Elixir Energy Limited (ASX: EXR)

Striking while the iron is hot: capital raising to progress resource delineation

Overview

Elixir's announced capital raising builds on its coal bed methane (CBM) gas discovery in Mongolia and will fund the next steps in defining resource size and quality. The discovery materially reduced project risk and the large permit area and thick coals point to a significant resource potential on China's doorstep. As the world emerges from Covid-19 China's need for gas imports will continue to increase, supporting Elixir's decision to press ahead now rather than sitting out the pandemic. This report revises our valuation for the capital raising and reduced risk following the gas discovery, and examines potential early stage commercialization options via micro-LNG. We value Elixir at $0.25/sh (prev. $0.22), with a range from $0.10-0.43/sh.

Key points

Background: Large gas resource close to China: Elixir holds 100% of the Nomgon IX CBM production sharing contract (PSC), covering ~30,000 km^2 adjacent to the border with China. The potential gas resource is large, with a pre-drill mid-case independent estimate of 7.6 Tcf recoverable.

Risk reduced: Recent drilling of two core holes and two chip holes has resulted in an announced discovery in February, together with a better understanding of coal quality for CBM development. We now know that good quality coal suitable for CBM exists within the PSC, materially reducing project risk. Given the large size of the PSC, more locations are likely.

But still more work to do: Results from the two core wells show that coal quality is variable and further exploration and delineation drilling will be required to identify the location, size and quality of suitable coals before a large contingent resource can be established. The current capital raising provides the funding to progress appraisal and further exploration.

Industry interest likely to be piqued: The declaration of a discovery is likely to attract the attention of larger parties, given the large resource potential and proximity to the Chinese market. This project now moves from being theoretically possible to one of practical interest.

Commercialization options: In this report we examine potential early stage commercialization options, including micro-LNG for road and rail transport. These could complement pilot stage appraisal activities, providing early stage cash flow. Preliminary project IRRs of ~15-27% are encouraging.

Technical, commercial and regulatory risks: Elixir is an early stage, single asset company. Risks include the quantity and quality of the CBM resource, economics and funding of appraisal and development options, navigating the Mongolian regulatory system and negotiating gas commercialization.

Value catalysts in advance of sales revenue: Revenue from major gas sales is some years away. However, value uplift is likely in advance of gas sales with continued project derisking, including the next round of drilling results (2H 2020) and a contingent resource assessment expected later this year.

Funding maintains momentum: This funding round enables further drilling to help identify resource extent, moving EXR closer to commercialization. Further work, and necessary funding, will depend upon outcomes from the current program.

SHARE PRICE PERFORMANCE

Closing price as of 6th May 2020

CAPITALIZATION	
Last price	$0.022
52-week range	$0.018-0.064
Capitalization	$13.4m
Cash: 31st Mar	$0.9m
Debt: 31st Mar	nil
EV	$12.5m
Shares*	608.4m
Options/rights	153.2m
Conv Notes	-
Balance date	June
RESERVES AND PRODUCTION	
1P (30 Jun 19)	0.00 MMboe
2P "	0.00 MMboe
3P "	0.00 MMboe
2C "	0.00 MMboe
FY17a	0.00 MMboe
FY18e	0.00 MMboe
FY19e	0.00 MMboe
SHAREHOLDERS (%)	
Board/mgt	~4
Retail/insto	96
* post May 2020 placement and SPP	
LEADERSHIP	
Chairman	Richard Cottee
MD/CEO	Neil Young
NED	Steve Kelemen
NED	B. Bayanjargal

Disclosure: This is a commissioned research report and K1 Capital will receive a fee for preparing this report.

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1. Valuation summary

Our estimate of the equity valuation for Elixir is based on a risked project value for the Nomgon IX PSC and includes dilution for the 2020 exploration/appraisal program and likely follow-on exploration. The company valuation ranges from $88m to $375m, driven by the range in potential resource size and EV/resource metrics. We have included dilution for a potential future raising in 2021, dependent on the outcome of the current exploration and appraisal program. We have not included capital raisings beyond 2021 given the extent of these will depend upon future exploration outcomes. Further valuation detail is provided in Section 4.

Table 1 Elixir equity valuation

Parameter	Units	Value	Low	Mid	High	Comment
Valuation		Mean	P90	P50	P10	
Nomgon IX PSC (Mongolia, 100%)	$m	**214**	**86**	**190**	**372**	from Monte Carlo simulation (see Section 4 of report)
Existing cash	$m	0.9				per Mar 2020 quarterly
Existing debt	$m	0.0				"
Placement & SPP	$m	1.9				$2.0m at $0.02/sh placement & SPP May 2020, net of fees
G&A costs	$m	-3.2				$1.2m/yr, per Jun 2019 quarterly, to end 2022
2020/21 work program	$m	-1.5				estimate (core hole, chip holes, possible seismic)
2021/22 work program	$m	-4.0				estimate (3 spot pilot)
Incentive options	$m	1.0				assume exercised (expiry Nov 2024)
New capital required (inc. fees)	$m	7.3				Maintain min $1.0m working cap (excludes incentive options)
Total	$m	**216** (mean)	**88**	**192**	**374**	
Existing capital structure						
Current share price	$/sh	0.022				6 May 2020 closing price
Shares on issue	000,000	508.4				per Mar 2020 quarterly
Placement & SPP	000,000	100.0				$2.0m at $0.02/sh placement & SPP May 2020
Incentive options	000,000	10.0				exercise price $0.10, expire 25 Nov 2024
Performance rights - Class C	000,000	15.0				FID approval or CBM pilot program, expire 16 Dec 2023
Performance rights - Class D	000,000	17.5				drill two CBM coreholes, expire 16 Jun 2020
Estimated dilution						assumed 2021 capital raising post current program
Assumed 2021 pre-raising price	$/sh	0.040				assume same as pre-Covid-19 share price (Feb 2020)
Pre-raising market capitalization	$m	24.3				
Future new capital required	$m	7.3				from above, excludes May 2020 placement & SPP
Assumed raising discount to TERP	%	11.0				per K1 Capital industry analysis
Estimated capital raising discount	%	13.8				relative to pre-raising share price
Estimated price at which capital raised	$/sh	0.034				based on assumed pre-raising share price
New shares issued	000,000	210.9				associated with assumed capital raising
Diluted share count	000,000	**861.8**				includes incentive options and perf rights
Estimated share price	$/sh	**0.251**	**0.103**	**0.223**	**0.434**	

