MKANGO RESOURCES LTD

RELATIVE VALUATION ANALYSIS

17.03.2021

Ticker:	**MKA.L**
Price (p):	**24.0**
Shares in issue (m):	**135.5**
Market cap. (£m):	**32.5**

Introduction

This valuation analysis should be read in conjunction with our recent Trade Note on Mkango Resources, viewable here:

www.aimchaos.com/category/lt-trade-notes/

And with our commentaries on the wider rare earth elements industry, viewable here:

www.aimchaos.com/category/misc-commentary/

The global rare earth elements ('REE') industry is undergoing a fundamental shift, as the rest of the world slowly begins to free itself from the shackles of quasi-monopolist China. A number of high quality, ex-China REE projects are now being rapidly developed, but are all still at least two years away from production. Consequently, with China curbing its exports and overall domestic production, and with the global rollout of renewable energy technologies that utilise REEs rapidly accelerating, we believe that a structural deficit in the global market approaches. Prices of the magnet REEs, especially NdPr, are thus likely to form a materially higher price base over the next three years. This will in itself facilitate the bringing online of the aforementioned ex-China deposits. As such, we retain our view that late-stage REE projects that possess mineralisation with a high NdPr ratio, and that have a visible path to production, will become highly sought after by investors going forward.

The above thesis that we set out in 2017, and updated last November, is beginning to play out in full. Prices of the 'magnet' rare earth elements ('MREE') – namely neodymium, praseodymium, terbium and dysprosium – are rocketing. Neodymium oxide is up 133% in 12 months. The impending structural deficit that we wrote of above is becoming glaringly apparent: the two major ex-China REE producers, ASX-listed Lynas Rare Earths and NYSE-listed MP Materials, are now trading at astonishing valuations. In the first 9 months of 2020, MP Materials booked adjusted EBITDA of $24.6m on revenues of $92.1m. At the time of writing, its market capitalisation is $7.1 billion. It's currently trading on a trailing twelve-month EV/Sales of a little shy of 50x. This is up there with first tier Silicon Valley stuff. Lynas isn't trading on quite such ludicrous metrics as MP, but it isn't too far off.

The rationale for this, as we have detailed in previous notes, is that a certain number of the 17 REEs – being the aforementioned four MREEs – are critical metals not only in green energy and automotive technologies, but also in numerous military applications.

As such, secure supplies of these four metals are not simply key to the global electric vehicle revolution and to the continued rollout of wind turbines; but are also vital to individual countries' National Security.

Our exposure to the booming REE industry is through AIM-listed Mkango Resources, which owns 51% of the Songwe Hill project in Malawi, Southeast Africa. Mkango intends to complete a bankable feasibility study ('BFS') for Songwe Hill this year. Whilst the Company's share price has increased 20% year-to-date, it has significantly lagged the performance of other REE pre-producers across the globe. In the following pages, we highlight this undervaluation, and explain why we believe this gap could begin to close in the coming months.

Company	Listing	Price	Shares in issue (m)	Market cap (US$m)	Project	Location	Stage	Project ownership
Arafura Resources	ASX:ARU	0.200	1,168	180	Nolans	Australia	Post BFS	100%
Australian Strategic Materials	ASX:ASM	5.710	120	529	Dubbo	Australia	Post BFS	100%
Greenland Minerals	ASX:GGG	0.200	1,340	206	Kvanefjeld	Greenland	Post PFS	100%
Hastings Technology Metals	ASX:HAS	0.210	1,510	244	Yangibana	Australia	Post BFS	100%
Northern Minerals	ASX:NTU	0.040	4,850	149	Browns Range	Australia	Post BFS	100%
Peak Resources	ASX:PEK	0.090	1,590	110	Ngualla	Tanzania	Post BFS	100%
Pensana Rare Earths	LON:PRE	1.850	204	552	Longonjo	Angola	BFS ongoing	84%
Rainbow Rare Earths	LON:RBW	0.180	474	117	Gakara	Burundi	Post Scoping Study	100%
Ucore Rare Metals	CVE:UCU	1.890	41	62	Bokan	Alaska	Post PEA	100%
Vital Metals	ASX:VML	0.080	2,670	164	Nechelacho	Canada	Post BFS	100%
Mkango Resources	**LON:MKA**	**0.240**	**136**	**45**	**Songwe Hill**	**Malawi**	**BFS ongoing**	**51%**

