Elixir Energy Limited (ASX: EXR)

Prospective resource upgrade

Overview

ERC Equipoise has updated its independent review of Elixir's prospective resources, lifting the mid-case risked estimate (2U) by 92% to 14.6 tcf (prev. 7.6 tcf). The increase recognizes greater gas in place and higher geological chance of success (30% vs. 19% prev.), based on recent drilling. Results from the two core holes indicate high gas content (8.6-8.9 m3/t DAF) and fully saturated coals, indicating good CBM potential. With cash at bank and inthe-money options due by end December Elixir is funded to continue exploration and appraisal in the new year. We value Elixir at \$0.29/sh (prev. \$0.27), with a range from \$0.11-0.52/sh, depending on resource outcomes.

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 14.6 Tcf recoverable. Phase 2 drilling expands prospective resource: Elixir has drilled nine wells (two core, seven stratigraphic) spanning 62 km across the PSC. All holes have intersected coals, ranging in thickness from 6 to ~90 m. The two core holes delivered gas contents of 8.9 and 8.6 m3/t on a dry ash free basis, with good permeability and full saturation, indicating gas flow from future pilot and production wells should not require extended dewatering.

Contingent resource assessment to follow: An initial contingent (i.e. discovered) resource estimate for the Nomgon sub-basin is expected next year following further analysis of recent drilling data. We would expect initial discovered volumes to be small, limited to the Nomgon project area. However, independent confirmation of suitable CBM coals will reduce project risk and contingent volumes should increase with ongoing drilling.

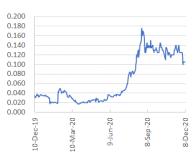
Nomgon project pilot production test in 2021: Gas content, permeability and seam thickness results to date indicate the Nomgon project area is potentially attractive for CBM development. Elixir has commenced planning for a pilot test next year to determine well deliverability parameters.

Funding aided by in-the-money options: 41m \$0.0679 Dec-20 listed options (ASX: EXROA) have already been exercised, raising \$2.8m, with a further 77m remaining. If fully exercised these will deliver a further \$5.2m by year end, funding much of the 2021 program to expand resource size and derisk future development.

Increasing industry activity: Interest in Mongolian CBM continues to build given large prospective resources and proximity to Chinese gas markets. Australian-based companies, Telmen Resource and High Grade Metals, have commenced field activity, and Korea's Kogas has partnered with Mongolia's Erdenes Methane. Elixir's first mover advantage should assist future gas commercialization.

Price catalysts: Contingent resource assessment; commencement of pilot program and well performance results; Nomgon project area extensional drilling; expansion of exploration drilling to other sub-basins.

SHARE PRICE PERFORMANCE



Closing price as of 8th Dec 2020

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CAPITALIZATION	
Last price	\$0.105
52-week range	\$0.015-0.18
Capitalization	\$77m
Cash: 30 th Sep	\$2.8m
Debt: 30 th Jun	nil
EV	\$74m
Shares	733.2m
Options/rights	105.8m
Conv Notes	-
Balance date	June
RESERVES AND P	RODUCTION
1P (30 Jun 20)	0.00 MMboe
2P "	0.00 MMboe
3P "	0.00 MMboe
2C "	0.00 MMboe
FY20a	0.00 MMboe
FY21e	0.00 MMboe
FY22e	0.00 MMboe
SHAREHOLDERS	<u>(%)</u>
Board/mgt	~4
Retail/insto	96
LEADERSHIP	
Chairman	Richard Cottee
MD/CEO	Neil Young
NED	Steve Kelemen
NED	Anna Sloboda

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

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1. Prospective resource upgrade

The current prospective resource assessment incorporates information obtained from recent core and stratigraphic holes, resulting in an increase in gas-in-place, unrisked prospective resources and geological chance of success. Both the current and previous (November 2018) resource assessments were undertaken by ERC Equipoise.

