

8 May 2023

## Initiation of Coverage: Targeting World's largest "Green" Helium resource in Tanzania

### NEED TO KNOW

- Naturally occurring (green) Helium is rare and very valuable, and NHE has potentially the world's largest green helium resource in its Tanzanian acreage. Exploration success would transform NHE.
- Two wells in Q3 2023, funded for up to US\$20M by a farm-in partner, subject to binding farm-in agreements.
- Management has extensive exploration records in east Africa over ~20 years. The upcoming exploration phase follows ~7years of preparatory work.

**NHE's Rukwa Basin acreage has independently certified, prospective helium resources of 175 Bcf (100% basis)** which is world scale. Naturally occurring Helium requires unique geology, which exists in the Rukwa Basin where Helium is detected at surface in world-high concentrations.

**Two exploration wells are planned in Q3- 2023**, with costs up to US\$20M carried by a farm-in partner, subject to execution of a binding agreement, in return for a 50% working interest in the Rukwa licenses. The wells target a combined 16.5 Bcf of Helium (gross). Additionally, several prospects are identified on trend to provide future drilling opportunities.

**The management team have deep experience and considerable success** in similar geologies along the East African Rift historically in oil and gas. In-house capability is augmented by 5-year agreements with global helium experts.

### Investment Thesis

**The Helium market is tightening**, and whole-sale prices are in an uptrend. Helium is a critical input to high-tech industries but 95% of supply is as a by-product from petroleum production and ~60% is from Russia & the Middle East.

**Catalysts to drive a re-rating** in the near term are (1) completion of the farm-out agreement and rig contracts, (2) Exploration results in Q3 2023, and (3) commercial studies and production concepts to fast-track production.

**A future commercial project is assessed at ~A\$2.60/share on an un-risked basis.** Our base-case valuation is heavily risked given the uncertainties that lie ahead, however the analysis points to manifold upside in the event of success.

### Valuation: A\$0.67

MST's valuation is a risked assessment of the cash flow from a conceptual project, combined with peer group market valuations for undrilled prospects.

### Risks

Exploration success is critical, and failure will reduce value. NHE will require funding during the exploration phase which may not be available. The Helium market is small, and prices volatile. There is country in Tanzania.

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### Equities Research Australia

#### Energy

**Stuart Baker**, Senior Analyst  
stuart.baker@mstaccess.com.au



Noble Helium Limited (ASX:NHE) is an exploration company focused on discovery and development of naturally occurring Helium in the Tanzania.

<https://noblehelium.com.au>

Valuation	<b>A\$0.67</b>
Current price	<b>A\$0.22</b>
Market cap	<b>A\$49M</b>
Cash on hand	<b>A\$3M (at March 31, 2023)</b>

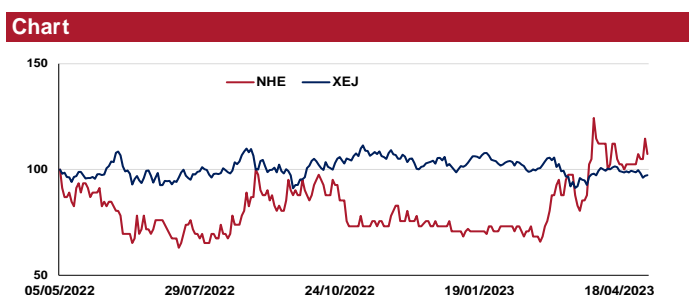
### Upcoming Catalysts / Next News

Period	Event
Q2 CY23	Rig tender & farm-out concluded
Q2 CY23	2-well drilling program commences



Figure 1: Financial summary

Market Data	Y/E Jun 30	A\$	Lo	Hi
Share price	A\$/sh	0.22		
52 week range	A\$/sh		0.14	0.3
Shares on issue	M	223.8		
Perf shrs + Options	M	104		
Market Cap	A\$M	49		
Net Cash	A\$M	10 (post farm-out)		
Enterprise Value	A\$M	39		



Valuation multiples	2021A	2022A	2023	2024	2025
EPS (us cents)	0.00	0.00	0.00	0.000	0.000
PE	-	-	-	-	-
DPS	-	-	-	-	-
Yield-%	-	-	-	-	-
EBITDAX/sh (US cents)	-	-	-	-	-
P/FCF	-	-	-	-	-
EV/EBITDAX	-	-	-	-	-
EV/(2P+2C)- A\$/ GJ	-	2.1	-	-	-
Revenue/MM boe	-	-	-	-	-
EBITDAX/Sales-%	-	-	-	-	-
Net cash (US\$M)	0.0	8.5	8.8	6.1	3.9
ND/(ND+E)	-	-	-	-	-

Realised prices	2021A	2022A	2023	2024	2025
Gas- A\$/ GJ	na	na	na	na	na
Oil-US\$/bbl	54.05	83.37	77.31	75.23	76.67
A\$/US\$ rate	0.73	0.7	0.7	0.7	0.7

Production (Net)	2021A	2022A	2023	2024	2025
Gas- Bcf	0.00	0.00	0.00	0.00	0.00
Liquids (MMbbl)	0.00	0.00	0.00	0.00	0.00
Helium	0.0	0.0	0.0	0.0	0.0
	-	-	-	-	-

Prosp. Resource (Bc)	P90	P50	P10	Mean
<b>Helium (100% basis)</b>				
Mbele (100%)	2.4	6.3	15.7	8.1
Pegere (100%)	1.8	6.2	19	8.4
Prospective, unrisked				158

Valuation-A\$	Risk	Bcf	A\$/mcf	Value
Helium Resources		83.0	0.63	52
Initial development	15%	5.0	17.36	88
Other				
<b>Total Helium assets</b>				<b>140</b>
Cash				3
Farm-in				7
Debt / provisions				0
<b>Total equity value</b>				<b>150</b>
Shares				224
<b>Value Per share</b>				<b>0.67</b>

Income statement	2021A	2022A	2023	2024	2025
Gas Revenue	0.0	0.0	0.0	0.0	0.0
Oil Revenue	0.0	0.0	0.0	0.0	0.0
Total sales	0.0	0.0	0.0	0.0	0.0
<b>Sales Revenue</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
Opex	0.0	0.0	0.0	0.0	0.0
Royalties	0.0	0.0	0.0	0.0	0.0
G&A	0.2	2.7	2.0	2.0	2.0
<b>EBITDAX</b>	<b>-0.2</b>	<b>-2.7</b>	<b>-1.9</b>	<b>-2.0</b>	<b>-2.0</b>
Exploration exp.	0.0	0.0	0.0	0.0	0.0
Depreciation	0.0	0.0	0.1	0.1	0.1
EBIT u/l	-0.2	-2.7	-2.0	-2.1	-2.1
Finance charges	0.0	0.0	0.0	0.0	0.0
Tax	0.0	0.0	0.0	0.0	0.0
<b>NPAT-underlying</b>	<b>-0.17</b>	<b>-2.7</b>	<b>-2.0</b>	<b>-2.1</b>	<b>-2.1</b>
Significant items	0.0	0.0	-0.2	0.0	0.0
<b>Reported NPAT</b>	<b>-0.2</b>	<b>-2.8</b>	<b>-2.2</b>	<b>-2.1</b>	<b>-2.1</b>
Share count at EOP (M)		224	224	224	224

Cash flow	2021A	2022A	2023	2024	2025
Receipts	0.0	0.0	0.0	0.0	0.0
Payments	-0.1	-1.4	-2.4	-2.5	-2.0
Payments for E&A	0.0	0.0	0.0	0.0	0.0
Interest & other	0.0	0.0	0.0	0.0	0.0
Net cash from ops.	-0.1	-1.4	-2.4	-2.5	-2.0
Exp & Devb capex	-0.1	-1.6	-4.8	-0.2	-0.2
Acquisitions / other	0.0	0.0	0.0	0.0	0.0
Net investing	-0.1	-1.6	2.7	-0.2	-0.2
Equity issuance	0.0	11.3	0.0	0.0	0.0
Debt Issue	0.0	0.0	0.0	0.0	0.0
Divs / other	0.0	0.0	0.0	0.0	0.0
Net cash Financing	0.0	11.5	0.0	0.0	0.0
Increase in cash	-0.2	8.4	0.3	-2.7	-2.2
Cash at EOP	4.1	8.5	8.8	6.1	3.9

Balance sheet	2021A	2022A	2023	2024	2025
Cash	0.0	8.5	8.8	6.1	3.9
Rcvbils / Inventory	0.0	0.4	1.0	9.0	11.0
P, P & E	0.3	1.6	8.6	8.8	9.0
Exploration & eval	0.0	0.3	-1.8	-1.9	-1.9
other	0.3	0.0	0.0	0.0	0.0
<b>Total Assets</b>	<b>0.6</b>	<b>10.8</b>	<b>16.6</b>	<b>22.0</b>	<b>22.0</b>
Payables	0.0	0.2	0.8	0.8	0.8
Debt	0.0	0.0	0.0	0.0	0.0
Other	0.0	0.0	0.0	7.0	9.0
<b>Total liabilities</b>	<b>0.0</b>	<b>0.2</b>	<b>0.8</b>	<b>7.8</b>	<b>9.8</b>
Total equity	0.6	10.5	15.8	14.2	12.2

Source: MST Access

# Potentially world's largest Green Helium Resource

## A big claim, backed by science

NHE is exploring for naturally occurring helium without associated carbonising gases, which is termed "green" helium, as distinct from 95% of the global supply which is a by-product of gas production.