Source: K1 Capital analysis. Valuation as of 6th May 2020.

Disclosure:

This report was commissioned by Elixir Energy Limited (Elixir) and K1 Capital Pty Limited (K1 Capital) will receive a fee for preparing this report. The purpose of the report is to provide an assessment of the value of Elixir Energy Limited. The user of this report is Elixir and persons designated by them. K1 Capital has prepared this report based on interviews with management and research using publicly available information. K1 Capital has not undertaken a site visit to Elixir's projects. To the best of K1 Capital's knowledge, full, accurate and true disclosure of all material information was provided by Elixir. Given the potential for a perceived conflict of interest it is K1 Capital's policy not to include a share price target or investment recommendation for commissioned research. K1 Capital may seek to do business with companies covered in its reports. Consequently investors should be aware that the firm may have a conflict of interest that could affect the objectivity of its research. Please see the final page of this report for further information on disclosures and disclaimers.

2. Nomgon project update

2.1.1 Recent drilling delivers a discovery

Elixir recently completed a core hole drilling program and commenced testing of coal samples for CBM suitability. The drilling program comprised two core wells, to test two separate areas for gas content, saturation and permeability, and two chip holes to quantify coal thickness and resource extent.

The first core hole, Ugtaal-1, encountered thick (43 m) but low quality coals (low permeability and low gas content). However, the second well, Nomgon-1, drilled in a different sub-basin, ~37 km from Ugtaal-1, encountered much better coals. The coals at Nomgon-1 were thick (82 m) coals, with raw gas contents of >5 m3/t. Permeabilities based on IFOT (Injection Fall Off Test) ranged from 1.2 to 23.3 milliDarcy metres. Results from the two core holes and two chip holes are summarized in Table 2 below.

The Nomgon-1 well has been declared a gas discovery by Elixir under the terms of the PSC and the Mongolian authorities advised of this outcome.

The importance of the Nomgon-1 discovery is that the Nomgon IX PSC is now confirmed to host coals in at least one location that should be suitable for CBM development. Given the size of the PSC (30,000 km^2) other areas are also likely to host suitable coals. We know from recent drilling that coal thickness and quality are not homogeneous within the permit and further drilling will be required to confirm the location, size and quality of areas suitable for CBM development.

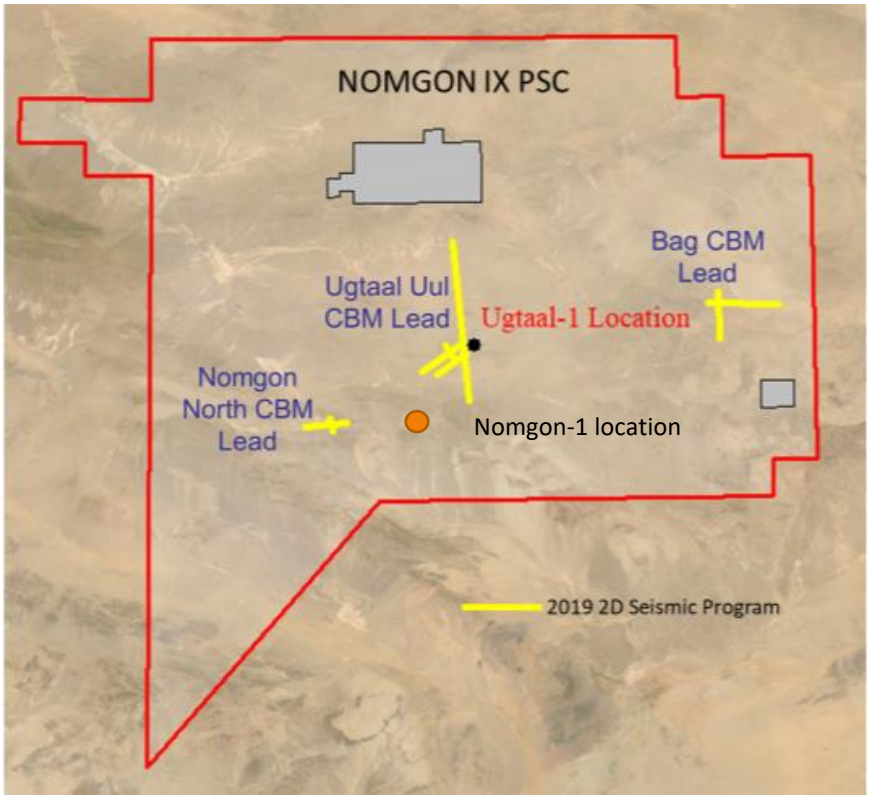
Table 2 Nomgon IX PSC drilling program results