GBP / USD : 1.39 AUD / USD : 0.77 CAD / USD : 0.80

Company	Listing	Resource (t) (M+I)*	Grade	Contained oxide (t) (M+I)	Resource (t) (Inferred)	Grade	Contained oxide (t) (Inferred)
Arafura Resources	ASX:ARU	34,900,000	2.77%	966,800	21,000,000	2.30%	483,000
Australian Strategic Materials	ASX:ASM	42,810,000	0.74%	316,794	32,370,000	0.74%	239,538
Greenland Minerals	ASX:GGG	451,000,000	1.14%	5,149,100	222,000,000	1.00%	2,220,000
Hastings Technology Metals	ASX:HAS	13,379,000	1.22%	162,591	8,294,000	1.09%	90,405
Northern Minerals	ASX:NTU	4,580,000	0.71%	32,518	4,680,000	0.64%	29,952
Peak Resources	ASX:PEK	20,800,000	4.76%	989,900	500,000	4.43%	22,150
Pensana Rare Earths	LON:PRE	190,700,000	1.65%	3,154,000	123,000,000	1.07%	1,320,000
Rainbow Rare Earths	LON:RBW	361,121	2.80%	10,111	844,348	2.80%	23,642
Ucore Rare Metals	CVE:UCU	4,840,000	0.60%	29,088	1,040,000	0.60%	6,282
Vital Metals	ASX:VML	17,576,000	1.50%	263,880	77,159,000	1.46%	1,123,435
Mkango Resources	**LON:MKA**	**21,030,000**	**1.41%**	**297,398**	**27,540,000**	**1.33%**	**366,154**

*Measured and Indicated

Company	Listing	Resource (t) (total)*	Grade	Contained oxide (t) (total)	Contained oxide (t) (attributable ownership %)	$ / tonne of contained oxide
Arafura Resources	ASX:ARU	55,900,000	2.59%	1,449,800	1,449,800	124.07
Australian Strategic Materials	ASX:ASM	75,180,000	0.74%	556,332	556,332	951.21
Greenland Minerals	ASX:GGG	673,000,000	1.09%	7,369,100	7,369,100	28.00
Hastings Technology Metals	ASX:HAS	21,673,000	1.17%	252,995	252,995	965.10
Northern Minerals	ASX:NTU	9,260,000	0.67%	62,470	62,470	2,391.23
Peak Resources	ASX:PEK	21,300,000	4.75%	1,012,050	1,012,050	108.88
Pensana Rare Earths	LON:PRE	313,700,000	1.43%	4,470,000	3,754,800	139.47
Rainbow Rare Earths	LON:RBW	1,205,469	2.77%	33,429	33,429	3,550.51
Ucore Rare Metals	CVE:UCU	5,880,000	0.60%	35,370	35,370	1,754.81
Vital Metals	ASX:VML	94,735,000	1.46%	1,387,316	1,387,316	118.55
	MEAN:	**127,183,347**	**1.73%**	**1,662,886**	**1,591,366**	**1,013.18**
	MEDIAN:	**38,786,500**	**1.30%**	**784,191**	**784,191**	**545.34**
Mkango Resources	**LON:MKA**	**48,570,000**	**1.37%**	**663,552**	**338,412**	**133.60**
					Discount to mean:	**86.8%**
					Discount to median:	**75.5%**
					Upside to parity (mean):	**658.4%**
					Upside to parity (median):	**308.2%**
Producers						
MP Materials	NYSE:MP	23,304,355	7.06%	1,644,776	1,644,776	4,265.87
Lynas Rare Earths	ASX:LYC	55,200,000	5.36%	2,959,100	2,959,100	1,485.33
	MEAN:	**39,252,177**	**6.21%**	**2,301,938**	**2,301,938**	**2,875.60**
					Discount to mean:	**95.4%**
					Upside to parity (mean):	**2,052.4%**

*Measured, Indicated and Inferred

Firstly, we stress that this valuation exercise for Mkango and its peers *only* takes into account the resource bases of the respective flagship REE deposits. We do *not* consider sunk capex; gross cash and debt positions; proximity to commencement of mining; resources that have not been formally classified; and, of course, other assets (non-REE exploration licences; investments, etc.).