According to a USGS World Report on Helium published in 2019 (Figure 2) the Tanzanian Rukwa Basin has potentially 354 Bcf, behind the USA and Qatar but these latter countries are producing helium as a by-product of fossil fuel production. NHE occupies the Rukwa Basin with other industry participants, but it is the dominant license holder and prospective resource owner.

Helium prices are in an uptrend driven by strong demand for hi-tech applications, while a key supplier, the USA, is declining leaving consumers increasingly reliant on supply from Qatar and Russia. New sources of supply are needed, and green helium has strategic importance in a de-carbonising world.

Naturally occurring helium requires a unique combination of geological parameters, which are present in the Rukwa Basin. This is evidenced by geochemical and geological field work, where helium has been detected in concentrations up to 17% in hot springs and seeps, which are among the highest recorded.

**Figure 2: Global distribution of Helium proved and prospective resources. (USGS: 2019)**

Country	Reserves BcF	Resources (Bcf)			Total
		Probable	Possible	Speculative	
USA (Ex Cliffside)	138	188	209	180	716
Qatar	0	357	0	0	357
Rukw a Basin	0	0	0	354	354
Algeria	64	290	0	0	353
Russia	60	240	0	0	300
Canada	0	71	0	0	71
China	0	39	0	0	39

Source: USGS 2019 World Helium Reserves and Resources. NOTE: NHE shares Rukwa Basin acreage with other companies.

## Strategic enablers

- Acreage of ~5400Km<sup>2</sup>, 100% owned, with tenure to up to 11 years gives "headroom" to deal
- Management has extensive and successful records at previous companies, pioneering exploration for conventional hydrocarbons in the East African Rift, and have significant equity in the company.
- Two- well campaign in 3Q 2023, in parallel with commercial studies and pre-development activities, to de-risk geology and define commercial options.
- Tanzania supportive of extractive industries with a mature Mining code and fiscal terms agreed.

## Key investment attributes & catalysts

- Exploration drilling in 3Q 2023 at two wells, Mbele#1 and Pegere#1, targeting a combined 16.5 Bcf (100% basis) of un-risked mean prospective resource. NHE share 8.2 Bcf post farm-out.
- Would transform the Helium market if successful. Global demand is~6.2 Bcf p.a.
- Farm-out is advancing. Non-binding HoA with a preferred bidder to fund NHE through up to US\$20M of expenditure, plus reimburse past costs of US\$5M, in return for a 50% working interest.

## Valuation & upside

Our A\$0.67/sh valuation is a risked conceptual cash-flow project, plus peer group unit value for yet-to-be drilled prospects. De-risking the project through exploration success, commercial studies, financing and offtake exposes investors to multi-fold upside, with a fully de-risked project worth ~\$2.60/share.

## Risks

- Large parts of NHE's permit area have had minimal exploration activity and sub-surface geology is only broadly understood. Results from wells drilled by another company in 2021 were inconclusive.
- Sovereign risk in Tanzania, and in-country E&P for logistic support adds to cost.
- NHE has no income so will require capital market and partner support during the exploration phase.
- The Helium market is small (US\$6 billion, 2023 est). Large scale success by new entrants such as NHE could oversupply the market and reduce prices.

# Assets: Major acreage holder in Tanzania

NHE is an exploration phase company, with 5400 km<sup>2</sup> of acreage, assembled since 2017 and which is prospective for naturally occurring helium. Figures 3 & 4 show the areas of interest. It has four project areas, in various regions of Tanzania along the “East African Rift System” (EARS). This is an extensive and prolific petroleum system extending for 5000km through many east African nations. The prospects for helium are backed by extensive surface samples, and in hot springs where Helium concentrations are commonly >10%, and as high as 17%. These are among the highest recorded globally.

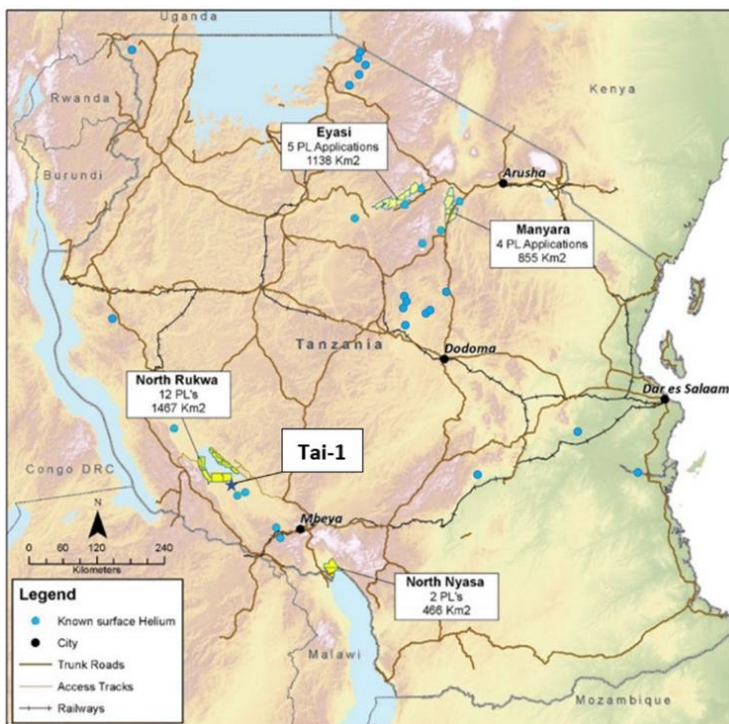
NHE’s acreage, specifically the North Rukwa licenses, have independently assessed resource potential from NSAI of 175 Bcf (100% basis, un-risked prospective mean resource). This would be enough to supply the world for ~30 years. NHE’s share of this will reduce to 88 Bcf if the farm-out process underway is completed.

Two wells are planned to be drilled in Q3 2023 targeting a combined resource of 16.5 Bcf of helium (un-risked summed mean prospective resource estimate, 100%). To put this figure into perspective, it is 2.5X current annual demand which was 6.2 Bcf in 2022. Proving this would be transformational for NHE and would re-shape the global helium market. NHE’s working interest in these prospects will reduce to 50% on successful completion of the current farm-out process.

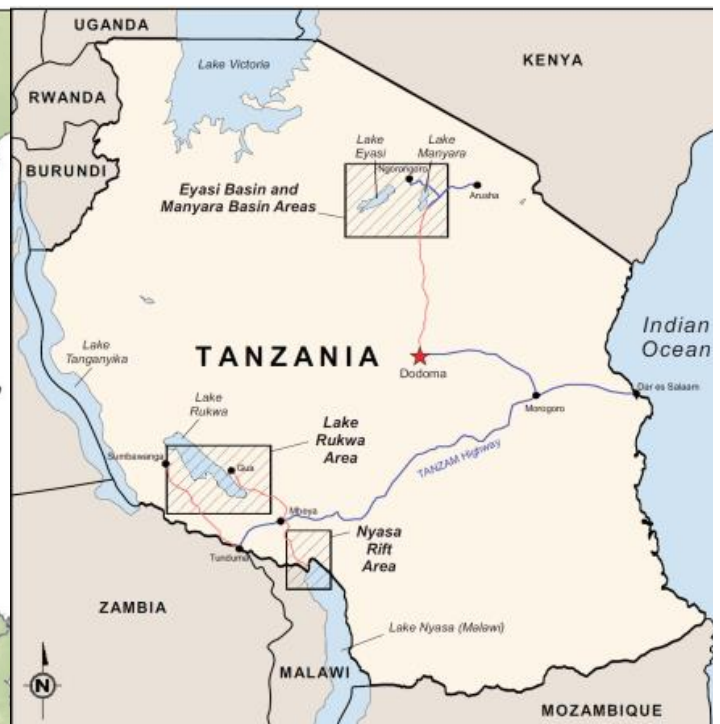
However, this is an exploration frontier and only one well has been drilled in modern times for Helium, however that well did not target geological settings that are generally successful along the EARS trend.