Parameter	Units	Ugtaal-1	Nomgon-1	BO-CH1	BO-CH2
Well type	-	Core hole	Core hole	Chip hole	Chip hole
Spud date	d-m-y		16 Jan 2020		
TD date	d-m-y	8 Dec 2019			
TD	m	752	491	738	890
Net coal	m	43	82	7	6
Thickest seam	m	20	51		
Coal brightness	-		C3-C4		
Appearance	-		fractured and cleated		
Gas presence	-		bubbling from core		
Cored	-	Yes	Yes	Yes	yes
Permeability * height (Kh)	mD.m	low	1.2 to 23.3		Not tested
Gas content (raw)	m3/t	low	2.4-7.5, avg 5.3		
Gas composition	vol%		~81% CH_4 ~19% CO_2		

Source: Elixir Energy Limited, ASX announcements, 9th Dec 2019, 20th Dec 2019, 16th Jan 2020, 5th Feb 2020 and 26th Feb 2020.

The Ungtaal-1 and Nomgon-1 well locations are shown in Figure 1 below.

Figure 1 Location of 2D seismic and wells



Source: Elixir Energy Limited, investor presentation, 4th September 2019, p10. Nomgon-1 well location (Lat 042/52/33.90 & Long 105/27/46.4) estimated based on Elixir's ASX release 5th February 2020

2.1.2 Capital raising to fund next steps of resource delineation

Elixir's current capital raising of ~$2.0 will fund a work program to continue to define the quantity and quality of the resource within the PSC, further reducing project risk. The program, commencing in July, will comprise:

1. delineation drilling (a fully tested core-hole and a stratigraphic chip-hole) in the sub-basin which hosted the recent Nomgon-1 gas discovery;
2. exploration drilling (stratigraphic chip-holes) in two new sub-basins, including a location adjacent to the electricity transmission lines connecting to the Rio Tinto operated Oyu Tolgoi mine;
3. additional 2D seismic (subject to funds raised); and
4. general working capital needs.

Elixir is fortunate that it has staff and contractors within Mongolia that enable it to progress work while Covid-19 restrictions exist, rather than having to wait until restrictions are relaxed. The capital raising should provide enough funding to continue operations until 2H 2021. At that point further capital will be required, with the quantum and work programs which it will fund dependent upon the outcome of the exploration and appraisal undertaken with the current round of funding. That follow-on program may involve an initial multi-well pilot to determine well productivity parameters.

3. Early commercialization options

As noted in our earlier report (25th September 2019), the Nomgon IX PSC is well positioned to supply gas demand in both Mongolia and China, with the permit located ~545 km from the Mongolian capital, Ulaanbaatar, and ~410 km from the major East-West Pipeline in China.

Field development, should further exploration and appraisal prove successful, is likely to involve pipeline connection to China and/or power generation into the Mongolian grid. However, small projects, such as micro-LNG for fueling heavy haulage vehicles or future coal trains associated with the nearby Tavan Tolgoi mine, may complement appraisal activities and provide early cash flow.

Our preliminary analysis of these options is described in the following sections and summarized in Table 3 below. These cases suggest that micro-LNG could be a viable appraisal and early stage development option for the Nomgon IX PSC, with project internal rates of return from 15-27%.

Table 3 Micro-LNG preliminary project economics

Item	Units	Case 1	Case 2	Case 3	Case 4	Case 5
Transport case (road or rail)	-	Road	Road	Road	Rail	Rail
Tavan Tolgoi mining rate	Mtpa	15	15	15	30	30
% of transport demand supplied	%	15	50	100	50	100
Micro-LNG plant capacity	t/cd	30	101	202	58	117
Feed gas requirement	mmscfd	1.8	5.9	11.8	3.4	6.8
LNG selling price (real 2019 $)	$US/mmBtu	9.00	9.00	9.00	9.00	9.00
Capex (excluding restoration)	M$US	18	41	74	27	46
Pre-tax NPV @ 15.0% nominal	M$US	0.2	17.6	42.6	7.1	21.5
Pre-tax IRR	%	15.2	24.4	27.4	20.9	25.2
Payback (from FID)	years	8.1	5.7	5.2	6.4	5.5
Discounted payback (from FID)	years	20.6	8.5	7.3	10.7	8.1
Profitability Index (=1+NPV/PV capex)	-	1.0	1.4	1.6	1.3	1.5

Source: K1 Capital analysis. Assumes 20 year project life. Pre and post-tax NPVs and IRRs are equal given 0% tax rate. 15% nominal discount rate.

3.1 Micro-scale LNG for road transport

LNG fueled heavy vehicles are popular in China, with over six million natural gas (LNG and CNG) vehicles already in service [1]. LNG fueled heavy vehicles are also in service in other countries, including the USA, Australia and Europe. LNG's advantages over diesel include improved air quality and lower life cycle costs [2]. LNG also offers 2.4 times the range of compressed natural gas (CNG) for the same fuel tank size and a faster refill time (1/3 to 1/5 of that for CNG vehicles) [3].

Studies have reported payback times of two to three years for LNG-fuelled vehicles in China and the US respectively, and between 1 and 2 years in Spain [3] [4]. Worldwide demand for LNG as a road transport fuel is projected to grow from 45 Mt in 2025 to 96 Mt in 2035, a compound annual growth rate of 7.9%, with China accounting for almost half of the market [3].