Secondly, it must be stated that it is very difficult to carry out relative valuation analysis when it comes to rare earth projects. The reason for this is that every deposit is different – in many cases *markedly* – with regards to its composition. For example, one deposit in the US might be comprised of 50% cerium, 1% terbium, 17% neodymium, etc.; whilst the ore body of a similar sized deposit in Southeast Asia might contain 22% cerium, 4% terbium, 26% neodymium, etc.

The prices of these REEs vary *immensely*. For instance, at the time of writing, one metric tonne of cerium oxide (a light rare earth that is in high abundance) is currently valued at approximately the same price as one *kilogram* of terbium oxide (a heavy rare earth used in permanent magnets which are key components in the production of electric vehicles).

As such, the basket prices of rare earth deposits can often be incomparable. Consequently, the above tables setting out the various advanced-stage REE pre-producers, provide only a partially valid reference point for analysing Mkango's possible valuation.

Nevertheless, we *do* know that Mkango's Songwe Hill is comprised of a relatively high proportion of MREEs (the updated PFS of 2015 suggested that REO concentrate production would be comprised of ~36% MREEs). Songwe Hill likewise has relatively low capex requirements (although this could change with the publication of the BFS later this year): a number of its peers have capex requirements of several multiples higher (Nolans, Dubbo, etc.).

Arguably most importantly, however, Mkango has a clear path through to production, via its option agreement with its partner, Talaxis (see pp.6-9 of our Trade Note). In short, by providing the entirety of the capex for Songwe Hill (including both the equity and debt components, however which way it is ultimately structured), Talaxis can increase its equity in the project from its current 49% to 75%. This would leave Mkango with a free carry on 25% of the project, which the 2015 PFS indicated could generate circa $100m in EBITDA per annum, for almost two decades. We believe that the ongoing BFS will suggest a project at least twice the size of that envisaged in the 2015 PFS.

What's more, Talaxis itself has a Memorandum of Understanding in place with Chinese rare earths giant, Chinalco Guangxi Nonferrous Rare Earth.[1] One particular area of cooperation that the two parties intend to focus on, amongst others, is:

- "*Other overall support from Chinalco Guangxi for Talaxis' rare earth supply chains, where Chinalco Guangxi will endeavour to assist Talaxis with its rare earth projects, including the Songwe Hill rare earths project construction in the Republic of Malawi, and other rare earth projects that Talaxis may sponsor*."

[On this note, it's interesting to consider how Talaxis and Chinalco could proceed with the financing of Songwe Hill's construction. Would Chinalco stump up $80m to $100m in return for 26% of the project equity, with the final $150m or so of the construction costs to be debt funded? This would leave Talaxis with 49%, Chinaclo with 26% and Mkango with 25%. A structure we cannot believe Chinalco would be happy with. We think it probable that there is some sort of standstill agreement currently in place between Talaxis and Mkango, preventing Talaxis from taking out Mkango in its entirety on the cheap. Could this be circumvented with the assistance of a strategic ally like Chinalco? This is all conjecture on our part, but what does seem clear is that, as things stand, Songwe Hill's concentrate is destined for the East, and not the West.]