**Figure 3: Location of focus areas**

**Figure 4: Location of permits areas in Tanzania**



Source: NHE Prospectus



Source: NHE prospectus

## There are four core project areas:

- The North Rukwa Basin project, encompassing 2941 km<sup>2</sup> in SW Tanzania, and is bounded by the shores of Lake Rukwa.
- The North Nyasa Basin project, covering 466km<sup>2</sup> in the SW of the country
- The Eyasi Basin project with an area of 1138 Km<sup>2</sup> in north-central Tanzania
- The Manyara Basin project, covering 854 Km<sup>2</sup> of acreage in north Central Tanzania

Over the outlook NHE is devoting most of its capital and focus at North Rukwa, due to previous conventional oil and gas exploration, encouraging pre-drilling geological studies, and seismic surveys to define the sub-surface structures, compared to the other project areas which have no previous drilling history.

### North Rukwa Project: Free-carried drilling coming up.

- Multiple leads and prospects, with NSAI assessed mean recoverable un-risked prospective resource of 175.5 Bcf (100% basis), NHE share reducing to 50% after farm-out.
- Drilling planned to commence on two prospects, Mbele and Pegere in Q3 2023, with Letter-of-intent (LoI) signed for a drilling contractor.
- Farm-out progressing. A non-binding Head-of-agreement (HoA) reached with a preferred bidder for a free carry for up to US\$20M of expenditures plus re-imbursment of US\$5M of past costs, in return for farm-in partner earning a 50% working interest. Binding agreements are subject to satisfactory due diligence and normal consents.

The company has a licenced landholding of 1467km2 in the Rukwa Basin and has benefited from legacy oil and gas exploration data to complement and accelerate its exploration activities.

NHE expects to commence drilling two wells in Q3 2023, on the northern section of the Rukwa rift, which is part of the EARS. The area is accessible by paved road from Dar Es Salaam and air services to Mbeya, which is a major regional centre nearby

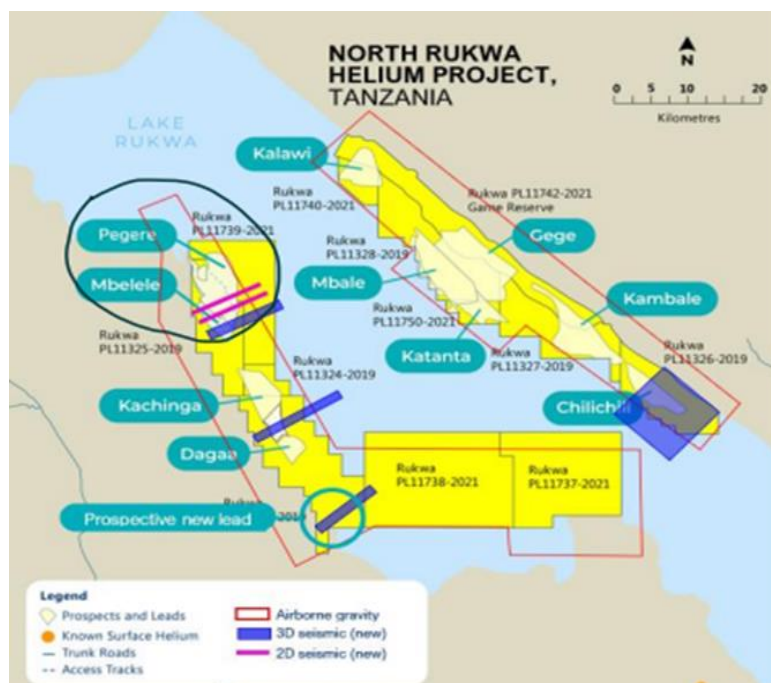
### Previous exploration and the rationale for drilling.

Two wells drilled by Amoco in 1987 for conventional oil and gas on the EARS, defined the main stratigraphic sequence in the Rukwa basin.

Further north in the EARS, over the border in Uganda and Kenya, numerous conventional oil and gas discoveries oil have been made in the past decade, helping to define geological understanding, in particular the mechanisms to trap sub-surface gases. This is important to understand because exploration success rates along the EARS since 2012 has proved to be immensely successful for conventional oil and gas, The NHE senior management helped pioneer those discoveries.

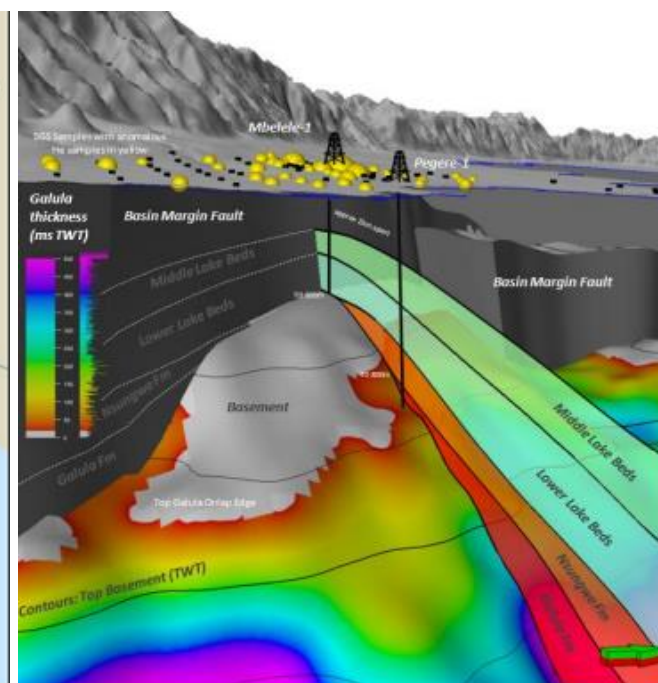
Surface sampling from seeps and hot springs since 2017, shows Helium present in concentrations up to 17%, and while globally high, may not represent helium concentration in subsurface reservoirs which may include other gases not detected at surface.. in South Africa, Renegen Ltd (ASX: RL) is producing naturally occurring helium along with methane, at helium concentrations ~3%, which is high compared to USA and Canadian producers which report helium concentrations in the range 0.1-1%, with ~0.3% viewed as economic cut-off.

Figure 5: North Rukwa Project area



Source: NHE Prospectus

Figure 6: Sub-surface schematic



Source: NHE prospectus

Exploration work completed in 2022 & 2023 are (1) numerous de-risking studies, Airborne Gravity Gradiometry and acquisition of 3D seismic, with fast-track interpretation to mature drilling location (2) Appointment of key drilling professionals (3) Rig identified and progressing to contract.

### Drilling coming up on two wells: Q3 2023

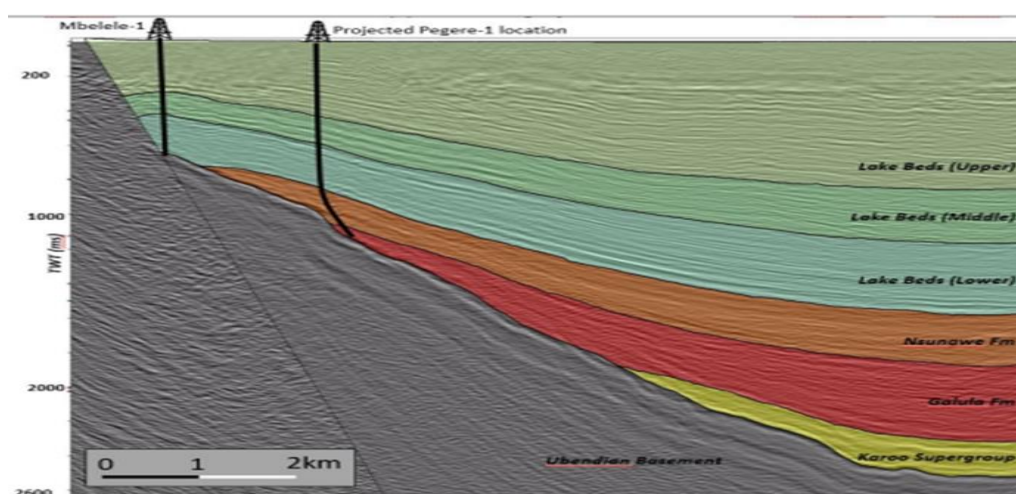
- Mbele#1, with recoverable helium of 8.1 Bcf (prospective, mean, un-risked,100% basis)
- Pegere#1, with recoverable prospective Helium of 8.4 Bcf (prospective, mean, un-risked100%)

NHE plan to drill two exploration wells, Mbele#1 and Pegere#1. Both wells are near vertical and will test basin margin fault traps. The first, to about 800M and the second 1.5Km north deeper to about 1200M total depth. Refer to figure 7 for a schematic of well trajectory.

Drilling follows a comprehensive de-risking program including soil gas surveys, reservoir and seal studies, airborne gravity gradiometry, 2D and 3D seismic surveys and the latest helium charge theories.

NHE is in the process of engaging drilling contractors, with drilling planned in 3Q 2023. NHE are in the process of selecting a farm-in partner, and a HoA has been agreed with a preferred bidder, which is non-binding at this stage. The broad terms, as announced to the ASX on May 5, 2023, are for a free carry up to a cap of US\$20M of expenditure on an agreed work program in the Rukwa licences, and reimbursement of US\$5M of past costs. In return, the farm-in partner will earn a 50% working interest.