Figure 1 Current Nomgon IX Prospective Resource assessment (9th December 2020)

Prospect Volumetrics (in Tcf)	Gross Ur	risked Pro	ospective	Resource	Working		Net Risked Prospective Resources					
	IU	2U	Mean	3 U	Interest	cos	IU	2U	Mean	3U		
Nomgon IX CBM	17	48	66	133	100%	30%	5.0	14.6	19.9	40.3		

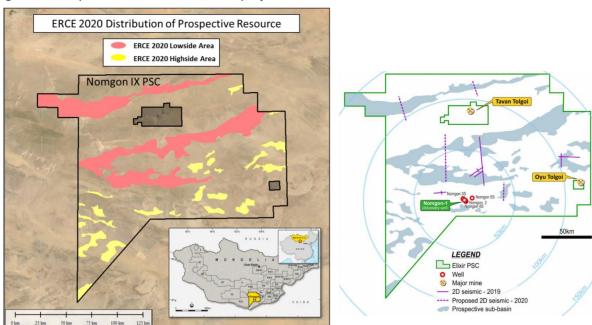
Source: Elixir Energy Limited, "Prospective Resources Increased", 9^{th} December 2020, p 1

Figure 2 Previous Nomgon IX Prospective Resource assessment (November 2018)

Nomgon IX CBM PSC: Mongolia		Low	Best	High
Probabilistic Calculations	Unit	(1U)	(2U)	(3U)
Unrisked Recoverable Prospective Resources	TCF	13.6	40.1	117.2
Chance of Geological Discovery			0.19	
Risked Recoverable Prospective Resources*	TCF	2.6	7.6	22.2

Source: Elixir Petroleum Limited, "Nomgon IX Prospective CBM Resource", 19th November 2018, p 1.

Figure 3 Prospective resource areas and project area location

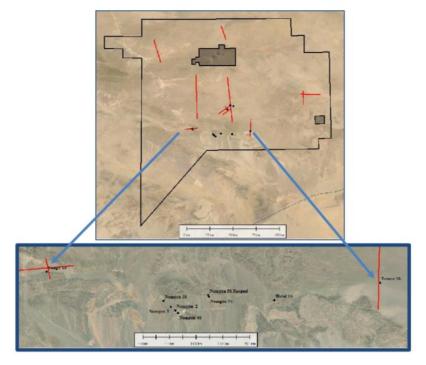


Source: Elixir Energy Limited, "Prospective Resources Increased", 9th December 2020, p 1 and ""Noosa Investor Conference Presentation", 12th November 2020, p 12

2. Drilling program results

Elixir has drilled two core holes and seven stratigraphic holes in one sub-basin in Nomgon IX PSC. Well locations and drilling results are shown below in Figure 4 and Table 1 respectively. Given the size of the PSC (30,000 km²) we expect other areas are likely to host suitable coals. Elixir's 2021 exploration will target additional sub-basins in the "low side" areas, shown in Figure 3 above.

Figure 4 Nomgon IX PSC well locations



Source: Elixir Energy Limited, "Noosa Investor Conference Presentation", 12th November 2020, p 14

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

Parameter	Units	Nomgon-1	Nomgon-2	BO-CH1	BO-CH2	Nomgon-S3	Nomgon-S4	Nomgon-5S	Hutul-1S	Yangir-1S
well type		core hole	core hole	strat hole	strat hole	strat hole	strat hole	strat hole	strat hole	strat hole
Country		Mongolia	Mongoli							
Basin		South Gobi	_	•	South Gobi	South Go				
Exploration phase		Phase 1	Phase 2	Phase 1	Phase 1	Phase 2	Phase 2	Phase 2	Phase 2	Phase
Spud date	- -	16-Jan-20	09-Jul-20	Pilase 1	Pilase 1			~Oct 20	~Oct 20	Nov 2
•	d-m-y			720	000	Aug 20	Aug 20			
Total depth	m	491	550	738	890	644	202	450	560	347
Coal depth	m	~270-400	~320-480	_	_					
Coal thickness	m	71	92	7	6	88	35	47	6	2
Thickest seam	m	49	51							
Net coal thickest seam	m	37	51			22	27			
Permeability	mD	0.1-2.4	2.1-91.5							
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	8.6							
Ash	%	19								
Moisture	%	9								
Gas composition - CH4	vol %	81	tba							
	%	~100	~100							

Source: Elixir Energy Limited, ASX announcements

2.1 Comparison with other fields

We have updated our previous comparison (24th August 2020) of the Nomgon IX well results with further public domain CBM data for Mongolian and international CBM projects. Early results from the Nomgon project area are similar to producing fields in Australia and China, supporting our view that future commercialization is a realistic objective, subject to satisfactory pilot well performance testing, expected in 2021.

