

# Gobi H2 Vision

L.	<b>500,000 tonnes</b> per annum of H2 sales	2.	<b>27.5 TWh</b> p.a. of renewable electrical energy generated			
	Annual revenues of <b>US\$Bs</b>		<b>6.3 GW</b> of wind and solar capacity	SB Energy		
	Scale-able upwards		5 GW of electrolysers installed	SB Energy Corp. and Elixir Energy Ltd. Sign a Memorandum of Understanding to Cooperate on Research and Development of a Green Hydrogen Project in Mongolia June 17, 2022		
3.	<b>4.5M tonnes</b> of coking coal replaced in target steel making market	4.	<b>US\$Bs</b> of investment attracted to Mongolia Major new Government tax revenues and <b>economic</b>			
	<b>11M tonnes</b> of CO2 emissions avoided		activity Replacement for coal exports			

Gobi H2

### Company Overview

Elixir's main asset is its 100% owned Nomgon IX Coal Bed Methane (CBM\*) Production Sharing Contract (PSC) project in the South Gobi region of Mongolia

Highly experienced CSG team – first mover in taking Australia's leading skills to Mongolia

Located on Mongolian/Chinese border with excellent infrastructure, mines and planned pipelines

This location provides many market options – including the *Gobi H2* project

Strong balance sheet funding aggressive exploration and appraisal program for years to come

\* Coal Seam Gas – CSG – is usually referred to as CBM outside Australia



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### Capital Structure / Board

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Capital Structure	Current (pre-raise)			
No of Shares	<b>892</b> M			
Performance Shares & Options	<b>32</b> M			
Market Capitalisation (at 15c)	\$ <b>134M</b>			
Cash (at 31st March - unaudited)	\$ <b>25</b> M			
Enterprise Value	\$ <b>109</b> M			
Share Price				



### Highly experienced CSG team



### Richard Cottee

### Non-Executive Chairman

Former Managing Director of CSG focused Queensland Gas Corporation (QGC), taking it from market cap of \$20M to \$5.7B

Other former CEO positions include CS Energy, NRG Europe & Central Petroleum

### **Neil Young**

### Managing Director

Former Business Development Manager at Santos, where he helped build Santos' CSG business Has worked in Mongolia since 2011

### Stephen Kelemen Non-Executive Director

Extensive technical and commercial career at Santos, including managing its CSG business Current Non Executive Director at CSG focused Galilee Energy (GLL)

### Anna Sloboda

### Non-Executive Director

Previous employers include Lehman Bros, Clough, Curtin University & Trans-Tasman Resources Ex-USSR background and experience of working in China

# Introduction – Hydrogen 101

- Hydrogen (H2) is the most common element in the universe but very rare as an element on Earth
- Hydrogen is common as a constituent of molecules readily available on Earth such as water and methane
- H2 can be obtained by separation processes from these. It is not a primary fuel source
- Hydrogen is therefore an *energy carrier or vector* e.g. it can be used to move and store renewable electricity
- QG [SON A | Combusting H2 produces heat (similar to hydrocarbons such as CH4) which can be used to generate electricity, and be used in industrial processes such as steel-making, etc
  - The key attractive feature of using H2 as an energy source is that its combustion does not produce greenhouse gases like CO2 – only water
  - In the absence of Government policies to reduce greenhouse emissions, H2 only currently serves niche markets such as oil refining
    - However, wide-spread international targets to meet net zero targets will require such Government policies hence H2 is expected to become a major part of the global energy mix in the decades to come

# Introduction – the Colours of Hydrogen (H2)

The 3 main ways
to produce H2
are illustrated:
In descending current cost
In ascending pollution levels
Net zero by 2050
targets are predicted to
require massive
clean H2
production



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### Predicted Hydrogen Uses Inevitable ersonal use 07 02 03 04 05 06 07 balancing **Uncompetitive**

Inner Mongolian Steel Mills are an excellent target market for Mongolian H2

Fertiliser | Food industry | Methanol | Hydrocracking | Desulphurisation

Long-haul aviation | Shipping | Steel | Chemical feedstock | Seasonal power shortage

Medium-haul aviation | Long-distance trains | e-Fuels, specialist vehicles | Local CO2 remediation

Long distance trucks & coaches | Coastal & inland vessels | High-temperature industrial heat

Short-haul aviation | local ferries | Commercial heating | Island grids | Clean power inputs

Light aviation | Rural & regional trucks | Mid/Low-temperature industrial heat | Domestic heating

Metro trains & buses | H2FC cars | Urban delivery | 2/3 – wheelers | Bulk e-Fuels | Power system

Source: Leibreich Associates

# Chinese H2 Market Opportunities

- Elixir's key strategic rationale for exploring for CH4 in Mongolia is the locational advantage that gives in supplying the World's largest energy importer to its South
- Bloomberg New Energy Finance concluded that China's population size and geographical nature means in the long term it have to import renewable energy – directly as electricity or as green H2

Sinopec plans to spend \$4.6 bln on hydrogen energy by 2025 Reuters - 30 August 2021

PetroChina sets up \$1.5bn clean-energy investment fund Nikkei Asia – 20 April 2021