Figure 7: Well drilling schematics



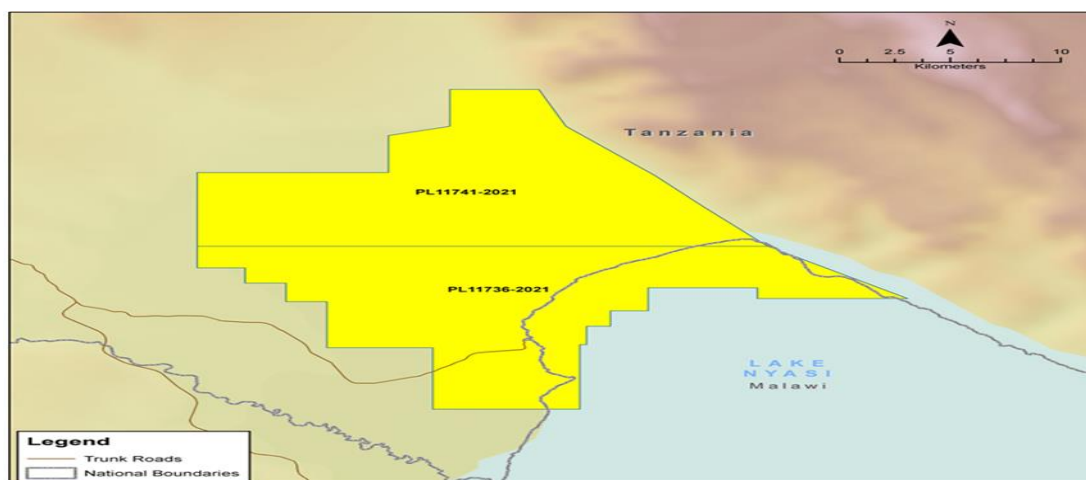
Source: Noble Helium

### North Nyasa Project

- 2 PL's covering 466 Km<sup>2</sup>. Nil prospective resources attributed at this time
- NHE acquired soil gas survey in 2022 indicating anomalous helium, historic exploration & geologic data being sourced to evaluate prospects.

The PLs are in the North Basin of the Nyasa (Malawi) Rift area, 230 km to the southeast of the Lake Rukwa area. The Nyasa Rift is part of the Western Branch of the EARS and forms part of the southwestern border between Tanzania and Malawi . (Figure 8).

Figure 8: North Nyasa project area



Source: Noble Helium

The Nyasa project area is accessible by road via the TANZAM highway from Dar es Salaam to Mbeya at the southern end of Lake Rukwa, followed by regional roads south, directly to Noble Helium's PLs.

Noble Helium is planning further data acquisition in the North Nyasa Area to improve structural resolution and to assist in drill target selection.

Previous licensee UK-based Heritage Oil and gas acquired airborne gradiometric and some 2D seismic in 2012 but relinquished the acreage in 2017. At the time of this report, NHE does not have access to this historical data, so in our view, this acreage is an untested frontier.

## Eyasi and Manyara Projects

- PL's cover 1138 Km<sup>2</sup> for Eyasi and 854 Km<sup>2</sup> for Manyara
- No historic exploration. Frontier acreage, minimal exploration to date.
- Resource prospects are not assessed.

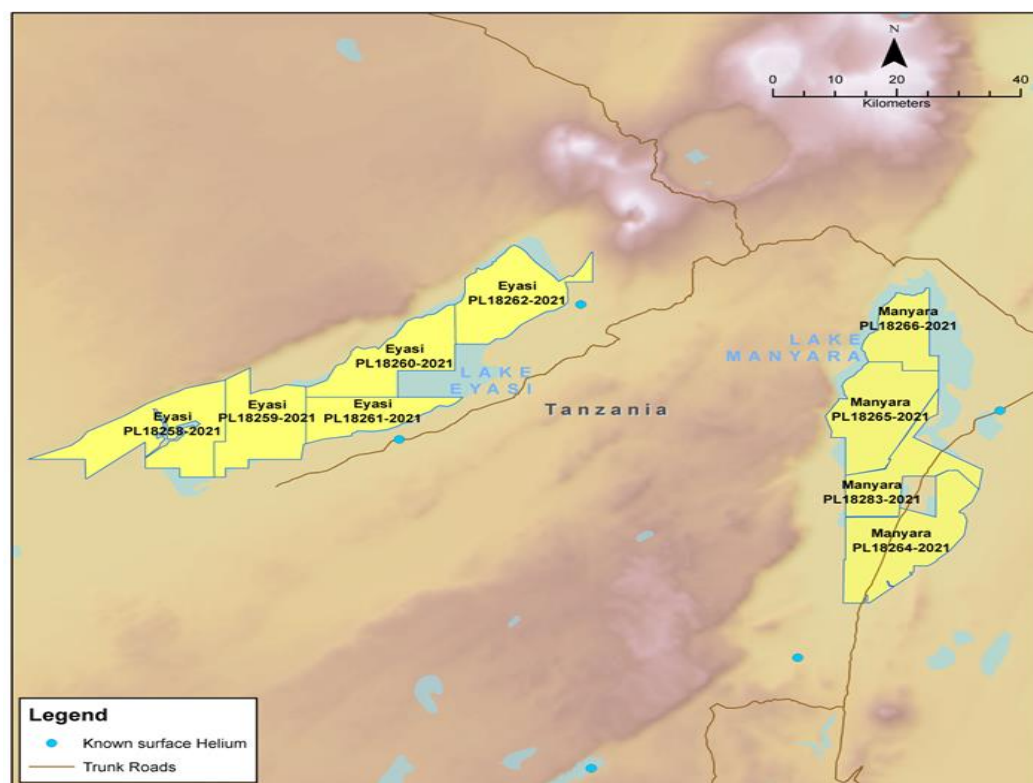
Noble Helium has five prospecting licenses in the Eyasi Basin which were awarded in July 2022 and four prospecting licence applications in the Manyara Basin, located in central northern Tanzania (Fig 9).

Road access to the Eyasi Basin Project from Dar es Salaam is via the regional capital of Dodoma, in the centre of the country. Air access is via Arusha, the major tourist centre in northern Tanzania, followed by road access west toward Ngorongoro for approximately 100km to the Manyara Project Area and 160km to the Eyasi Project Area.

Noble Helium is planning data acquisition in the Eyasi and Manyara areas that will provide initial structural, stratigraphic and geochemical insights into the basin. The work program includes airborne surveys, & surface geochemistry work

This acreage has not been previously drilled, so exploration here is very immature. More data will be required to understand perspective, including air-borne surveys, and surface geo-chemical sampling.

**Figure 9: Eyasi and Manyara project areas**



Source: NEI 2022 Annual Report

## Macro: Unique geology but it's early days

The EARS and its sedimentary basins extend 5000 Km from Ethiopia to Mozambique.

Seismic and wells along the EARS have identified numerous thick sedimentary sequences within the EARS basins of Tanzania, which are overlying and abutting 2–3-billion-year-old crystalline basement rocks. Refer to figure 10. These basement rocks are rich in radioactive elements which have generated and stored vast amounts of helium through radioactive decay over 2 billion years.

Through the active rifting and heating of the globally unique EARS, this large inventory of stored helium is being released from basement and into overlying sediments at high rate. Sealing rocks where present, may provide the necessary trap to retain the helium in underground layers for commercial production, just like conventional petroleum gas which has been discovered to the north in EARS basins of Uganda and Kenya.

Where sealing rocks are either not present or too broken-up to retain gas, the helium produced deep in the earth can leak through the overlying sediment to the surface. In Tanzania, this leakage to surface has been measured in hot springs at up to 17.9%, which is significantly higher than the onshore USA commercial cut-off of 0.3%.

Having helium generated by ancient rocks that can be accessed at reasonable depths, in concentrations that have not been diminished by Helium leaking away, and from reservoirs with high-rate production potential is rare. However, this is the setting in Tanzania's rift basins and the high success rate of oil and gas discoveries since 2006 suggests that the potential for success is real.

