VRFB cost competitiveness

The use of quenching and tempering can be used to strengthen steel rebars (~25% of Chinese Grade III on Project Blue estimates) while niobium, to a degree, can be used as a substitute strengthening agent for vanadium.

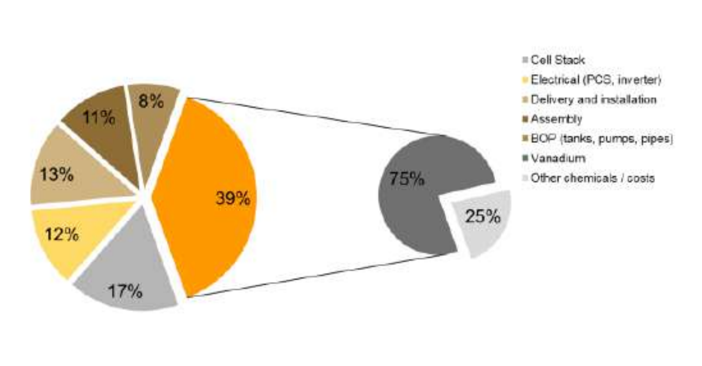
Regional FeV prices (US$/kgV)



Source: Asian Metals

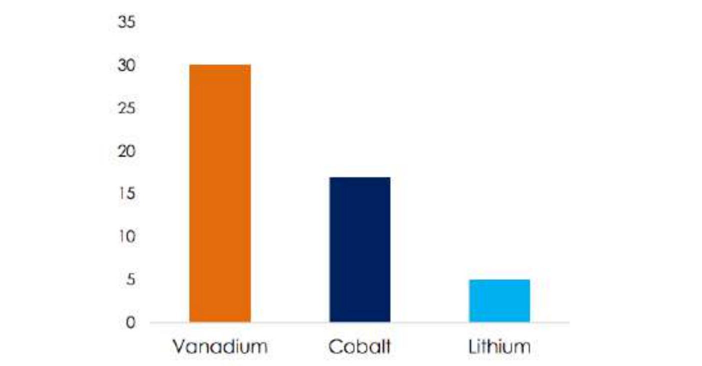
Vanadium is the largest cost contributor in the VRFB system accounting for 30-50% of the battery cost as such an increase in the cost of the material reduces VRFB's cost competitiveness. Separate estimates suggest prices >$10/lb V2O5 (equivalent to ~$45/kgV) will hurt VRFB economics over the long run (Project Blue estimates).

VRFB cost breakdown



Source: Company

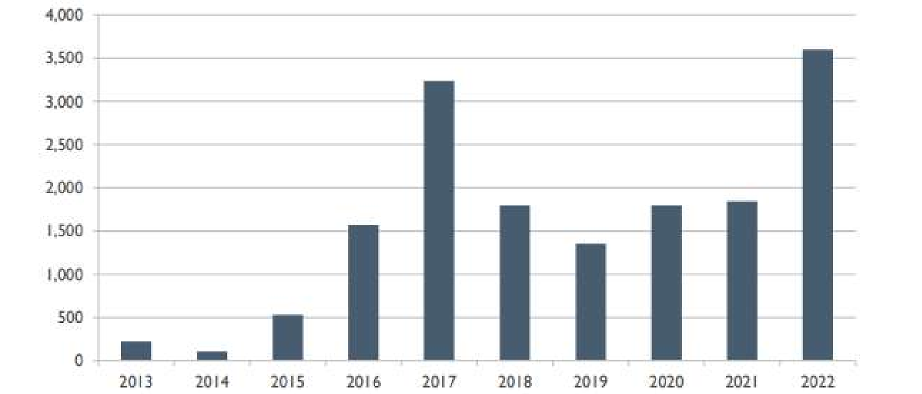
Vanadium contribution to battery cost vs cobalt/lithium (pp, as of Sep/21)



Source: Company

The case is illustrated by a pullback in the number of new VRFBs commissioned during the 2018-19 jump in vanadium prices (see below).

