

Elixir Energy Limited (ASX: EXR)

Excellent Nomgon-2 well results derisk resource base

Overview

Since raising \$3.3m in late May Elixir has moved quickly to advance exploration of the Nomgon IX PSC in Mongolia, acquiring seismic and drilling two wells which have expanded the CBM resource potential. Importantly, the Nomgon-2 well has delivered good gas content, coal thickness and permeability, validating the Nomgon-1 results earlier this year. The results provide increasing confidence that the permit hosts a large resource of coal suitable for CBM development, to be confirmed by further extensional drilling and pilot production testing next year. We value Elixir at \$0.27/sh (prev. \$0.25), with a range from \$0.11-0.47/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 km² adjacent to the border with China. The prospective gas resource is large, with a risked best (mid) case independent estimate of 7.6 Tcf recoverable.

Phase 2 drilling validates earlier results and expands identified resource: The Phase 2 program has confirmed the Nomgon-1 well drilled earlier this year was not a “one hit wonder”, with similarly good coal thickness and gas content and even better permeability. The Nomgon-3 stratigraphic well (a cheaper well to determine coal thickness but not quality) has extended the resource boundary, and this may expand further with the Nomgon-S4 strat hole expected to spud shortly.

Seismic has identified additional coal areas: Multiple sub-basins have been identified from 2D seismic acquired in Phase 2 (106 km) in addition to Phase 1 (132 km), which will guide locations for further drilling in 2020 and thereafter to expand the project inventory and resource size.

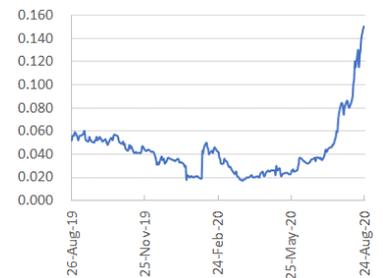
Nomgon project pilot production test in 2021: Results to date indicate the Nomgon project area is potentially attractive for CBM development and Elixir has commenced planning for a pilot test next year to determine well deliverability parameters. The close-to-fully saturated coals suggest early gas breakthrough is likely and water management should be simple.

Funding aided by in-the-money options: Elixir has ~118m listed options (ASX: EXROA), with a 31st Dec 2020 expiry and \$0.0679 strike, which if fully exercised will deliver ~\$8.0m around year end, funding much of the future program to expand resource size and derisk future development.

Price catalysts: As noted in our 6th May 2020 report we expect continued value uplift with ongoing project derisking. We expect a contingent resource assessment before year end based on Phase 1 and 2 drilling results. We expect the initial assessment will be relatively small, limited to the Nomgon project area and not representative of the full potential of the 30,000 km² PSC. Its importance will be independent confirmation of the presence of suitable coals, which we expect will be expanded with ongoing drilling.

Confidence in execution: EXR’s management has demonstrated good capability in meeting commitments. The planned pilot program is a logical next step to advance the project towards commercialization.

SHARE PRICE PERFORMANCE



Closing price as of 24th Aug 2020

CAPITALIZATION	
Last price	\$0.145
52-week range	\$0.015-0.155
Capitalization	\$96m
Cash: 30 th Jun	\$3.3m
Debt: 30 th Jun	nil
EV	\$93m
Shares	688.0m
Options/rights	147.2m
Conv Notes	-
Balance date	June
RESERVES AND PRODUCTION	
1P (30 Jun 20)	0.00 MMboe
2P “	0.00 MMboe
3P “	0.00 MMboe
2C “	0.00 MMboe
FY19a	0.00 MMboe
FY20e	0.00 MMboe
FY21e	0.00 MMboe
SHAREHOLDERS (%)	
Board/mgt	~4
Retail/insto	96
LEADERSHIP	
Chairman	Richard Cottee
MD/CEO	Neil Young
NED	Steve Kelemen

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1. Nomgon project update

1.1 Phase 2 drilling validates Phase 1 discovery

The Nomgon-1 well was been declared a gas discovery by Elixir under the terms of the PSC and the Mongolian authorities advised of this outcome in early 2020. The Nomgon-2 well, drilled in the same sub-basin, has validated the results of Nomgon-1 with similar coal thickness and gas content and even better permeability.