Table 2 Comparative CBM field resource parameters

Parameter	Units	Nomgon-1	Nomgon-2	Noyon-1	Nalaikh	Nariin Sukhait	Baganuur	Borteeg	GSS	GCZ	Fairview	Roma	Project Atla
well type		core hole	core hole	core hole	core hole	СММ	CMM	core hole					
Company		Elixir	Elixir	StormCat	Kogas	US EPA	US EPA a	as/Erendene	G3 Expl'n	G3 Expl'n	STO/ORG	Senex	Sene
Country		Mongolia	Mongolia	Mongolia	Mongolia	Mongolia	Mongolia	Mongolia	China	China	Australia	Australia	Australia
Basin		South Gobi		ariin Sukhait					Qinshui	Qingshan	Bowen	Surat	Sura
Spud date	d-m-y	16-Jan-20	09-Jul-20	2005	2010	2013	2013	2014					
TD date	d-m-y		~28-Jul-20										
Total depth	m	491	550	~460	~350			783-933					
Coal depth	m	~270-400	~320-480					363-655	574-698	636-731	700-800	300+	220-750
Coal thickness	m	71	92	30-70			2.4-52.8		11	19	23	19	<43
Thickest seam	m	49	51				17		6	7			
Permeability	mD	0.1-2.4	2.1-91.5						0.2-0.8		0-575+		
Perm * height (kh)	mD.m	1.2-23.3	19.7-640.3						1.0-4.7		~2,000+		
Gas content (raw)	m3/t	2.4-7.5	3.4-7.4	2.4-11.2				0.06-12.06		4.8-26.4	12-25	2.5-4.8	
Gas content (raw) - avg	m3/t	5.3	5.3	7.8	<5					13.0			
Gas content (DAF)	m3/t	8.9	8.6						12.2-17.6				
Ash	%	19	•	8-15		•	12-17						
Moisture	%	9					31.8-35.9						
Gas composition - CH4	vol %	81	tba		94			30-95					
Gas saturation	%	~100	~100	under					50-61				

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

- Fairview/Spring Gully is a world-class CBM field in Australia.
- Roma North and Project Atlas are examples of two recent CBM fields brought into production.
- GSS and GCZ are two producing projects in China with western company involvement in conjunction with Chinese NOCs.
- Noyon, Nariin Sukhait, Baganuur and Borteeg are Mongolia CBM projects evaluated at various stages but not developed.

3. Valuation

3.1 Methodology

In the absence of reserves or contingent resources to support a discounted cash flow valuation we continue to value 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 24th August 2020). 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 producers	0.48	1.09	1.18	Beach, Cooper, Senex
Aus domestic explorers	0.02	0.07	0.14	Recovering post COVID-19/oil price impact
International projects	0.03	0.05	0.32	Small sample set, illiquid
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 CBM	0.05	0.15	0.50	Before risking and time value adjustment

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

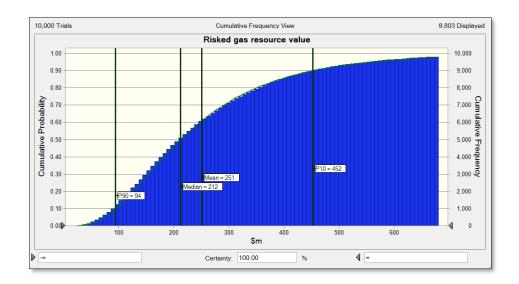
3.2 Risked project value

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

- Resource estimate: December 2020 independent prospective resource estimate. Our previous valuation was based on the November 2018 assessment. We had previously assumed a mid-case geological chance of success of 30%, based on drilling results.
- EV/resource metrics: drawn from market trading and transaction analysis, per Table 3 above (we have revised our mid-case estimate down somewhat, from \$0.20/GJ to \$0.15/GJ, but increased our high case value, reflecting current trading multiples)
- 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.