Regional FeV prices (US$/kgV)



Source: Project Blue

Load shedding remains an issue weighing on production growth projections

Well covered power generation challenges amid ageing infrastructure in South Africa remain an issue and sadly are getting worse.

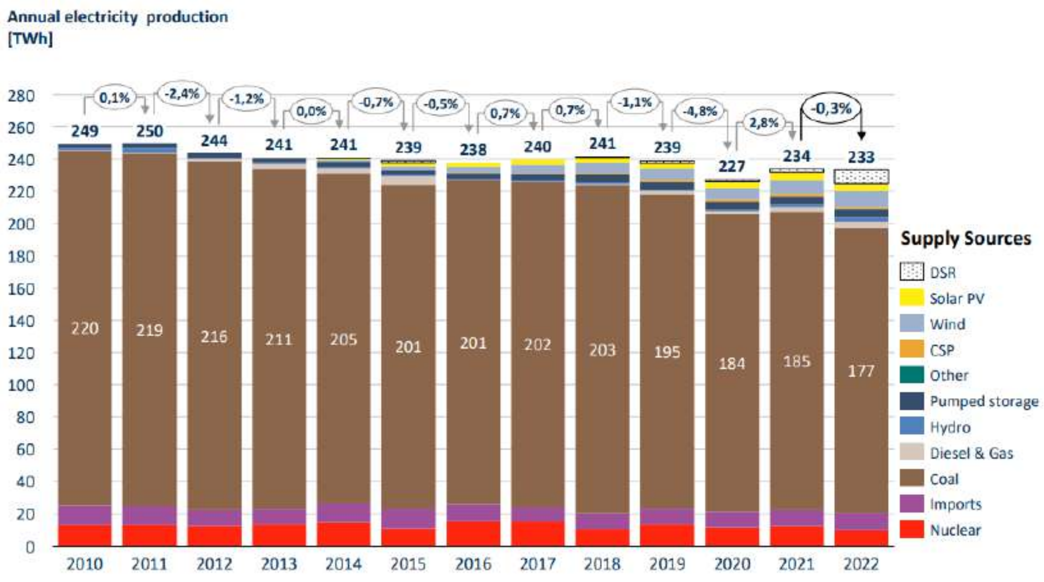
According to the latest report from the Council for Scientific and Industrial Research (CSIR), national energy availability factors tracking readiness of available power generating infrastructure continue to decline averaging 58% in 2022, down 20pp from mid-2010s, and hitting a new record low of ~49% in December, the month of the highest load shedding last year.

Availability of existing power generation capacities in SA (pp)

Source: CSIR (2022)

Power generated by coal plants has been going down with some of declines compensated by increasing share of renewables in total energy mix, although, not enough to cover increasing demand translating into more cases of Demand Side Responses (DSR) or load shedding. Total energy generated gone down 12% since start of 2010 while the size of the economy has gone up 15% during the same period.