AS we noted in our 6th May 2020 report the Nomgon-1 discovery (and Nomgon-2 validation) confirms that the Nomgon IX PSC hosts coals in at least one sub-basin that should be suitable for CBM development. Given the size of the PSC (30,000 km²) other areas are also likely to host suitable coals.

Table 1 Nomgon IX PSC Phase 1 and Phase 2 drilling program results

Parameter well type	Units	Nomgon-1 core hole	Nomgon-2 core hole	BO-CH1 strat hole	BO-CH2 strat hole	Nomgon-S3 strat hole
Exploration phase	-	Phase 1	Phase 2	Phase 1	Phase 1	Phase 2
Spud date	d-m-y	16-Jan-20	09-Jul-20			
TD date	d-m-y		~28-Jul-20			
Drilling time	days		~21			
Total depth	m	491	550	738	890	644
Coal thickness	m	71	91	7	6	78
Thickest seam	m	49	51			
Net coal thickest seam	m	37				
Perm * height (kh)	mD.m	1.2-23.3	19.7-640.3			
Gas content (raw)	m3/t	2.4-7.5	3.4-7.4			
Gas content (raw) - avg	m3/t	5.3	5.3			
Gas content (DAF)	m3/t	8.9	tba			
Ash	%	19				
Moisture	%	9				
Gas composition - CH4	vol %	81	tba			
Gas saturation	%	~100	tba			

Notes:

Coal thicknesses have not been adjusted for dip angle

Results reported in 6 May 2020 research report updated for subsequent company revisions

Gas content and permeability are for thickest seam

Source: Elixir Energy Limited, ASX announcements (9th Dec 2019, 20th Dec 2019, 16th Jan 2020, 5th Feb 2020, 26th Feb 2020, 8th Jul 2020, 9th Jul 2020, 15th Jul 2020, 29th Jul 2020, 20th Aug 2020).

1.2 Comparison with other fields

Public domain CBM resource quality information is limited. Whilst coal thicknesses are frequently reported, coal permeability and gas content data are less common, with stock exchange releases commonly reporting qualitative descriptors or upper limits. This is in part due to the wide range of individual quality parameters, with, for example, permeability potentially varying by two or more orders of magnitude within the same field, and different results for different seams within the same field. In addition, in the case of gas content, the basis of measurement (raw or dry ash free) is commonly not disclosed.

That said, early results from the Nomgon project area are similar to some producing fields in Australia and China, supporting our view that future commercialization is a realistic objective at this time. However, economic well performance will need to be determined from one or more production pilots, with Elixir now planning for this phase of project derisking in 2021. A summary of key resource parameters for selected fields is shown below.

Table 2 Comparative CBM field resource parameters

Parameter well type	Units	Nomgon-1 core hole	Nomgon-2 core hole	Fairview	Roma	Project Atlas	GSS	GCZ
Country		Mongolia	Mongolia	STO/ORG	Senex	Senex	G3 Expl'n	G3 Expl'n
Basin		South Gobi	South Gobi	Australia	Australia	Australia	China	China
Coal depth	m	~270-400	~320-480	Bowen	Surat	Surat	Qinshui	Qingshan
Coal thickness	m	71	91	700-800	300+	220-750	574-698	636-731
Thickest seam	m	49	51	23	19	<43	11	19
Net coal thickest seam	m	37					6	7
Permeability	mD			0-575+			0.2-0.8	
Perm * height (kh)	mD.m	1.2-23.3	19.7-640.3	~2,000+			1.0-4.7	
Gas content (raw)	m3/t	2.4-7.5	3.4-7.4	12-25	2.5-4.8			4.8-26.4
Gas content (raw) - avg	m3/t	5.3	5.3					13.0
Gas content (DAF)	m3/t	8.9	tba				12.2-17.6	
Ash	%	19						
Moisture	%	9						
Gas composition - CH4	vol %	81	tba					
Gas saturation	%	~100	tba				50-61	

Notes:
 Coal thicknesses have not been adjusted for dip angle
 Results reported in 6 May 2020 research report updated for subsequent company revisions
 Gas content and permeability are for thickest seam

Source: K1 Capital analysis of company disclosures

Project selection:

- Fairview/Spring Gully is a world-class CBM field in Australia.
- Roma North and Project Atlas are examples of two recent CBM field brought into production.
- GSS and GCZ are two producing projects in China with western company involvement in conjunction with Chinese NOCs