Currently ~15 Mt/yr of coal from the Tavan Tolgoi mine is currently trucked through the Nomgon IX PSC to a rail head at Gashuun Sukhait on the Chinese border, which, we estimate, presents an opportunity to replace up to 85 ML of imported diesel per year (1.5 kbd) with LNG sourced from Nomgon IX gas.

3.1.1 Micro-scale LNG plants

Micro-scale (<~200 tpd) LNG plants are in operation in numerous countries, including Australia, the US and China. In Australia, BOC built two 50 tpd (18 ktpa) plants (Westbury, Tasmania and Chinchilla, Queensland) in 2010 to supply LNG to the heavy transport sector [5] [6]. Production from each plant is equivalent to ~70 kL/day diesel. The Westbury plant and six re-fuelling stations across the state were reported to have cost $150m (~$US100m at the current spot exchange rate, not adjusted for inflation).

Our review of publicly available data suggests a 50 tpd plant (15 kt/yr at 80% utilization) costs ~$US20-25m. Importantly, micro-LNG plants can be highly automated, with plants of up to 150 tpd operating autonomously [10][17]. The relatively low capital cost and simple operation indicates that these plants could be suitable for early stage field appraisal and development. Our analysis indicates an appraisal stage project for Nomgon IX could be smaller than 50 tpd and correspondingly cheaper.

Table 4 Micro-LNG capex estimates

Source	Description	Cost basis	Cost $US million for 50 tpd plant	Ref
BOC Australia	Liquefaction plus six refuelling stations	$A150m reported project cost	100 (at 0.67 spot fx)	[5]
LNG Limited	Greenfield small scale	$US600-1000/t	15-25	[7]
Siemens	US target	<$US500/gal daily capacity, equivalent to $US730/t annual capacity	19	[8]
World Bank	Mini/micro-LNG, various vendors, excludes storage	$US6.3m+3.12*mmscfd for liquefaction, ~$US1,700/m3 for storage	18+5=23	[9]

Notes: 50 tpd = ~15 kt/yr assuming 80% utilization. Assumes ~30 days storage capacity

3.1.2 Coal haulage diesel replacement - road

We estimate that the current 15 Mt/yr of coal production from Tavan Tolgoi requires ~1050 B-double vehicle movements per day, which we estimate consumes ~85 ML/yr of diesel for the 480 km round trip journey. This is equivalent to ~200 tpd of LNG, which would consume ~4.5 PJ/yr of feed gas (12 TJ/d).

A small scale CBM pilot project producing say ~1-2 mmscfd would produce enough gas for a 15-30 tpd micro-LNG plant (~19-38 tpd capacity at 80% utilization), providing ~10-15 % of the trucking fleet requirement. We estimate a micro-LNG plant of this capacity would cost ~$15-20m and would achieve an internal rate of return of 15%. This assumes the LNG is priced at 85% of the crude oil price and hence a material discount to the diesel price (low sulphur diesel is typically Brent + ~$US9/bbl). Thus the project should be economically attractive to coal haulage operators. If the LNG is valued at diesel the IRR increases to 21%.

3.2 Micro-scale LNG for rail transport

We are aware that the Mongolian Government plans to replace coal trucking with rail transport during the coming decade [10] [11]. However, the opportunity also exists to run the rail project on LNG, as demonstrated by existing LNG rail projects in countries such as Russia. LNG is expected to play a significant global role in fueling freight locomotives over the next 20-30 years, with the US Energy

Information Administration (EIA) suggesting that LNG will account for 35% of total freight rail energy consumption in the US by 2040 [12].

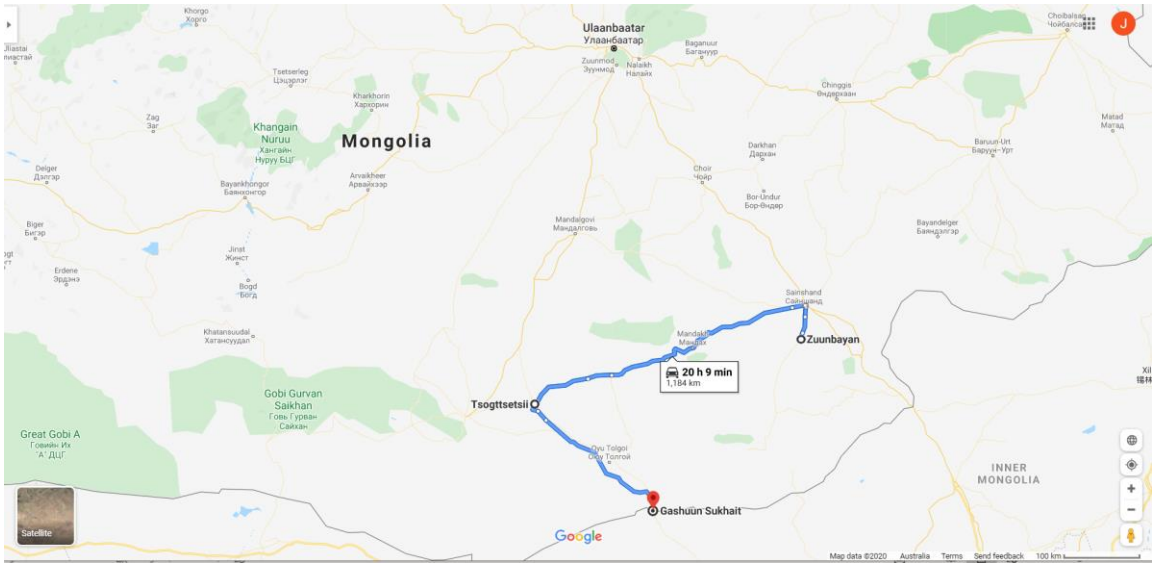
The proposed rail link is intended to carry up to 30 Mt/yr on a 1,520 mm (60") gauge line, running east from Tavan Tolgoi coalfield near Tsogttsetsi to UBTZ's current railhead at Zuun-Bayan [10], a distance of ~470 km based on the current road corridor, as shown in Figure 2 below.