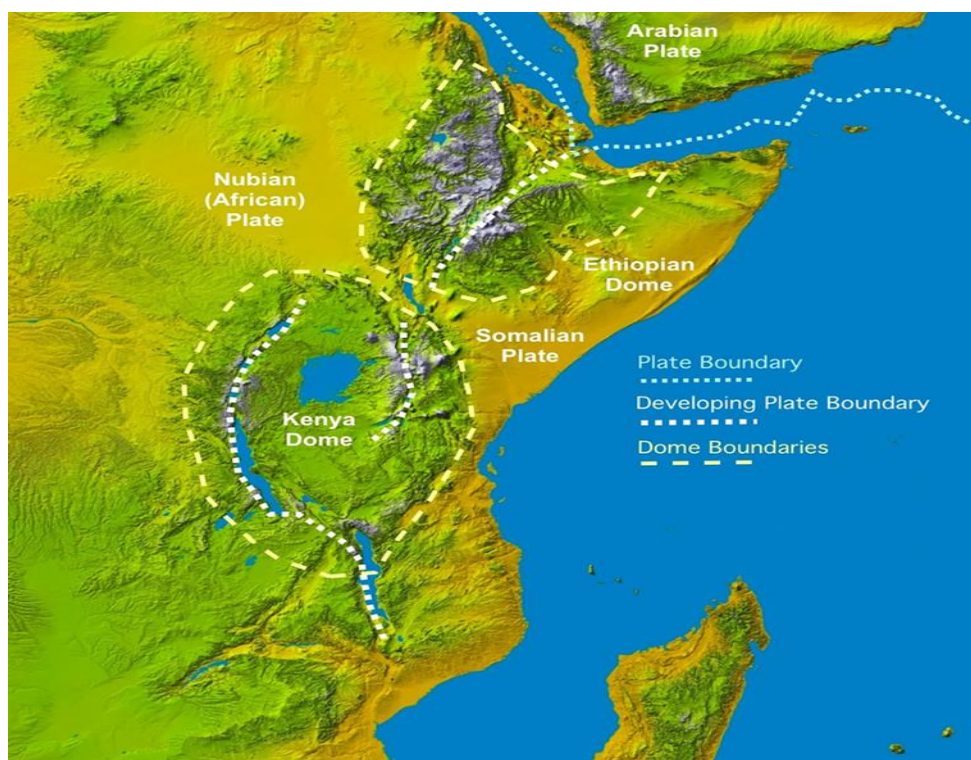
### Basin margin fault trapping geology proven along toe EARS for oil and gas.

Since the first oil discoveries in 2006, 38 exploration wells have discovered 4 billion barrels of oil and gas in the EARS basins. Fourteen of these discoveries were in Basin Margin Fault traps with a 100% success rate demonstrating the effectiveness of Basin Margin Fault seals.

NHE have the benefit of deep knowledge of the EARS fairway and have identified several basin-margin traps in North Rukwa, while historic wells confirm the sedimentary sequences that NHE is likely to encounter. A key determinant will be competency of sealing rocks above the porous sediments, to contain Helium and other gases.

Thus, the upcoming exploration activity, will be pivotal in informing the sub-surface geological model, and if successful will de-risk future exploration.

**Figure 10: East Africa Rift in Tanzania**



Source: <https://geology.com/articles/east-africa-rift/figure1.jpg>



# Tanzania

## The country is opening to foreign investment in mining and oil.

Key stats:

- GDP US\$67B, has doubled in 8 years. GDP 2010-2020 (pre GDP) ~5-6% p.a.
- Main languages: Swahili. Secondary English
- Predominantly an agrarian, market-based economy although Governmental controls over major sectors such as banking remain, and reform is slow.
- Current Government attracting new investment in mining, following missteps by previous administrations. The Presidency retains significant powers which have been entrenched over decades and reforms have been slow, however there has been positive progress since 2018

For oil and gas explorers, the over-riding attraction is the geology. The EARS has proven to be very prolific in countries to the north, in particular Kenya and Uganda, and Sudan. Tanzania is also prospective for many other mineral commodities and there are several ASX- listed companies active.

## Fiscal terms and regulatory environment

In 2018, a Ministry of Minerals was established after separation from Ministry of Energy and Minerals. A Mining Commission was established in June 2018 to manage the sector, including licensing for Helium.

The tax & royalty regime is:

- Corporate tax rate of 30%
- Royalty of 3%
- Mineral export levy of 1%
- Government to gain a free carry in mining projects of 16%
- There are three main prospecting licence types: prospecting Licence (PL), Mining License (ML), and Special Mining License (SML). All of NHE's licenses are PL's.

Prospecting licence (PL) have a 4-year initial term, second term of another 3 years, and a third term of 2 years with a fourth term of 2 years with feasibility study.

## Figure 11: Port of entry: Capital Dar Es Salaam



Source: Google Earth

- NHE has established a significant in-country presence in advance of its upcoming drilling activity, with ~100 local staff and contractors variously engaged.
- NHE's in-country ESG activities include study agreements with the University of Dar es Salaam. Sponsored training courses at the Dar Es University, educational and sporting equipment at 8 schools in PL areas and upgrading of roads in license areas enabling improved vehicular movement for local inhabitants. Relationships with leaders at all levels from Government Ministries to local village.

# About Helium

## It's very valuable, and naturally occurring helium is very rare.

Helium (elemental symbol He2) is a "Noble" gas with a range of unique properties. It is an input to many "hi-tech" industries, with demand driven by global innovation in aerospace, medicine, and electronics.

Key attributes which differentiate it from other gases are

- It is chemically inert and does not bond with other periodic elements. It is non-flammable, and non-toxic, and non-corrosive. It is colourless, odourless and tasteless, doesn't burn or conduct electricity,
- It is the "coldest" material known, never freezes into a solid, and is gaseous at temperatures down to -268.9 Degrees Celsius. Absolute zero is -273. Helium readily absorbs heat, and so it used in hi-tech applications where "super-colling" is required.
- It is lighter than air, and very hard to capture and store (I,e, leaky) so is widely used in lighter-than air lifting applications and leak detection.
- Helium's small elemental size (second smallest after Hydrogen), light weight, and inert properties give it a range of properties required in manufacturing of semi-conductors and fibre-optics, or any manufacturing processes while require a "sterile" environment.
- It the many applications the Helium is used for, it cannot be substituted
- Helium cannot be manufactured from other gases, and occurs naturally in the earth as a consequence of natural decay of radioactive Uranium. This occurs deep in the earth's crust, but Helium is so "leaky" that most of it escapes through the overlying strata. Helium is commonly detected in wells (oil, gas or water) but in minuscule quantities.
- Naturally occurring Helium in concentrations high enough to justify economic extraction, is rare, and requires a unique set of geological circumstances. Currently, naturally occurring helium is produced as a by-product of conventional gas production, where the Helium concentration is very low (<1%) and with value of the co-products (methane) is economically important.

This latter observation is highly relevant to NHE, when we consider the global "Helium" map.

## What is Green Helium ?

Currently 95% of all Helium is sourced from LNG production, and LNG production (from natural gas) is fossil fuel production and comes with a CO2 footprint. In contrast, naturally occurring Helium is "greener" if it is produced naturally in tandem with other non-greenhouse gases, specifically Nitrogen.

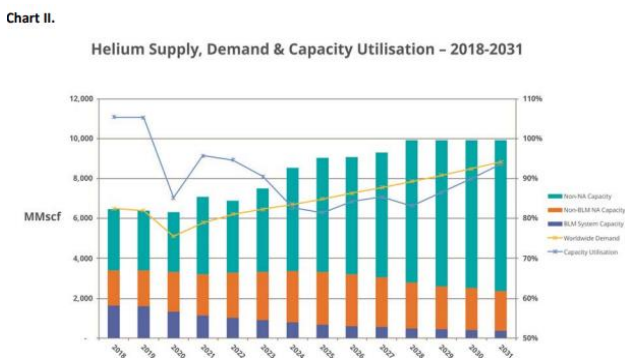
NHE's prospects are theorised to be very low in greenhouse gases such as CO2 or methane, with none of these detected in soil gas surveys over all of its leads or prospects.

## Helium Demand

2022 global demand was ~6.21 Bcf. CAGR projection 2023-2031 ~4% p.a. (NHE prospectus), other reports we have read document CAGR in the 6-8% range

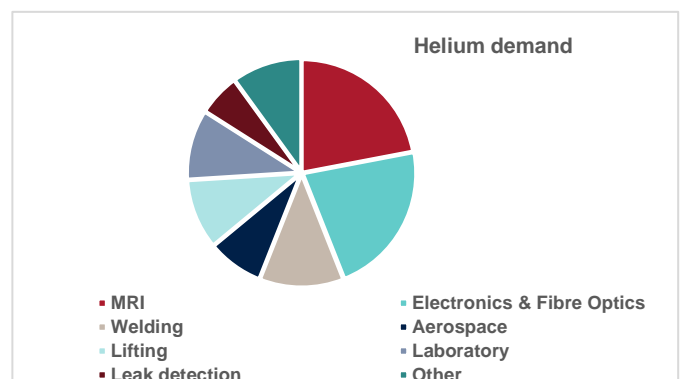
The Helium market It is a niche market in terms of volume, which is currently ~ 6.2 Bcf p.a, and this is miniscule compared to natural gas and LNG, again the point of re-emphasis is that Helium is not a "fuel". It is registered as a Critical Raw Material in numerous countries including Europe, Australia, and USA until 2021 (and under significant debate).