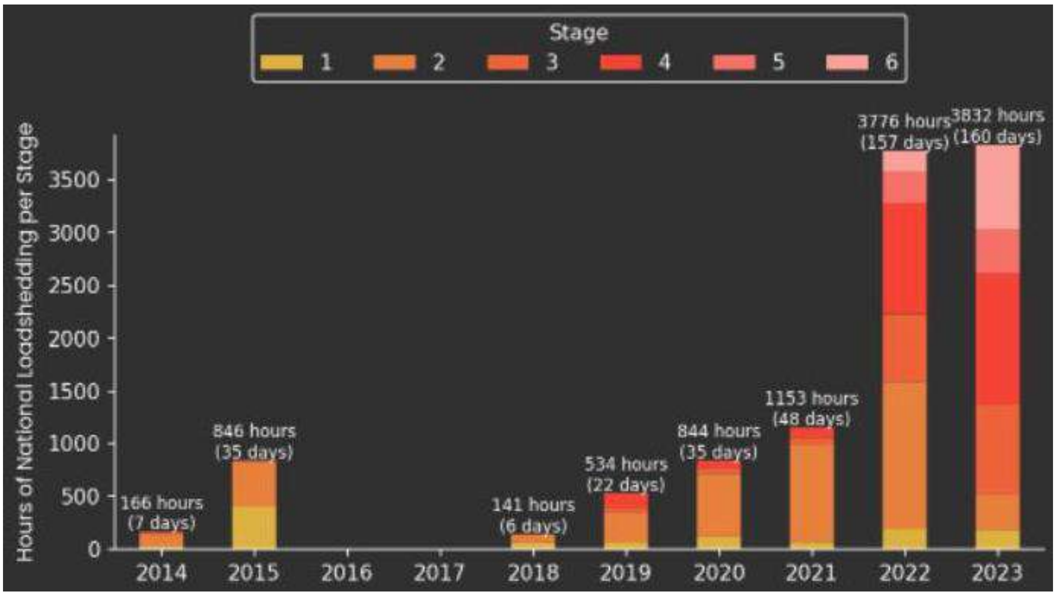
Annual energy production



Source: CSIR (2022)

Year to date data shows the situation is getting worse with the nation having recorded 160d of load shedding YTD (Jun/23, ESP.info), more than a total of 157d in full year of 2022. Cases of loadshedding have also been more severe with stages of 4 and higher affecting >4,000MW of capacity of ~54GW available total.

Cases of load shedding (hours)



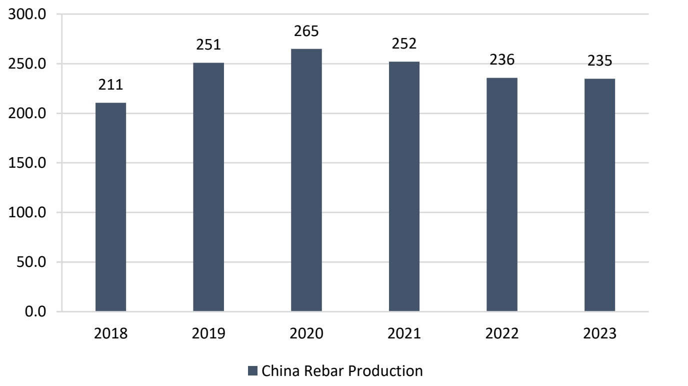
Source: EskomSePush (ESP.info)

Appendix 1 – Chinese rebar and property statistics

Chinese rebar prices (US$/t)

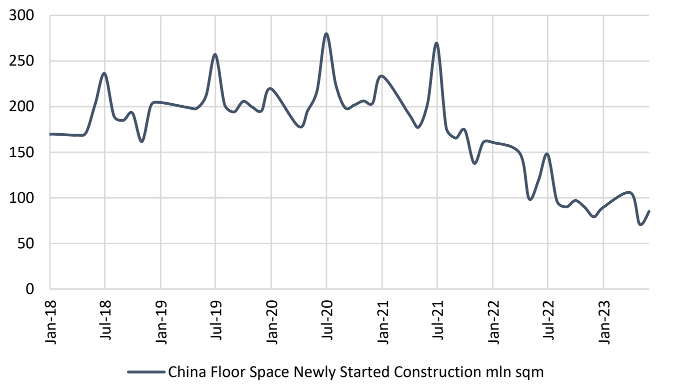
Source: Bloomberg

Chinese rebar production (mt, 2023 annualised from Jan-Apr data)



Source: Bloomberg

China new property construction (mln sq m)



Source: Bloomberg

China property investment (YTD, %yoy)

Source: Bloomberg

China new property prices (%mom)

Source: Bloomberg

China new property prices (%yoy)

Source: Bloomberg

Earnings Summary

Projections are ex BELCO related earnings/cashflows

US$m unless stated (YE Dec)

Market data		
Ticker		BMN LN
Last price	GBp	3.1
Target price	GBp	15.8
Rec		BUY
GBPUSD		1.29
Mkt cap	GBPm	41.7
	USDm	53.8
EV	GBPm	125.8
	USDm	162.3
Av # of sh in issue*	mln	1,345
Av # traded, 100d	mln	5.1