We estimate the proposed 30 Mt/yr of coal production from Tavan Tolgoi delivered by rail will use approximately 49 ML/yr of diesel[1], less than the ~85 ML/yr required for road haulage of the current 15 Mt/y, due increased freight efficiency. Our estimate is based on an average unit-train coal rail efficiency measure of 744 RTM/G[2] (revenue ton-miles per gallon) from US studies [13] and one-way distance of 470 km (with the return distance implicit in the RTM determination).

The actual fuel consumption may be greater or less than this measure, depending upon terrain, types of coal cars, traffic control and delays, potentially ranging from ~650 RTM/G to ~850 RTM/G [13]. Further, efficiency may have improved due to technological improvements since the study in 2008, which noted an increase in efficiency of 2.6% pa compound annual growth rate from 1985 to 2008[3].

We estimate this fuel demand could be met by ~84 kt/yr LNG, equivalent to 117 tpd (requiring a plant capacity of ~150 tpd assuming ~80% utilization). We estimate this size plant would cost ~$US45-50m, including storage, and consume ~4.5 PJ/yr gas, equivalent to ~12 mmscfd. We estimate project economics should achieve an IRR of 25% and be economically attractive to rail operators.

Figure 2 Tavan Tolgoi road and rail coal logistics options



Source: google maps, accessed 7th February 2020. N.B. the route depicted above from Tsogttsetsi to Zuun-Bayan is the current road route for the purposes of illustration.

[1] 30 Mt coal * 470 km / (744 RTM/G * 0.3856 Rtkm/L / RTM/G) = 49 ML diesel per year

[2] 1 RTM/G = 2000 lb/short ton*0.4535 kg/lb * 1 t/1000kg * 1.60934 km/mile / 3.785 L/US gal = 0.3856 Rtkm/L

[3] If continued, this would increase efficiency from 744 to 1151 RTM/G by 2025, an improvement of 55%.

4. Valuation

4.1 Methodology

Elixir does not yet have reserves or contingent resources to support a discounted cash flow valuation of future projects. Instead, we have valued Elixir using a risked exploration and appraisal basis, with underlying resource metrics drawn from market trading and transaction multiples. We base our market multiples on price adjusted reserves and resources to better account for the value differences between oil and gas, and gas prices in different markets.

Table 5 Reserve & resource spot price equivalence factors

Commodity	units	Price 05-May-20	Price $US/boe	Price factor	Source
USD/AUD forex	$US/$A	0.6459	-	-	Reserve Bank of Australia
Brent	$US/bbl	31.01	31.01	1.00	Bloomberg
WTI	$US/bbl	24.55	24.55	0.79	"
HH	$US/mmBtu	2.08	12.06	0.39	"
EC Australia	$A/GJ	4.50	17.79	0.57	AEMO Wallumbilla benchmark 2 May
WC Australia	$A/GJ	2.16	8.54	0.28	gasTrading spot price Mar '20
Europe	$US/mmBtu	2.72	15.78	0.51	World Bank, Netherlands TTF, Mar '20
LNG	$US/mmBtu	4.54	26.36	0.85	85% of Brent (14.7% slope)
LNG JPN/KOR spot	$US/mmBtu	2.80	16.21	0.52	naturalgasintel.com
China	$US/mmBtu	7.91	45.90	1.48	Shanghai Pet & NG Exchange Apr '20
LPG	$US/t	340	29.82	0.96	Saudi Contract Price - May '20

Source: K1 Capital analysis

4.1.1 Equity market trading metrics

Our list of peer companies is shown below. A brief description of each company is provided in Section 5.1 later in this report. Current trading metrics range from $0.01 to $0.09/GJ 3P+2C, with an average of $0.04/GJ for ASX-companies with international CBM operations. Domestic focused companies trade at higher levels, in part due to lower perceived country risk and more mature projects. These metrics have been significantly reduced compared to 2H 2019 levels by COVID-19 and oil price declines.