Figure 12: Helium supply & demand history



Source: Kornbluth Helium Consulting – February 2022

Figure 13: Helium demand by segment



Source: NHE prospectus

Source: NHE Prospectus

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The largest demand for Helium is to cool superconducting magnets in MRI scanners. This application accounts for 22% of Helium demand, and this segment is growing at ~10% p.a.

The second largest market is the semi-conductor manufacturing market, where Helium's unique properties are required to manufacture the semi-conductor wafers. This segment has been growing very strongly over many years, driven by chips needed in cell phones and laptops. Currently around 19% of demand is for the semi-industry. Major manufacturers of semi-conductors in Taiwan have announced expansion plans.

Reports we have reviewed show cagr demand over the next 10 years in the 6-8% p.a. range, driven by aerospace, semi-conductor medical sectors. The Annexures in the NHE Prospectus are more conservative at 4%, even so this would require new supply each year of 240 MMcfd of Helium.

### Helium Supply

Helium cannot be manufactured by any known chemical process. It occurs naturally in sub-surface reservoirs, because of isotopic breakdown of Uranium and Thorium in the earth's upper crust where these elements are concentrated. Helium produced in this way and released to be later trapped in sub-surface reservoirs within sedimentary basins is deemed to be "naturally occurring"

- Naturally occurring Helium can be produced from wells drilling into sympathetic geology, but unique geologies and high concentrations are required to make this commercial
- There are ~16 Helium plants in the world, 7 in the USA and Canada and most of the rest in Russia and the Middle East.. The newest producer to enter the market is Renergen Ltd, with a pioneering project producing LNG and helium in South Africa commencing in 2022.

Due to its very small molecular size, Helium is very "leaky" and trapping it in sub-surface rocks requires a combination of unique geological settings.

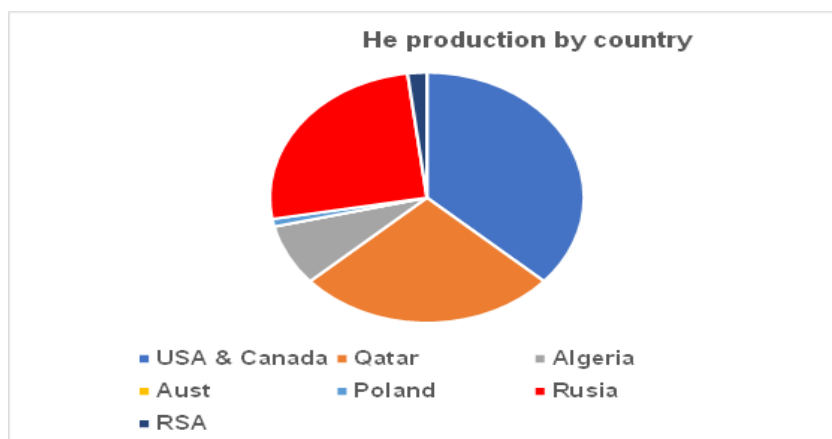
The majority of Helium supply is from LNG production in Qatar, Algeria and prospectively, Russia. Helium is present in very low concentration in natural gas feedstock, and the capture of Helium from raw gas feeding LNG plants is part of the cryogenic process in LNG production. In this process, other gases such as methane, oxygen and CO2 are condensed out of the gas stream, with Helium extraction a by-product.

Helium produced as a by-product of natural gas accounts for about 95% of production, and outside the USA supply is dominated by Qatar, Algeria, and potentially Russia after 2025.

Production of naturally occurring green Helium from wells with only nitrogen is rare, and accounts for less than 5% of global supply. For most of the 20th century, naturally occurring Helium was produced from a small number of Helium-enriched natural gas fields located onshore USA, which accounts for about 40% of the world supply, with one field, the LaBarge field in Wyoming (operated by ExxonMobil) accounting for 22%. Other locations of natural Helium production are Canada, and most recently South Africa.

Naturally occurring Helium in sub-surface reservoirs is mixed in with other gases, predominantly methane (which has economic value), or CO2 which can have some economic value, or nitrogen which is worthless but is not a pollutant. Helium concentration in the gas mix is deemed commercial down to 0.1%, but this "cut-off" depends on location, value of other gas by-products and the amount of processing required to distil the Helium from all these other constituents. In any event, concentrations are typically a few -percent, and figures as high as 10% reported by NHE are the highest recordings in the world.

Figure 14: Helium supply by country



Source: USA Energy Information Agency.

Capacity additions are underway at:

- Qatar is expanding LNG production from 77 MTPA to 126 MTPA by 2026, with a commensurate lift in Helium output of ~1.5 Bcf p.a.
- Regener (RSA) : 0.37 Bcf p.a. (phase 1 & 2 ) by year end 2027
- Gazprom (Russia): Amur LNG plant would have three Helium trains, producing 2.1 Bcf p.a. Project located in Siberia, has been delayed on multiple occasions, and reliability of supply questionable. Russian invasion of Ukraine saw major customers withdraw

In the USA and Canada, there are public companies with new projects in the development phase, which we have reviewed. Individually, each is small (production < 0.1 Bcf p.a.) and collectively, the volumes proposed for development are not enough to meet demand growth, and in addition, these are natural-gas co-projects.

## Prices

Helium is immensely more valuable than natural gas, driven by the niche markets it supplies into, which are typically highly value added. There is no traded market for Helium, and prices are opaque and usually a bil-lateral arrangement. Major industrial gas companies loom large as aggregators and distributors to end users, and this part of the value chain is concentrated in the hands of a few very large industrial gas companies such as Air Liquide, Linde Industries and other specialist companies. Thus discussion of prices needs to be referenced to the point of sale, either ex-plant or to the consumer.

Historically in the USA, the Bureau of Land management (BLM) managed an inventory of Helium called the “Federal Helium Reserve” and for decades set a helium price based on paying off the Reserve debt of US\$1.5b by the time of depletion. The BLM auctioned off volumes to end-users, but this activity ceased in parallel with the depletion of fields supplying it in 2019, and since then the transition to privately held helium from producing natural gas fields has seen the market tightening, driving prices higher.

## Quality differentials

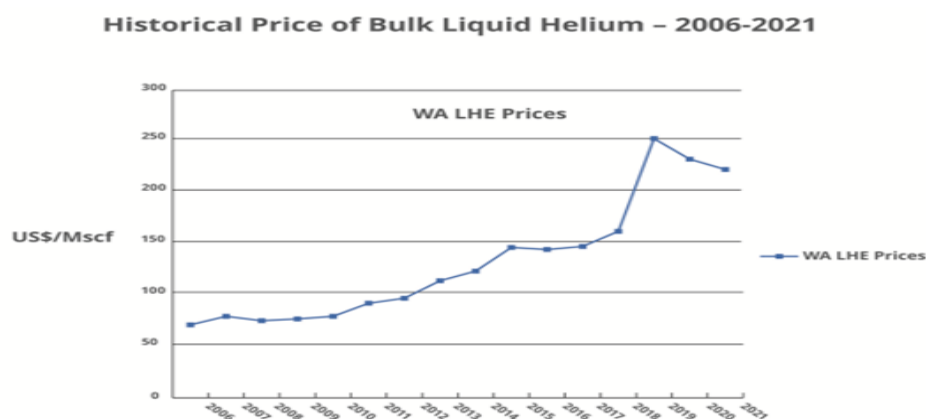
Prices also reflect the purity of the Helium stream. For most hi-tech applications, purity must be >99.9995% Helium, so called “5-nines”, and these highest grades command premium prices because of the extra processing required to extract all the contaminants from the Helium mix, such as Oxygen, Nitrogen, CO2 or any other gases. Lower grades, <99% are termed “party balloon” grade and are command lower prices.

We have reviewed several corporate presentations which document Helium contract and spot prices rising from ~US\$200/mcf in 2017, to >US\$1000/Mcf in 2023. With supply growth expected over the outlook, its likely that prices will moderate from high levels over the outlook period. However, the helium market can be quite volatile due to its small size, and limited flex in the supply chain due to reliance on a small number of producers, some located in geo-politically risky regions.

NHE claim in its latest ASX presentation, “Long term bulk Helium Pricing” US\$450/Mcf. This is consistent with investor presentational material we have reviewed from peer companies (Blue Star, Helium One).

In our background research, we reviewed a myriad of prices, to the producer, consumer, spot or contract. There is convergence to prices in the US\$350-450/Mcf range for reliable whole-sale supply ex-field, and in our preliminary analysis we have assumed US\$400/Mcf for our cash-flow forecasts.

**Figure 15: Bulk Helium price history**



Source: From NHE prospectus

## Economics

Commercial exploitation of naturally occurring Helium depends on several factors. These include:

- the nature of the deposit, its size, depth, concentration of Helium and nature of other gases
- Location factors including proximity to markets, infrastructure, and distribution costs
- Grade of Helium (which affects price) and level of processing required, and capital costs
- Availability and cost of essential services such as power, water, and labour
- Taxes, royalties or other host-country charges

The drilling skills and equipment required to locate and extract Helium are known and the process equipment is relatively “standard”, proven technology

NHE’s peers listed in Australia, Canada and UK are in the exploration phase, and financial data is limited. There are TSXV-listed exploration companies that have disclosed indicative economics for projects in Canada, in corporate presentations (Eg, First Helium, Avantis, Royal Helium). These are small projects, with Helium concentration 1% or less, with the balance Methane or CO2 with economics reliant on by-product methane or beverage grade CO2.