Units Value Risked exploration: Nomgon IX PSC triangular distributions assumed for simplicity 100.0 100.0 100.0 per Elixir, Nomgon IX PSC Working interest Prospective resources (gross, unrisked) tcf 48.0 17.0 48.0 133.0 per ERP Equipoise, 9 Dec 2020 Geological risk factor % 25.0 30.0 35.0 mid per ERP Equipoise, 9 Dec 2020 vol % 81.0 per Elixir, ASX release 15 Jul 2020 Gas content Prospective resources (net, risked) 12,184 = unrisked * geological risk factor * heating value % 60 Conversion to contingent resources 30 70 assumed longer run value (initial assessment will be less) ΡJ 7,310 Estimated contingent resources 1,332 9,025 34,037 = Prospective * resource conversion factor Conversion to reserves % 40 60 80 upper case per K1 Capital analysis of Australian CBM Estimated future reserves PΙ 4,386 = Contingent * reserves conversion factor Commercial chance of success % 40.0 60.0 mid-case per ERP Equipoise, 19 Nov 2018 Gas resource unit value (energy equiv't) \$A/GJ 0.15 0.05 0.35 K1 Capital analysis of ASX companies with international ops 3.0 4.0 Time value adjustment 4.0 8.0 K1 Capital estimate, yrs to similar maturity as peers years Base nominal discount rate 10.0 8.0 10.0 12.0 K1 Capital estimate % Country risk premium % 1.0 5.0 9.0 per Damodaran, NYU Stern: low = China, high = Mongolia Time value adjustment factor 0.572 $= (1+rb+rc)^{-t}$ \$m based on median cell values Risked gas resource value Monte Carlo valuation P50 P10 Mean P90 ΡJ 8.671 per Monte Carlo simulation, 10.000 trials Estimated future reserves 5,380 2,669 4,972 Risked gas resource value Śm 251 94 212 452 per Monte Carlo simulation, 10,000 trials Implied unit gas value (risked) \$A/GJ 0.047 0.035 0.043 0.052 after project risking and time value discounting

Table 4 Nomgon IX PSC risked project valuation (risked gas resource value)



3.3 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 \$96m to \$454m (previously \$94-395m), driven by the range in potential resource size and EV/resource estimates.

Table 5 Elixir equity valuation

Parameter	Units	Value	Low	Mid	High	Comment
Valuation		Mean	P90	P50	<u>P10</u>	
Risked gas resource value	\$m	251	94	212	452	from Monte Carlo simulation (see Section 4 of report)
Existing cash	\$m	2.8				per Sep 2020 quarterly
Existing debt	\$m	0.0				п
G&A costs	\$m	-2.5				~\$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	-9.0				estimate (3 spot pilot), core/strat drilling, new basins
Options: Dec 2020 already exercised	\$m	2.8				exercised between 30 Sep and 7 Dec 2020
Options: Dec 2020	\$m	5.2				assume exercised
Options: Nov 2024	\$m	1.0				exclude from near term capital due timing
New capital required (inc. fees)	\$m	3.8				Maintain min \$1.0m working cap (excludes incentive options
Total	\$m	253	96	214	454	
		(mean)				
Existing capital structure		, ,				
Current share price	\$/sh	0.105				8 Dec 2020 closing price
Shares on issue	000,000	733.2				per 7 Dec 2020 ASX release
Listed options (ASX: EXROA)	000,000	77.2				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	16.0				FID approval or CBM pilot program, expire 16 Dec 2023
Performance shares/other	000,000	2.6				
Estimated additional dilution						assumed 2021 capital raising post current program
Assumed 2021 pre-raising price	\$/sh	0.105				assume current share price
Pre-raising market capitalization	Śm	77.0				assume current share count
Future new capital required	\$m	3.8				from above
Assumed raising discount to TERP	%	11.0				per K1 Capital industry analysis
Estimated capital raising discount	%	11.5				relative to pre-raising share price
Estimated price at which capital raised	\$/sh	0.093				based on assumed pre-raising share price
New shares issued	000,000	40.6				associated with assumed capital raising
Diluted share count	000,000	879.6				includes incentive options and perf rights
Estimated share price	\$/sh	0.288	0.109	0.243	0.516	

Source: K1 Capital analysis. Valuation as of 9th December 2020.