Table 6 Reserve and resource trading metrics

Company	Code	Last Price 05-May-20	Total Shares (million)	Mkt Cap M$A	EV M$A	2P PJe'	3P PJe'	2C PJe'	EV/2P $A/GJe	EV/ (2P+0.8*2C) $A/GJe	EV/ (3P+2C) $A/GJe	Gearing D/(D+E) %
Elixir Energy	EXR	0.022	608	13	13	-	-	-	-	-	-	-
Australian CBM companies (6)				**531**	**511**	**891.9**	**1,195.9**	**5,510.4**	**0.57**	**0.10**	**0.08**	**19**
Blue Energy	BLU	0.015	1,327	20	15	71.0	298.0	1,166.0	0.21	0.02	0.01	-
Comet Ridge	COI	0.081	728	59	50	106.0	183.0	286.0	0.47	0.15	0.11	-
Carbon Minerals	CRM	0.350	19	7	3	-	-	183.0	-	0.02	0.01	-
Galilee Energy	GLL	0.380	271	103	76	-	-	3,011.5	-	0.03	0.03	-
State Gas	GAS	0.360	144	52	50	-	-	536.0	-	0.12	0.09	-
Senex Energy	SXY	0.200	1,453	291	317	714.9	714.9	327.9	0.44	0.32	0.30	30
International companies (7)				**118**	**368**	**1,372.9**	**7,018.6**	**3,327.4**	**0.27**	**0.09**	**0.04**	**70**
Kinetiko Energy	KKO	0.000	543	-	-1	-	-	751.2	-	-0.00	-0.00	100
NuEnergy Gas	NGY	0.012	1,481	18	20	157.8	157.8	78.0	0.13	0.09	0.09	14
Strata-X	SXA	0.050	108	5	5	-	-	66.8	-	0.10	0.08	-
Tlou Energy	TOU	0.065	450	29	27	123.5	1,295.7	649.4	0.22	0.04	0.01	-
Triple Energy	TNP	0.010	72	1	1	-	-	-	-	-	-	20
G3 Exploration	G3E	0.213	156	33	310	1,091.6	5,565.1	1,781.9	0.28	0.12	0.04	89
Petro Matad	MATD	0.047	673	32	7	-	-	-	-	-	-	-

Source: K1 Capital analysis of company data. Expressed relative to the spot east coast Australian gas price of $4.50/GJ. Kinetiko suspended Sep 2017. G3 Exploration liquidators appointed Jan 2020.

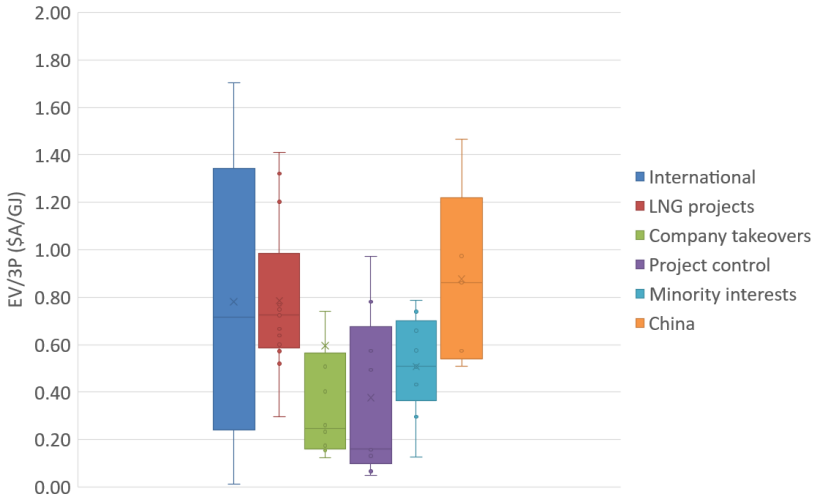
4.1.2 CBM transaction metrics

Our data base includes over 40 CBM transactions from early 2008 to 2019. In our view EV/3P metrics have generally been more representative than EV/2P, given the limited reserve maturity for early transactions. Transaction prices have generally declined over time, in line with declining global oil and LNG prices, but also with increasing maturity of CSG reserves. The metrics also depend upon the nature of the interest acquired, with assets linked to LNG projects achieving a premium. On average, EV/3P metrics have averaged ~45% of EV/2P metrics (i.e. 3P reserves have on average been ~2.2x as large as 2P reserves, for reported transactions).

Transaction metrics for interests in companies or CBM projects in China have ranged from ~$0.50/GJ to ~$1.50/GJ 3P reserves, with an average of $0.88/GJ 3P. Four out of five of these transactions occurred in 2009 or 2010 and hence are somewhat dated. The most recent transaction occurred in May 2018 (Lone Star acquisition of ASX-listed Sino Gas & Energy Limited at $1.47/GJ 3P).

All other things being equal, transaction metrics are expected to be higher than trading metrics due to acquiring companies paying a premium for control. Asset maturity is also typically higher.

Figure 3 Box and whisker plot of ASX-listed CBM transaction metrics (EV/3P)



Source: K1 Capital analysis of market transactions from February 2008 to April 2019.
International: acquisition of companies or projects with international CBM operations (8 transactions, includes China)
LNG projects: acquisition of companies or projects related to Queensland CBM to LNG projects (13)
Company takeovers: acquisition of companies not related to LNG projects (10)
Project control: acquisition of a controlling/operating interest in CBM projects (9)
Minority interests: acquisition of minority interest in CBM projects (9)
China: transactions specifically related to CBM assets in China (5 transactions from the International category above)
N.B. the B&W plot shows the minimum, first quartile, median, third quartile and maximum value of each data set

4.1.3 Resource valuation metrics

Our assumed resource valuation metrics are summarized below

Table 7 CBM resource metric summary (EV/3P+2C)

Metric	Low	Mid	High	Comment
Trading – Aus domestic	0.01	0.08	0.30	COVID-19 / oil price currently impacting sector
Trading – Aus domestic'	0.00	0.23	0.60	3Q CY19, pre-COVID-19 / oil price
Trading - international	0.01	0.04	0.09	Small sample set, illiquid, COVID-19 impact
Transaction – project cont.	0.07	0.23	0.57	Excludes non-concluded offers, 3P only (no 2C)
Transaction - China	0.50	0.88	1.47	Limited recent transactions, 3P only (no 2C)
Assumed	**0.10**	**0.20**	**0.35**	Before risking and time value adjustment

Source: K1 Capital analysis of ASX and AIM-listed companies and historical transactions