Renergen’s Virginia LNG and helium project in South Africa, is shown in figure 16. The relevance to NHE proposing a new industry in Tanzania is the Renergen’s project demonstrates that the challenges of establishing a new and complex industry in Africa can be successfully overcome.

**Figure 16: Renergen’s Virginia LNG & Helium plant: a real life example in Africa**



Source: Renergen Ltd

Several exploration peers have outlined broad economics in investor materials. In April 2023, NHE published some indicative “maths” to help in understanding profitability potential. Key figures are:

- Capex for 850,000 mcf per annum helium plant ~US\$305M
- Opex ~US\$25/Mcf per annum
- Estimated ultimate recovery ~12 BCF over 20 years, with ~33% depletion rates after year 13.
- Annual revenue US\$382M at helium price US\$450/Mcf, before Tanzania Government take
- Gross margin US\$342M p.a.

These figures similar in context to other public data from other companies, specifically Helium One.

We refer to, and adopt some of these figures into our conceptual cash-flow modelling.

# NHE's Helium Resources

NHE's listing Prospectus details un-risked summed mean prospective resources in a series of leads and prospects in the Rukwa Basin, as assessment by independent reservoir engineers Netherland Sewell and Associates Inc.(NSAI) and these are repeated for completeness in Figure 17.

The figures are for a 100% working interest and would be reduced by 50% in the event that NHE completes its proposed farm-out.

**Figure 17: NHE prospective Helium resources (Gross, pre-farm-out)**

Lead	Unrisked Gross Prospective Helium volume (Bcf)				Pg
	Low	Best	High	Mean	%
Chillii	0.1	5.4	25.4	10.5	16%
Dagaa	0.1	0.5	2.5	1.1	10%
Gege	11.2	54.4	199.1	87.2	13%
Kachinga	1	4.8	18.1	7.9	13%
Kalaw i	0.8	4.7	24.1	10.2	13%
Kambale	1.9	10.9	48.6	20.7	16%
Katanta	2.1	11.90	54.80	23.2	13%
Mbale	0.6	2.70	11.00	4.7	10%
Mbele	0.9	5.4	23.1	9	16%
<b>Total</b>	<b>19.6</b>	<b>100.7</b>	<b>406.7</b>	<b>174.5</b>	

Source: NSAI, as disclosed in IPO prospectus.

On 20 April 2023, NHE announced an upgrade of the Dagaa/ Kachinga prospects, following interpretation of the most recent 3D as well as other geological modelling.

A Key finding is the Dagaa and Kachinga leads, which at the time of IPO and the NSAI report were believed to be separate leads, now appear to be a single much large prospect. Further, NHE advised that this lead is drillable in 2024.

This more recent work would add ~10 Bcf to the "best estimate" figure in Figure 17.

# Financials and Valuation

NHE is a new corporate entity, having listed on the ASX in April 2022. It does not have a financial history of any relevance to our investment case

- The balance sheet records historic expenditure for securing the Tanzanian acreage and the costs of geological work there-after of approximately A\$8.5M.
- There are no material financial liabilities, nil bank debt, and cash was \$3.0M (at 31 March 2023).
- NHE has no production income, so our financial forecasts show nil income and operating cashflow.
- We do not assume production revenue over the outlook, although small scale early production is possible. Our cash-flow forecast assumes exploration is free-carried

## Impact of farm-out on financials

On 5 May 2023, NHE announced it had agreed a non-binding HoA with a preferred bidder to farm-in to the Rukwa licenses in return for a 50% working interest. Key elements are (1) the farminee to fully carry NHE through an agreed work program in the Rukwa licenses up to US\$20M, (2) re-imburement of past costs up to US\$5M.

Our Financial Summary in Figure 1 (page 2 of this report) assumes the farm-in is executed, receipt of US\$5M in 2H CY2023, and nil exposure to the 2023 exploration activity.

Another potential source of funds is from option exercises. NHE has 36.6M listed options exercisable up until 3 May 2025, which could raise \$9M if exercised. There are 61.4M unlisted options with various exercise prices between 20c and 30c, exercisable at various dates in 2024 and 2025, which could bring an additional ~\$16M. Our forecasts do not assume exercise.

## Initial Valuation: A\$0.67

Our principal valuation tool is a DCF of expected future cash-flows from a proposed commercial helium development, in the event the helium resource is proven.

We have developed project cashflow forecasts and there are many scenarios depending upon input factors, with the key ones and our assumptions outlined as followed:

- Helium prices ex-field. We have reviewed several public company corporate presentations for pricing guidance. Figures indicated by NHE and Helium One are perhaps the most relevant and are in the range US\$350-450/Mcf. We choose US\$450 as a base case.
- Capital costs. We have reviewed a sample of projects in the USA where small projects of <0.1 Bcf p.a. can be erected for US\$40-60M. Helium One discloses US\$50M for a modular plant in Tanzania and NHE's discloses US\$305M (gross), for a large scale plant. We adopt this latter figure.
- Opex costs. We have reviewed a sample of projects that disclose annual per-unit opex in the range US\$15-40/mcf. NHE disclose US\$20/mcf, and we adopt this figure.
- Timing of start-up: We assume at the earliest, 2026.
- Project capacity. Helium plants are typically modular, so production rates come in blocks. We assume an 850,000 mcf p.a. project, as indicated in NHE's presentational material, however this is a large scale plant and in reality development would likely be staged over many years in smaller units, to dove-tail with demand.
- Financing. NHE would need to fund project capex beyond the size of the current balance sheet. A further farm-out would reduce the company's working interest and share of gross project value, while equity issuance would reduce the per-share NPV. Debt finance may be available. We make no assumptions as to the funding mechanisms.
- We assume Tanzania fiscal terms of a 16% carry, 4% royalty +export levy, and 30% corporate tax.
- Cash-flows are discounted at a post-tax WACC of 12%.
- The US\$ per-share valuation is converted to A\$/share at a spot rate of 67c.

## Model results

The result of this modelling returns annual project FCF of ~US\$240M after taxes and royalties. NHE's share of this, after farm-out and Government back is 42% or US\$100M p.a.

Project NPV equates to US\$960M, (gross) and returns and IRR of 55%. NHE's share of this assuming a 50% working interest and after Government back-in is US\$403M.

These model outcomes are un-risked, and do not take into account the myriad of inputs such as helium price, capex, opex and timing that could drive the figure lower, or higher.

### The upside is large but there is a lot of de-risking to occur first

The above figure equates amounts to ~\$2.60 per share, which demonstrates the leverage in the event of success, however, this is an un-risked figure and does not take into consideration any of the risks and variable outlined in the previous paragraphs.

Our base case valuation shown in Figure 18, applies a 15% risk factor to project NPV, which we think is realistic ahead of an exploration program, where probabilities of geological success (PoG) are typically in the order of 10-20%. Further, we note the NSAI resources detailed in the prospectus are un-risked, and PoG are listed in the 10-16% range.

Broker reports we have sighted for other companies in the exploration or pre-development phase, commonly apply risk factors from zero to 25%, for exploration phase projects

If NHE is successful in due course, de-risking events will drive our base-case valuation, and ultimately the share price, and these events are likely to be:

- Exploration & appraisal results, and conversion of prospective resources to reserves.
- Progress on commercial studies to confirm key engineering and capital costs, usually from the introduction to the project of specialist plant engineering companies or other partners.
- Clarification of funding to de-risk a construction phase.
- Confirmation off helium offtake agreements.

The majority of these would likely converge at the point of Board, Government and partner commitment to an "Final Investment Decision: of FID.

**Figure 18: SoP Valuation**

Asset Value (A\$M)	Risk	Volume-PJ	\$/mcf	A\$M	Basis
Helium Resources		83	0.63	52	Helium One
Initial development	15%	5	17.36	88	DCF Risked at PoG
<b>Total Helium assets</b>				<b>140</b>	
Cash				3	Mar-31
Farm-in cash				7	Proforma
Debt				0	
<b>Total equity value</b>				<b>150</b>	
Shares on issue				223.8	
<b>Value Per share</b>				<b>0.67</b>	

Source: MST Access.

### Secondary measures

We value prospective resources that are not captured in our DCF, with reference to peers as listed in Figure 19. NHE's Helium resource potential is trading at A\$0.45/mcf, assuming a reduction in working interest to 50%. The peer group median is A\$47c/mcf, but more relevant is the Helium One value of A\$63c/mcf and we apply this to the balance of NHE's resource that is not captured in our DCF model.