2. Valuation

2.1 Methodology

In the absence of reserves or contingent resources to support a discounted cash flow valuation we have valued Elixir using a risked exploration and appraisal basis, with underlying resource metrics drawn from market trading and transaction multiples (discussed in our report of 5th May 2020 and updated below). 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 3 CBM resource valuation metrics summary (EV/3P+2C)

Metric	Low	Mid	High	Comment
Trading metrics				
Aus domestic	0.01	0.10	0.34	COVID-19 / oil price currently impacting sector
Aus domestic'	0.00	0.23	0.60	3Q CY19, pre-COVID-19 / oil price
International projects	0.01	0.04	0.09	Small sample set, illiquid, COVID-19 impact
Transaction metrics				
Project control	0.07	0.23	0.57	Excludes non-concluded offers, 3P only (no 2C)
China-related CBM	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

2.2 Risked project value

Our risked project value for the Nomgon-IX PSC is based on the following major assumptions.

- Resource estimate: November 2018 independent prospective resource estimate
- EV/resource metrics: drawn from market trading and transaction analysis, per Table 3 above
- Risk adjustment: project value adjusted for reserve conversion risk, project maturity (technical and commercial considerations), time value to achieve reserve status and country risk.
- Sensitivity analysis: range for each factor to reflect uncertainty, with Monte Carlo simulation to estimate the distribution of valuation outcomes.

Table 4 Nomgon IX PSC risked project valuation

Parameter	Units	Value	Low	Mid	High	Comment
Risked exploration: Nomgon IX PSC						
triangular distributions assumed for simplicity						
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	%	30.0	19.0	30.0	35.0	low per ERP Equipoise, 19 Nov 2019; mid/high per K1 Capital
Gas content	vol %	81.0				per Elixir, ASX release 15 Jul 2020
Prospective resources (net, risked)	PJ	10,178				= unrisked * geological risk factor * heating value
Conversion to contingent resources	%	60	30	60	70	assumed longer run value (initial assessment will be less)
Estimated contingent resources	PJ	6,107	810	7,540	29,993	= 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	3,664				= 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)	\$/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	182				based on median cell values
Monte Carlo valuation						
		Mean	P90	P50	P10	
Estimated future 2P reserves	PJ	4,317	2,031	3,957	7,113	per Monte Carlo simulation, 10,000 trials
Nomgon IX PSC (Mongolia, 100%)	\$m	225	92	196	393	per Monte Carlo simulation, 10,000 trials
Implied unit gas value (risked)	\$/GJ	0.052	0.045	0.050	0.055	after project risking and time value discounting

2.3 Company valuation

Our estimate of the equity valuation for Elixir is based on a risked project value for the Nomgon IX PSC and includes dilution for expected follow-on exploration. The company valuation ranges from \$94m to \$395m (previously \$88-375m), driven by the range in potential resource size and EV/resource metrics.

Table 5 Elixir equity valuation

Parameter	Units	Value	Low	Mid	High	Comment
Valuation		<u>Mean</u>	<u>P90</u>	<u>P50</u>	<u>P10</u>	
Nomgon IX PSC (Mongolia, 100%)	\$m	225	92	196	393	from Monte Carlo simulation (see Section 4 of report)
Existing cash	\$m	3.3				per June 2020 quarterly
Existing debt	\$m	0.0				"
G&A costs	\$m	-2.8				~\$1.1m/yr, per FY19/FY20 avg, to end 2022
2020/21 work program	\$m	-2.0				estimate (core hole, chip holes, seismic)
2021/22 work program	\$m	-7.0				estimate (3 spot pilot), additional core/strat drilling
Options: Dec 2020	\$m	8.1				assume exercised
Options: Nov 2024	\$m	1.0				exclude from near term capital due timing
New capital required (inc. fees)	\$m	1.4				Maintain min \$1.0m working cap (excludes incentive options)
Total	\$m	227	94	198	395	
		(mean)				
Existing capital structure						
Current share price	\$/sh	0.145				20 Aug 2020 closing price
Shares on issue	000,000	688.0				per 15 July 2020 presentation
Listed options (ASX: EXROA)	000,000	119.0				exercise price \$0.0679, expire 31 Dec 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 shares/other	000,000	3.0				
Estimated additional dilution						assumed 2021 capital raising post current program
Assumed 2021 pre-raising price	\$/sh	0.145				assume current share price
Pre-raising market capitalization	\$m	99.8				assume current share count
Future new capital required	\$m	1.4				from above, excludes May 2020 placement & SPP
Assumed raising discount to TERP	%	11.0				per K1 Capital industry analysis
Estimated capital raising discount	%	11.1				relative to pre-raising share price
Estimated price at which capital raised	\$/sh	0.129				based on assumed pre-raising share price
New shares issued	000,000	10.8				associated with assumed capital raising
Diluted share count	000,000	845.8				includes incentive options and perf rights
Estimated share price	\$/sh	0.268	0.111	0.234	0.467	

Source: K1 Capital analysis. Valuation as of 20th August 2020.