[1] www.noblegroupholdings.com/wp-content/uploads/2019/12/FINAL-Talaxis-Chinalco-MoU-announcement-Mon-09122019.pdf

So: we acknowledge that valuing the peer group members on the in-situ value of their classified resources at their flagship assets *alone* is not a reliable methodology, as the deposits themselves are difficult to value and moreover other assets are not considered. On the other hand, we can see how Mkango does stand up well in its peer group with regards to high MREE content, middle-of-the-range grade (see p.3), low capex and visibility of route to production. We have also detailed in our previous Trade Note that the Company has three other potentially very valuable exploration licences as well as a REE technology investment arm: as such, whilst the sum-of-the-parts valuations of some of the peer groups could be considerably underrepresented, we could argue that Mkango's could be likewise.

With this in mind, how does Mkango's relative valuation stack up?

At a share price of 24.0p, Mkango's 51% share of the rare earth oxides contained in the total 48.6 million tonnes of ore (measured, indicated and inferred) at Songwe Hill is being valued at $133.60 per tonne. This compares to the peer group average of $1,013.18/t; and to the peer group median of $545.34/t.

The discount to the peer group is startling. Below, we demonstrate the upside to Mkango's current share price, just for it to achieve parity with the mean and median valuations of its ten listed peers.

To achieve parity with:	**Theoretical share price for Mkango (p)**
Peer group mean valuation of $1,013.18/t	182.0
Peer group median valuation of $1545.34/t	98.0

The very obvious question: how on earth has such a disparity occurred? In our November Trade Note (p.10), we provided several explanations. However, given the time that has passed since and the intensity of the spotlight that has been shone on the REE industry in that period, we do not believe those explanations remain valid.

Rather, we believe that Mkango is simply not as well-known within the global investment community as most of its peers. The Australian investment community (the majority of Mkango's peers are ASX-listed) is, by and large, more attuned to the mining industry (and in particular, ascribing more reasonable valuations to miners!) than is the UK; and in the UK itself, Mkango's two peers are promoted more extensively by their respective management teams and advisers.

It is also worth highlighting that on an *absolute* basis, with a market capitalisation of only $45m, Mkango is the cheapest of the 11 list pre-producers. The closest peer to it, in terms of valuation, is Ucore Rare Metals: its market cap. is 38% greater than Mkango's, at $62m; yet its total contained REE oxide (attributable ownership) is only ~10% of the size of Mkango's.

Although technically of little significance in our relative valuation analysis exercise, the disconnect in absolute valuations between Mkango and its peers could nevertheless prove compelling for investors. The mean market capitalisation of the ten peers is currently $229m, some 5.1x greater than Mkango's $45m cap (equating to an upside of 409% for Mkango to achieve parity with the peers). When considering valuations for pre-producers, we would also point out that beyond a certain resource size (say two to three decades of major-scale production), size of resource base becomes of decreasing importance. There is a world of difference between a 25-year mine life and a 7-year mine life; but not so much between a 100-year mine life and a 25-year mine life.

In this context, we would argue that Mkango's Songwe Hill (which will produce at major scale for a multi-decade life) is even cheaper than our relative valuation analysis suggests.

What could occur to close the valuation discrepancy? The Company intends to complete its BFS later this year: updates on this front could whet investors' appetites. In tandem, Mkango will seek to secure a full mining licence for Songwe Hill (currently it holds an exploration licence); it will progress plans to establish a separation facility; it *might* begin to establish Memorandums of Understanding or Heads of Terms for financing and/or offtakes with Talaxis, Chinalco and/or other parties; and it will continue development work on its three other exploration licences, as well as report on the progress of its investee companies within its REE technology arm, Maginito.

More so than company-specific news flow, however, we believe that a continuing bull run in the REE market will catalyse increased investor interest in Mkango. Investors will be looking at the valuations of MP Materials and Lynas with awe. These companies are being valued like no other miners on the planet – the result of them producing key ingredients for Earth's Green Industrial Revolution, *and* for National Defence in a nascent era of deglobalisation.

Our theoretical 'fair value' share prices for Mkango that we set out on the previous page should *not* be considered as our own share price targets. What they demonstrate is how the Company *could* be valued, simply were it to sit in the middle of the peer group valuation range.

Disclosure

The author of this paper, Myles McNulty, is a private investor. He and his family hold 2.98% of the ordinary shares of Mkango Resources.

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