4.2 Risked project value

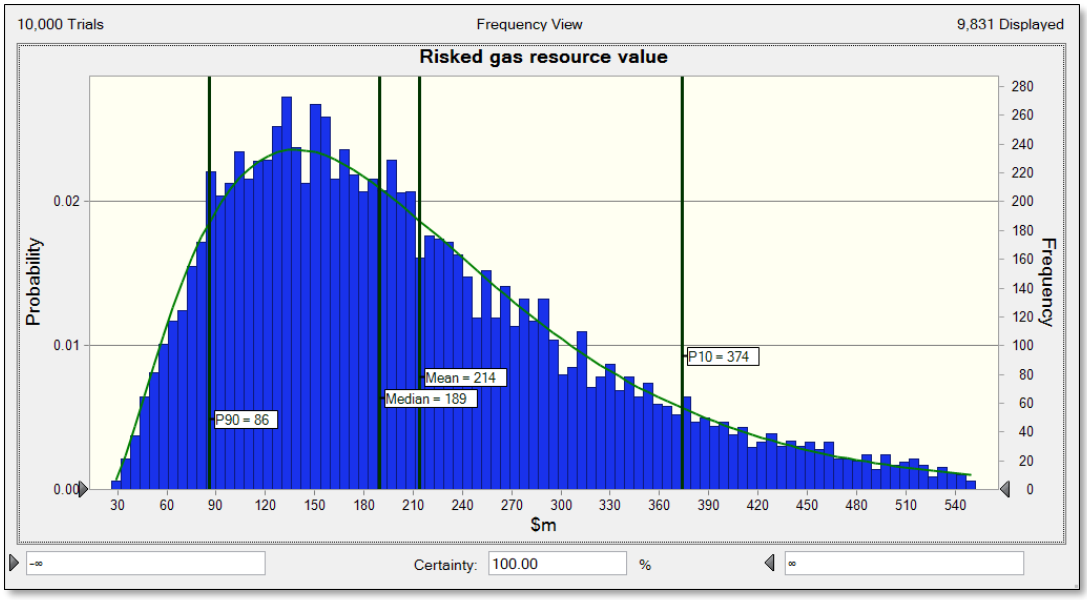
As with our September 2019 report we have estimated the risked project value of Elixir's interest in the Nomgon IX PSC building on the November 2018 independent prospective resource estimate. We assume EV/resource metrics as noted in Table 7 above, which we adjust for reserve conversion risk, time value to achieve reserve status and country risk. We have applied a range for each factor to reflect the uncertainty at this time and used Monte Carlo simulation to estimate the distribution of valuation outcomes. We have increased the mid and high case geological risk factors from 19% previously to 25% based on recent drilling (this is a judgement call, but is not inconsistent with the one good result (Nomgon-1) from four holes). This has increased the mean project value from $177m (pre-drill, September 2019) to $214m.

Table 8 Nomgon IX PSC risked project valuation

Parameter	Units	Value	Low	Mid	High	Comment triangular distributions assumed for simplicity
Risked exploration: Nomgon IX PSC						
Working interest	%	100.0	100.0	100.0	100.0	per Elixir, Nomgon IX PSC
Prospective resources (gross, unrisked)	tcf	40.1	13.6	40.1	117.2	per ERP Equipoise, 19 Nov 2018
Geological risk factor	%	25.0	19.0	25.0	25.0	low per ERP Equipoise, 19 Nov 2019
Prospective resources (net, risked)	PJ	10,472				= unrisked * geological risk factor * heating value
Conversion to contingent resources	%	50	30	50	70	assumed longer run value (initial assessment will be less)
Estimated contingent resources	PJ	5,236				= Prospective * resource conversion factor
Conversion to reserves	%	60	40	60	80	upper case per K1 Capital analysis of Australian CBM
Estimated future 2P reserves	PJ	3,141				= Contingent * reserves conversion factor
Commercial chance of success	%	50.0	40.0	50.0	60.0	mid-case per ERP Equipoise, 19 Nov 2018
Gas resource unit value (energy equiv't)	$A/GJ	0.20	0.10	0.20	0.35	K1 Capital analysis of ASX, AIM companies
Time value adjustment	years	5.0	3.0	5.0	8.0	K1 Capital estimate, yrs to similar maturity as peers
Base nominal discount rate	%	10.0	8.0	10.0	12.0	K1 Capital estimate
Country risk premium	%	5.0	1.0	5.0	9.0	per Damodaran, NYU Stern: low = China, high = Mongolia
Time value adjustment factor	-	0.497				= (1+rb+rc)^-t
Risked gas resource value	$m	156				based on median cell values
Monte Carlo valuation		Mean	P90	P50	P10	
Estimated future 2P reserves	PJ	**4,097**	**1,991**	**3,770**	**6,678**	per Monte Carlo simulation, 10,000 trials
Nomgon IX PSC (Mongolia, 100%)	$m	**214**	**86**	**190**	**372**	per Monte Carlo simulation, 10,000 trials
Implied unit gas value (risked)	$A/GJ	0.05	0.04	0.05	0.06	after project risking and time value discounting

Source: K1 Capital analysis

Figure 4 Risked gas resource value distribution



Source: K1 Capital analysis

4.3 Company valuation

We have valued Elixir based on the Nomgon-IX project valuation and incorporated G&A expenses and estimated future capital dilution in 2021 to fund an additional phase of exploration. We have assumed the pre-raising price is 2021 similar to the share price in February 2020, after the Nomgon-1 discovery and prior to the impact of Covid-19. We have also assumed all performance rights are issued. The resulting equity valuation is shown below in Table 9 (which is the same as Table 1 earlier in the report).