**Figure 19: Peer group EV/mcf of Helium (A\$/mcf)**

Company	Location	EV (A\$M)	2U (Bcf)	EV/2U	EV/2U -Total Mol.
			(He)	A\$/Mcf	A\$/Mcf
<b>Noble Helium (Post farm-out)</b>	<b>Tanzania</b>	<b>37</b>	<b>83</b>	<b>0.45</b>	<b>0.45</b>
Blue Star	USA	43	13.4	3.21	3.21
Reenergy	South Africa	278	32	8.69	0.28
Grand Gulf	USA	15	21	0.72	0.72
Helium One	Tanzania	87	138	0.63	0.63
Desert Mountain Energy	USA	121	2	60.57	60.57
Avanti Energy	Canada	41	1.4	29.13	0.28
Royal Helium	Canada	97	2	48.52	0.53
First Helium	Canada	13	0.6	21.92	1.00
<b>Total</b>		<b>732</b>	<b>293</b>		<b>0.459</b>
<b>Excluding NHE</b>		<b>695</b>	<b>210</b>	<b>3.31</b>	<b>0.459</b>
Median					<b>0.63</b>

Source: MST Access, assembled from individual company reports and investor presentational material. EV's as at EOT, May 5, 2023.



## Ownership & capital structure

At 31 December there were 223.8 M ordinary shares on issue.

In addition, there are 104M options

Ownership is concentrated into the hands of senior management and seed investors:

Justyn Wood: 30.6%

Kent Masters: 5.1% (Anchor investor, former Executive Director of industrial gas company Linde, currently Chairman, President & COE of Albermarle Corporation USA, the world's largest Lithium producer.

Shoki Pty Ltd: 11.1%, associated with co-founder and former Executive Chair Walter Jennings

## Board & Management: Previous east Africa experience an enabler

We referenced the management team and Board experience in east Africa, over many years as a key enabler. We detail management track record in more detail below.

Exploration track record is obviously paramount given the company's current corporate focus, however corporate capability extends beyond technical expertise. Key executives and directors have extensive, and successful multi-faceted operational, commercial, and financial experience in private and public companies, with particular success in growing small companies into much larger entities, and capturing value through monetisation

### Mr Justyn Wood, Executive Director & CEO

Justyn Wood is a petroleum geophysicist and highly successful explorer; Justyn brings more than 25 years of E&P industry experience to Noble Helium. Justyn has an outstanding track record of value creation with a global career in technical and managerial roles with majors and super-majors Chevron and Repsol and at juniors Hardman Resources and Jacka Resources Australia. He has designed and executed numerous international frontier exploration projects and is recognised as having played key roles in unlocking the then frontier petroleum provinces of the East African Rift and the Guyana basins of NE South America. As a proven contrarian opportunity finder and highly successful explorer, Justyn became aware of the importance of helium and the potential for a Tier-1 helium resource in the East African Rift System. Following extensive research, he has committed his full attention to applying his skills and experience in securing the global supply chain of this critical, high-value, rare and unique, technology-enabling gas.

### Mr Shaun Scott (appointed 25 January 2022), Non-Executive Chairman

Shaun Scott is an experienced independent non-executive director on publicly listed and private company boards. Shaun's board experience includes non-executive director roles in the resources sector, training and education, alternative waste technology and the services industries. As an executive, Shaun was CEO of Arrow Energy Ltd and was instrumental in taking this business from a \$20 million coal seam gas explorer to a significant gas and energy producer and leader in the development of Queensland's LNG industry until Arrow's \$3.5 billion acquisition by Shell and Petro-China in 2010. Shaun is a Chartered Accountant, whose corporate career involved financing, commercial and M&A activities in the mining, resources and energy sectors in Australia, the United States and Asia, negotiating and closing many billions of dollars of transactions. At the board level Shaun has operated as Chairman and Non-Executive Director of several publicly listed companies and chaired numerous board sub-committees. Shaun has specific expertise and experience in business strategy, financing, negotiations, financial and risk management, executive remuneration, governance, and safety leadership.

### Prof. Andrew Garnett (appointed 9 December 2021) Non-Executive Director

Prof. Garnett is currently the Director of the University of Queensland's research Centre for Natural Gas (CNG), working closely with the main LNG project proponents in Queensland, Australia. The Centre aims to be a leading provider of a wide range of technical and social science research services in this unconventional sector. He is also research Director of the University's Carbon Capture Utilisation and Storage Program. Andrew is a former non-executive Director of National Energy Resources Australia, an Australian government industry growth initiative and a former reviewer for natural gas for the IEA's World Energy Outlook series. He is a current non-executive Director of the Australian Gas Industry Trust. A former Shell and Schlumberger executive, Andrew has over 25 years' world-wide experience with oil majors in conventional and unconventional hydrocarbon exploration, appraisal and development projects. He has worked with the Queensland government, Petroleum and Gas Inspectorate on Well Construction Codes and Health and Safety and with Industry on Well Integrity Modelling.

### Mr Ariel (Eddie) King (appointed 15 December 2021), Non-Executive Director

Mr King is a qualified Mining Engineer. Mr King holds a Bachelor of Commerce and Bachelor of Engineering from the University of Western Australia. Mr King's experience includes being a Manager for an investment banking firm, where he specialised in the technical and financial analysis of bulk commodity and other resource projects for investment and acquisition. Eddie is also a director of CPS Capital Group, one of Australia's most active stockbroking and corporate advisory firms specialising in capital raisings and corporate advice to junior / mid cap companies with high potential growth prospects.

**Mr Walter Jennings (resigned on 31 January 2022), co-founder former Executive Chair**

Mr Walter Jennings is a start-up specialist with an enviable track record with 4 of the world's largest multinational companies and later in his own successful business start-ups. In his corporate career, he was part of history as a major Australian industry disruptor with four of the world's largest marketers. As part of a team, he was integral in growing one market segment from \$10 million pa to \$8 billion pa and capturing 80% of that market in the process.

Walter later reconstructed an entire 250-person national sales and marketing team across 6 divisions in just 9 months for a major industry. He reduced operating costs from 12%pa to just 3%pa, whilst increasing sales revenues by 14% in the first full year. He pioneered two significant start-up ventures, one that has grown to a \$20b market segment today. In the other, he raised \$30m to develop and launch a unique service operation, employing 1,000 people that revolutionised the relationship between suppliers and retailers. He has wide experience in corporate governance, board, chair and directorship roles.

**Mr Graham Yerbury, Chief Financial Officer (appointed 19 September 2022)**

Mr Yerbury has over 40 years of experience from executive and senior finance roles with ASX-listed and multi-national resources and professional services companies. He has a proven track record as CFO, most recently with CleanCo Queensland Limited, and previously with Senex Energy, Cardno, Macarthur Coal and coal seam gas producer Arrow Energy.

**Mr Craig McNab, Company Secretary (appointed 20 December 2021)**

Craig McNab is a Chartered Accountant and Fellow member of The Chartered Governance Institute (Chartered Secretary) with over 13 years' experience in the resource industry and accounting profession in Australia, New Zealand and the UK. He initially qualified as an auditor at PricewaterhouseCoopers and his experience includes senior corporate compliance positions at De Beers UK and Anglo American plc in London. He provides services to a number of ASX-listed resource companies, specialising in corporate compliance and financial accounting.

**External expertise**

NHE has developed relationships with experts that are academically accredited as being early pioneers in identification of helium potential in Tanzania

Of key relevance is an exclusive, 5-year agreement with global helium geology experts, Dr Jon Gluyas, and Dr Chris Ballentine, for access to their "Global Helium Database"-

Dr Gluyas is Chair in Geoenergy Carbon Capture and storage, Durham University, UK.

Dr Ballentine is Chair of Geochemistry, University of Oxford UK.

# Risk Factors

There are several risks in our opinion, including but not limited to:

- **Exploration and geology.** NHE's acreage has very little historical well data, and most of the belief to data is built around surface samples for Helium and geological theories. Drilling is required to confirm the geological models.
- **Helium prices.** The Helium market is small, and over the past 10 years there have been periods of over supply and under supply and volatile prices. Prices currently at record highs, and there is significant downside risk if the spate of new entrants, including NHE, find too much Helium and glut the market
- **Sovereign risk.** Tanzania is a developing nation and previous administrations have not been as open to foreign investment and mining as the current. Fiscal terms could change.
- **Economics.** Compared to the USA or Canada, mobilising equipment and operating in Tanzania is higher cost. There are not many established oil and gas service providers, the inland is remote and well costs, process plant capital costs, and operating costs are likely to be higher than those in North America.
- **Capital availability.** NHE is a small company, does not have an income stream and will need ongoing support from equity investors and joint venture partners for continuity of operations through the exploration phase. External funding may be difficult and / or expensive to source.
- **Operational risk.** NHE has not previously developed a helium project and has no historical operational experience.

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