*incl ~58m new shares to Orion

Operating metrics		FY20	FY21	FY22	FY23E	FY24E
USDZAR		16.5	14.8	16.4	17.9	18.0
FeV price	US$/kgV	23.5	32.2	41.4	36.5	40.0
Vanadium Production	V kt	3.6	3.6	3.8	4.2	4.4
Vanadium Sales	V kt	3.8	3.3	3.6	4.3	4.4
C1 cash cost	US$/kgV	18.6	26.1	27.7	25.2	24.8
Income Statement		**FY20**	**FY21**	**FY22**	**FY23E**	**FY24E**
Revenues		90	107	148	156	177
EBITDA		**-15**	**-7**	**22**	**16**	**34**
margin		**-17%**	**-7%**	**15%**	**10%**	**19%**
EBIT		-33	-29	-20	2	20
Net Interest		-5	-14	-14	-12	-10
PBT		**-38**	**-39**	**-37**	**-10**	**11**
Tax		**7**	**5**	**1**	**-1**	**-5**
PAT		**-31**	**-34**	**-35**	**-12**	**5**
EPS basic, cents		**-2.6**	**-2.7**	**-3.1**	**-1.2**	**-0.0**
EPS diluted, cents		**-2.6**	**-2.7**	**-3.1**	**-1.2**	**-0.0**
Cash flow		**FY20**	**FY21**	**FY22**	**FY23E**	**FY24E**
CFO		**-14**	**-12**	**22**	**16**	**34**
Tax paid		-3	0	-1	-1	-5
Net CFO		**-17**	**-12**	**21**	**15**	**28**
Capex (incl Exploration)		-11	-20	-19	-7	-7
CFI		**-13**	**-17**	**-20**	**-7**	**-7**
Dividends paid		-	-	-	-	-
Issue of shares		-	-	-	-	-
Borrowings net change		50	-4	0	-1	-7
Interest paid		-3	-3	-6	-7	-8
CFF		**47**	**-7**	**-5**	**-7**	**-15**
Net cash flow		17	-36	-4	1	6
Cash cf		**51**	**15**	**11**	**11**	**18**
Balance Sheet		**FY20**	**FY21**	**FY22**	**FY23E**	**FY24E**
Cash & cash equivalents		73	15	14	14	21
Receivables/prepayments		11	18	9	9	9
Inventories		34	42	55	53	53
Current assets		**121**	**78**	**78**	**77**	**83**
Exploration & PPE		227	212	181	174	167
Investments		3	10	6	6	6
Non-current assets		**229**	**223**	**189**	**182**	**175**
Total assets		**351**	**301**	**268**	**259**	**258**
Payables, provisions		22	33	46	44	44
Borrowings ST (incl leases)		14	11	48	7	9
Current liabilities		**43**	**48**	**99**	**56**	**57**
Borrowings LT (incl leases)		84	74	42	78	71
Non-current liabilities		**117**	**101**	**63**	**99**	**93**
Total liabilities		**160**	**149**	**162**	**155**	**150**
Net assets		**191**	**152**	**106**	**104**	**109**
Key financial metrics		**FY20**	**FY21**	**FY22**	**FY23E**	**FY24E**
Net debt/(cash)		25	69	76	71	59
Av # of sh (diluted)		1,165	1,202	1,271	1,330	1,345
EV/EBITDA		-	-	10.5	10.2	4.8
PER		-	-	-	-	-
FCF (NCFO-Capex)		-27.9	-32.5	2.5	7.4	21.4
FCF yield		-	-	2%	14%	40%
DY		0.0%	0.0%	0.0%	0.0%	0.0%
ROA		-	-	-	-	0.0
Interest coverage		-	-	-	0.1	2.1
Net Debt/EBITDA		-	-	3.4	4.5	1.8

Source: Company, SPA

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