Table 9 Elixir equity valuation

Parameter	Units	Value	Low	Mid	High	Comment
Valuation		Mean	P90	P50	P10	
Nomgon IX PSC (Mongolia, 100%)	$m	**214**	**86**	**190**	**372**	from Monte Carlo simulation (see Section 4 of report)
Existing cash	$m	0.9				per Mar 2020 quarterly
Existing debt	$m	0.0				"
Placement & SPP	$m	1.9				$2.0m at $0.02/sh placement & SPP May 2020, net of fees
G&A costs	$m	-3.2				$1.2m/yr, per Jun 2019 quarterly, to end 2022
2020/21 work program	$m	-1.5				estimate (core hole, chip holes, possible seismic)
2021/22 work program	$m	-4.0				estimate (3 spot pilot)
Incentive options	$m	1.0				assume exercised (expiry Nov 2024)
New capital required (inc. fees)	$m	7.3				Maintain min $1.0m working cap (excludes incentive options)
Total	$m	**216**	**88**	**192**	**374**	
		(mean)				
Existing capital structure						
Current share price	$/sh	0.022				6 May 2020 closing price
Shares on issue	000,000	508.4				per Mar 2020 quarterly
Placement & SPP	000,000	100.0				$2.0m at $0.02/sh placement & SPP May 2020
Incentive options	000,000	10.0				exercise price $0.10, expire 25 Nov 2024
Performance rights - Class C	000,000	15.0				FID approval or CBM pilot program, expire 16 Dec 2023
Performance rights - Class D	000,000	17.5				drill two CBM coreholes, expire 16 Jun 2020
Estimated dilution						assumed 2021 capital raising post current program
Assumed 2021 pre-raising price	$/sh	0.040				assume same as pre-Covid-19 share price (Feb 2020)
Pre-raising market capitalization	$m	24.3				
Future new capital required	$m	7.3				from above, excludes May 2020 placement & SPP
Assumed raising discount to TERP	%	11.0				per K1 Capital industry analysis
Estimated capital raising discount	%	13.8				relative to pre-raising share price
Estimated price at which capital raised	$/sh	0.034				based on assumed pre-raising share price
New shares issued	000,000	210.9				associated with assumed capital raising
Diluted share count	000,000	**861.8**				includes incentive options and perf rights
Estimated share price	$/sh	**0.251**	**0.103**	**0.223**	**0.434**	

Source: K1 Capital analysis. Valuation as of 6th May 2020.

5. Appendices

5.1 Equity market peer group

Table 10 Peer group

Company as of 05-May-20	Code	Mkt Cap M$A	EV M$A	Description
Elixir Energy	EXR	13	13	Nomgon IX CBM PSC, South Gobi Basin, Mongolia
Australian CBM companies (6)				
Blue Energy	BLU	20	15	Conv. & unconv oil & gas exploration in Qld/NT (Bowen, Surat, Cooper, Maryborough, Wiso, McArthur Basins). ATP 814P CSG block adjacent to Arrow's Moranbah field.
Comet Ridge	COI	59	50	CSG expln/appraisal in the Bowen Basin (Mahalo JV with Santos & APLNG), Galilee Basin (own and JV with Vintage), and Gunnedah Basin (JV with Santos).
Carbon Minerals	CRM	7	3	NSW CSG exploration, Gunnedah Basin JV with Santos
Galilee Energy	GLL	103	76	CSG expln/appraisal in the Galilee Basin (Glenaras lateral pilot, Queensland) and CSG licence application in the Magallanes Basin in Chile. Withdrawing from US onshore.
State Gas	GAS	52	50	Majority interest in the Reid's Dome Gas Project (PL 231), central eastern Queensland.
Senex Energy	SXY	291	317	Oil & gas exploration and production in the Cooper Basin (JVs with Cooper and Beach) and CSG in the Surat Basin of Queensland (WSGP and Atlas domgas project).
International CBM/Mongolian companies (6)				
Kinetiko Energy	KKO	0	-1	CBM exploration in South Africa. 49% interest in the Amersfoort Project. Suspended since late 2017, pending resolution of funding issues with JV partner Badimo Gas.
NuEnergy Gas	NGY	18	20	Indonesian CBM; six PSCs in South Sumatra, Central Sumatra and East Kalimantan, including 45% Tanjung Enim PSC and 100% Bontang Bengalon PSC (East Kalimantan)
Strata-X	SXA	5	5	Serowie CSG project in Botswana, plus shallow oil, Illinois, USA
Triple Energy	TNP	1	1	MOU to acquire an 80% of Songyuan Petroleum Development Co. Ltd, Jilin Province, PRC; Aolong JV in Heilongjiang Province, PRC for coal mine methane drainage
Tlou Energy	TOU	29	27	CBM exploration in Botswana. 100% interest in the Lesedi and Mamba CBM projects. Low initial gas flowrates; successful tenderer for gas and power supply to government.
G3 Exploration	G3E	33	310	CBM E&P in China. Seven PSCs, totalling ~7,500 km2, with CNOOC and PetroChina. Two producing PSCs, two in development. Liquidators appointed Jan 2020.
Petro Matad	MATD	32	7	Conventional oil & gas exp in Mongolia: Matad Block XX 10,340 km2 near eastern border with China; Bogd Block IV and Ongi Block V 50,000 km2 in west central

Source: K1 Capital, company data. EV estimated from most recent cash and debt values (typically 31st March 2020).

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