2.4 Equity market trading metrics

Table 7 below list current trading metrics for Elixir and selected peer companies. Trading metrics for ASX-companies with international CBM operations range from \$0.01 to \$0.08/GJ 3P+2C, with an average of \$0.04/GJ. Domestic focused companies trade at higher levels, in part due to lower perceived country risk and more mature projects. The only domestic mid-cap producing CBM company, Senex, currently trades at \$0.34/GJ 3P+2C, and \$0.51/GJ 2P.

Table 6 Reserve & resource spot price equivalence factors

Commodity	units	Price 20-Aug-20	Price \$US/boe	Price factor	Source
USD/AUD forex	\$US/\$A	0.7172	-	-	Reserve Bank of Australia
Brent	\$US/bbl	45.06	45.06	1.00	Bloomberg
WTI	\$US/bbl	42.91	42.91	0.95	"
HH	\$US/mmBtu	2.35	13.63	0.30	"
EC Australia	\$/GJ	3.60	15.80	0.35	AEMO Wullumbilla benchmark 20 Aug
WC Australia	\$/GJ	3.83	16.81	0.37	gasTrading spot price Jul '20
Europe	\$US/mmBtu	1.80	10.44	0.23	World Bank, Netherlands TTF, Jul '20
LNG	\$US/mmBtu	6.60	38.30	0.85	85% of Brent (14.7% slope)
LNG JPN/KOR spot	\$US/mmBtu	5.20	30.16	0.67	Jul 2020
China	\$US/mmBtu	5.19	30.10	0.67	Shanghai Pet & NG Exchange Aug '20
LPG	\$US/t	355	31.14	0.69	Saudi Contract Price - Aug '20

Source: K1 Capital analysis

Table 7 Reserve and resource trading metrics

Company	Code	Last Price 20-Aug-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	0.130	688	89	86	-	-	-	-	-	-	-
Australian CBM companies (6)				683	697	1,027.1	1,644.9	5,310.5	0.68	0.13	0.10	15
Blue Energy	BLU	0.036	1,327	48	43	71.0	298.0	1,166.0	0.61	0.04	0.03	-
Comet Ridge	COI	0.081	728	59	54	106.0	183.0	286.0	0.51	0.16	0.12	-
Carbon Minerals	CRM	0.290	19	5	2	-	-	183.0	-	0.01	0.01	-
Galilee Energy	GLL	0.380	271	103	85	-	-	3,011.5	-	0.04	0.03	-
State Gas	GAS	0.550	144	79	78	-	-	536.0	-	0.18	0.15	-
Senex Energy	SXY	0.268	1,453	389	434	850.1	1,163.9	128.0	0.51	0.46	0.34	24
International companies (7)				135	380	1,122.4	5,744.0	4,672.6	0.34	0.08	0.04	65
Kinetiko Energy	KKO	0.065	543	35	34	-	-	2,463.3	-	0.02	0.01	0
NuEnergy Gas	NGY	0.008	1,481	12	14	177.6	177.6	87.8	0.08	0.06	0.05	19
Strata-X	SXA	0.059	113	7	6	-	-	75.2	-	0.10	0.08	-
Tlou Energy	TOU	0.037	513	19	17	139.0	1,458.7	731.0	0.13	0.02	0.01	-
Triple Energy	TNP	0.010	72	1	1	-	-	-	-	-	-	20
G3 Exploration	G3E	0.175	156	27	276	805.7	4,107.7	1,315.3	0.34	0.15	0.05	90
Petro Matad	MATD	0.051	674	34	31	-	-	-	-	-	-	-

Source: K1 Capital analysis of company data. Expressed relative to the spot east coast Australian gas price of \$3.60/GJ. G3 Exploration liquidators appointed Jan 2020.

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