**Chinese oil giant CNOOC** adds green hydrogen to energy transition plays Globuc – 23 September 2020



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# Hydrogen Delivery Costs

Around 2/3 of the cost of producing green H2 are the cost of renewables Shipping H2 by boat costs multiples (~\$20/GJ) of shipping the same energy as CH4 (~\$5/GJ) The delivered cost of H2 is LOS J therefore all about the quality of renewable energy and the cost of delivery Access to markets by pipeline is massively

advantaged over seaborne supplies - Mongolia can supply H2 to Chinese markets by pipeline

Cost of gas-to-gas hydrogen transportation, including conversion and reconversion - 2030s For hydrogen production of ~15PJ/year



Source: Rystad Energy research and analysis commissioned by Elixir Energy -

# Gobi H2 Project

- Mongolia combines:
  - **Exceptional renewable** resources
  - A H2 market that can be reached by pipeline not boat
- These advantages make Gobi H2 a potential Tier One globally green hydrogen export project
- **Recent SB Energy MOU** provides validation for the concept

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- The primary goal for 2022 is to materially advance a 10 MW pilot project
- Elixir and SBE are pursuing the elements required for this under the MOU



Project finance plans

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# **Complementary Capabilities**

- Elixir's natural gas related operations in Mongolia require:
  - Good relationships with multiple levels of Government
  - Ongoing effective engagement with different energy related Ministries and regulators
  - Ensuring local Government bodies and their communities are supported and their potential concerns addressed
- Demonstrated local support given in recent years: annual cash contributions under PSC; COVID related donations; water wells drilled; livestock feed provided; community events sponsorsed; local economic injections from e.g. supplies for drilling camps; etc
- The Company's existing staff, relationships, knowledge and goodwill therefore provide it with a very strong local relationship platform on which to build *Gobi H2*
- At the national level, Elixir has H2 sharing relationships with various Ministries (e.g. MOU with Ministry of Energy)



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# Water supplies

- Water is the key physical feedstock for green H2
- However, water costs are a trivial part of overall green H2 production costs
- The physical volumes of water required are much less than for other industrial processes already present (or planned) in the Gobi region, e.g.:
  - Gobi H2 0.5mtpa project requires ~1/6 of water currently used at Oyu Tolgoi
- Water's biggest issues are likely to be political rather than economic community engagement is vital right from the beginning
- Elixir has engaged an experienced water drilling company who has identified locations in the South Gobi region to drill new water wells (drilling due in next few months)
- Brackish water preferred less politically challenging than fresh water



Erdenes Drilling exploring for water

# Sodar

- In 2021 Elixir imported Australian built Sodar equipment into Mongolia to measure wind and solar resources to bankable standards
- The Sodar has been deployed to the South Gobi – strong wind resources measured to date (~ one year's data obtained)
- Solar equipment more recently deployed
- More SODARs recently delivered
- Locations for deployment identified by in-country renewable energy specialists



# Pilot Project For personal use only

- Gobi H2 will develop a pilot project in the medium term
- The pilot will serve to demonstrate viability and create confidence with multiple stakeholders: customers, policy makers, financiers, potential partners, local communities, etc
- Seaborne H2 export projects less able to demonstrate scalability in this fashion
- A notional 10 MW electrolyser pilot is proposed using renewable electricity generated in the Gobi region
- A number of possible foundation customers are under consideration – in Mongolia and China
- Project finance to be sought Elixir is working with the Mongolia Green Finance Corporation and briefing various Ulaanbaatar based IFIs (e.g. ADB, EBRD & IFC) with H2 related mandates



## Partnering

- Elixir is a small (but nimble) ASX listed company that has been developing the *Gobi H2* project – the first of its kind in Mongolia
- Elixir recently signed a MOU with SB Energy (SBE) – a wholly owned subsidiary of Japan's SoftBank Group – under which both parties will pursue the potential development of the *Gobi H2* project
- SBE currently operates the world-class 50 MW Tsetsii wind-farm in the Gobi and this is its first green H2 venture
- SBE brings substantial attributes to the *Gobi H2* project, including strong international relationships, balance sheet and strong finance raising capabilties, high quality regional wind data, etc



### Summary

	Most credible international energy experts now see <b>hydrogen</b> as playing a <b>very large</b> <b>role in the future</b> <b>de-carbonized</b> <b>global energy</b> <b>system</b>	2.	<b>Hydrogen</b> is not a fuel existing on Earth as an element – rather it <b>must be</b> <b>produced from</b> <b>other energy</b> <b>sources</b>	3.	It is therefore intrinsically more expensive than the primary energy sources it can be produced from – and its <b>role is</b> <b>therefore as an</b> <u>energy</u> <u>vector/carrier</u> – in time and/or space	4.	The physical nature of hydrogen means that it is very expensive to ship long distances – <b>sources of</b> <b>hydrogen production</b> <b>adjacent to large users</b> are therefore massively <b>competitively advantaged</b>
<b>5</b> .	Elixir's existing sphere of operations in <b>Southern Mongolia</b> is one such <b>massively</b> <b>advantaged</b> <b>location</b>	6.	Additionally, the <b>quality</b> of <b>renewable energy</b> <b>resources</b> in this region are also top tier – and in particular the wind/solar capacity factor is very high	7.	In recognition of these factors – and using the experience, personnel and skills the Company has developed over many years – Elixir is developing the Gobi H2 project	8.	A <b>MOU between Elixir</b> <b>and SBE</b> serves as a platform to rapidly progress a pilot green H2 project – then pursue gigawatt scale projects

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