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4. Appendix 1: 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 \$0.04 to \$0.11/GJ 2P+0.8*2C for the three most active companies, Kinetiko, Tlou and Renergen. 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 \$0.48/GJ 3P+2C, and \$0.64/GJ 2P+0.8*2C.

Table 6 Reserve & resource spot price equivalence factors

Commodity	units	Price	Price	Price	Source
		09-Dec-20	\$US/boe	factor	
USD/AUD forex	\$US/\$A	0.7426	-	-	Reserve Bank of Australia
Brent	\$US/bbl	48.87	48.87	1.00	Bloomberg
WTI	\$US/bbl	45.63	45.63	0.93	"
Henry Hub	\$US/mmBtu	2.45	14.21	0.29	II .
EC Australia	\$A/GJ	7.10	32.27	0.66	AEMO Wallumbilla firm bench'k 8 Dec
WC Australia	\$A/GJ	3.38	15.36	0.31	gasTrading spot price Nov '20
Europe	\$US/mmBtu	4.85	28.13	0.58	World Bank, Netherlands TTF, Nov '20
LNG	\$US/mmBtu	7.16	41.54	0.85	85% of Brent (14.7% slope)
LNG JPN/KOR spot	\$US/mmBtu	6.21	36.02	0.74	Nov 2020 contract price
SAfrica	\$US/mmBtu	7.00	40.60	0.83	est. field gate price @ \$US52 Brent
LPG	\$US/t	455	39.91	0.82	Saudi Contract Price - Dec '20
Helium	\$US/kscf	210	1,183	24.20	USGS Mineral Comm Summary 2020

Source: K1 Capital analysis

Table 7 Reserve and resource trading metrics

Company	Code	Last Price	Total Shares	Mkt Cap	EV	2P	3P	2C	EV/2P	EV/ (2P+0.8*2C)	EV/ (3P+2C)	Gearing D/(D+E)
		09-Dec-20	(million)	M\$A	M\$A	PJe'	PJe'	PJe'	\$A/GJe	\$A/GJe	\$A/GJe	%
Elixir Energy	EXR	0.100	733	73	68	-	-	-	-	-	-	-
Australian CBM (5)				454	410	177.0	481.0	5,182.5	2.31	0.09	0.07	-
Blue Energy	BLU	0.100	1,327	133	129	71.0	298.0	1,166.0	1.81	0.13	0.09	-
Comet Ridge	COI	0.074	728	54	49	106.0	183.0	286.0	0.46	0.15	0.10	-
Carbon Minerals	CRM	0.390	19	7	4	-	-	183.0	-	0.03	0.02	-
Galilee Energy	GLL	0.640	271	174	155	-	-	3,011.5	-	0.06	0.05	-
State Gas	GAS	0.500	173	87	73	-	-	536.0	-	0.17	0.14	-
ASX International CBM (5)				261	237	450.0	1,272.3	3,927.5	0.53	0.07	0.05	1
Kinetiko Energy	KKO	0.130	543	71	70	-	-	2,463.3	-	0.04	0.03	0
Strata-X	SXA	0.080	127	10	9	-	-	29.9	-	0.40	0.32	-
NuEnergy Gas	NGY	0.012	1,481	18	19	87.0	87.0	43.0	0.22	0.15	0.14	15
Tlou Energy	TOU	0.064	513	33	31	53.0	555.6	278.4	0.59	0.11	0.04	-
Renergen	RLT	1.100	118	129	107	310.1	629.7	1,112.9	0.35	0.09	0.06	-
ASX oil & gas producers (3	•			5,310	5,451	3,510.8	1,504.5	1,479.6	1.55	1.16	1.09	8
Beach Energy	BPT	1.850	2,278	4,215	4,206	2,398.2	-	1,172.9	1.75	1.26	1.18	3
Cooper Energy	COE	0.365	1,627	594	690	310.8	414.3	227.8	2.22	1.40	1.07	28
Senex Energy	SXY	0.345	1,453	501	556	801.8	1,090.2	78.9	0.69	0.64	0.48	20

Source: K1 Capital analysis of company data. Expressed relative to the spot east coast Australian gas price of \$7.10/GJ. G3 Exploration liquidators appointed Jan 2020.

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