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NOVEMBER 2022

ENERGY SHIFT

POWER TO THE PEOPLE

The new global energy mix keeping the economy humming

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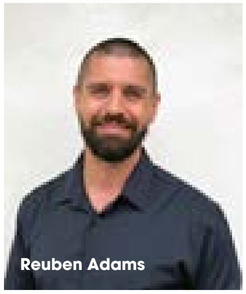
ENERGY GUIDE


Nuclear power plant


Reuben Adams


The Ranger Uranium mine in Kakadu, NT

Investing in energy

As old energies and clean fuels compete to power our economy, now is the time to take a closer look at energy stocks

REUBEN ADAMS

The global energy mix is an exciting, sometimes confusing beast.

Thermal coal, oil, and LNG still dominate supply and consumption, but nuclear energy – and its feedstock, uranium – is back with a vengeance.

And let's not forget emerging tech like green hydrogen, which is evolving at a frantic pace to power our transportation, homes, and communities in the future.

In 2022, the LNG market has been roiled by the Ukraine war, prompting Europe to rapidly pivot away from its major supplier Russia, or attempt to, anyway.

That's led to substantial market disruptions.

Spot LNG prices have been under extreme upward pressure, reaching historical highs of around US$60/million British Thermal Units earlier in the year.

Prices have since retreated, but Fitch expects them to remain elevated over the coming years, "as the ongoing energy crunch proves slow to abate".

And what about coal?

Again, an industry supposedly in its death throes is very much alive due to war, trade constraints and what WoodMac calls "the existential threat of the energy transition".

Coal stocks are making record profits. For major miner Glencore, coal's magic 2022 run has translated into a stunning 800%+ lift in earnings per share from US0.10c to US0.92c in the first half of the year.

Nuclear power, once maligned, is now seen by many as an energy saviour in the transition to green energy.

Medium term uranium demand was already expected to outstrip supply by quite some margin. There is now a large and growing gap between supply, projected supply and what will be required into the future.

> "Thermal coal, oil, and LNG still dominate supply and consumption, but nuclear energy – and its feedstock, uranium – is back with a vengeance"

For example, the biggest growth market in China is building 10 large reactors a year for the next 15 years.

Then there's the "holy grail of clean energy" green hydrogen, which could eventually displace coal in power and steel "as countries race to net zero and low-carbon hydrogen costs fall," WoodMac says.

"This displacement will make the Asia Pacific region the largest consumer of low carbon hydrogen by 2050, with a combined demand from steel and power alone of 40 million tonnes per annum," it says.

EDITORIAL

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NEXT ISSUE

Investor Guide: Technology
Date: 2023

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EDUCATION OVERVIEW

Energy to sell, or cash to burn?

A new investment dynamic has put fast profits over energy sector growth – but at what cost?


Peter Strachan


Hydrogen Park, SA

PETER STRACHAN

Australia is a net energy exporter in the form of liquified natural gas (LNG), coal and uranium oxide. Oil production of 380,000 barrels per day contrasts with consumption near one million barrels per day, resulting in a net importation of petroleum liquids. The nation exports about 80 per cent of its gas production, or 11 billion cubic feet (Bcf) per day, as LNG, while 2.7 Bcf of gas is consumed daily in the domestic market.

High risk-reward: Cyclical commodity pricing

The petroleum industry is characterised by high geological and political risks, incredible commodity price volatility, massive capital intensity and growing threats to its social license to operate.

It is not uncommon for offshore exploration wells with a 70% chance of failure to cost over $100 million. Combined with falling oil and gas prices late last decade, these risk factors saw Australian exploration investment fall from $3 billion in 2009 when 340 exploration wells were drilled, to a low of around $400 million in 2021 on just 30 wells, as lower cost onshore exploration dominated.

Focus shifts to profitable production

Petroleum price increases have lifted operating cash flows and boosted forecast net present values for development, providing confidence for project funding going forward. Over the past three years, crude oil has traded between US$25 and US$125 per barrel while spot LNG cargoes ranged from US$2 to over US$50 per gigajoule. Thermal coal miners experienced commodity prices of between US$50 and US$120 per tonne in the decade prior to 2020 as global funds shunned the industry. Recent pricing closer to US$400 per tonne has strengthened balance sheets boosting capital needed to sustain operations.

After a decade of uncommercial uranium oxide pricing below US$40 per pound, the market has sprung to life. Spot pricing for uranium oxide concentrate recently hit US$62/lb before a recent retreat, spurring the recommissioning of Boss Energy's in situ recovery project at Honeymoon Well in South Australia, joining BHP's legacy production of around 3,000 tpa of U3O8 from Olympic Dam.


An oil refinery

Consumption of fossil fuels not declining

More energy is required to support society as nations continue to expand economies and global population numbers continue to rise by about 75 million annually. To date, a needed transition to energy sourced from lower carbon intensity, rebuildable machines that capture, store, and distribute energy generated from wind and solar sources, has lagged growth in total energy consumption.

> "More energy is required to support society as nations expand economies and global population numbers continue to rise by about 80 million annually"


Woodside - North West Shelf Project, WA

QUICK FACTS

- Australia: a net importer of petroleum liquids but exports ~ 11 Bcf gas daily.
- Cash flow is king - focus on production and project development, not exploration.
- Demand rising faster than supply means a higher price paradigm.

A new investment paradigm

Investment dynamics for the energy sector have altered dramatically since 2019. Access to capital has been impacted by ESG concerns, historical poor returns on capital and commodity price weakness for the sector. Major fuel producers have substantially downgraded exploration spending to focus on generating free cash flow by developing their existing portfolio of projects, aiming to reward shareholders by paying dividends rather than chasing costly growth. This squeeze was exemplified when FAR Ltd was obliged to sell a ~$1.7 billion interest in the 485-million-barrel Sangomar development for ~$235 million for lack of access to funding.

Woodside's merger with BHP is evidence of this hunkering down, cost reduction, cash flow focused approach with most major energy companies holding a project development to-do list that will keep them occupied for a decade.
Ultimately, unless funds are directed at exploration, the pool of projects that are ready to develop will shrink and supply will remain constrained, holding commodity prices high.
A bid for pumped-hydro, solar/wind company Genex Power demonstrates that eyes have finally turned to the rebuildable sector.
Meanwhile, Aussie battery maker Redflow is scoring grid-scale power storage installations to go alongside its list of smaller applications.


Genex Power's Kidston Pump Storage Hydro Project

MARKET INSIGHTS

Uranium's warm glow

As a nervous world looks to nuclear power to shore up energy security, this once maligned metal has been rebranded as an energy saviour


Guy Le Page

> "With Sprott taking the 'slack' out of the uranium spot market, utilities will be forced to look for sources of primary uranium production"

GUY LE PAGE

While uranium prices have eased from 10-year highs of US$57/lb and are now sitting around US$49/ lb, it seems like the momentum behind uranium is unstoppable if shifting government policy (e.g., US, Korea, UK, US Japan, and China) is anything to go by.

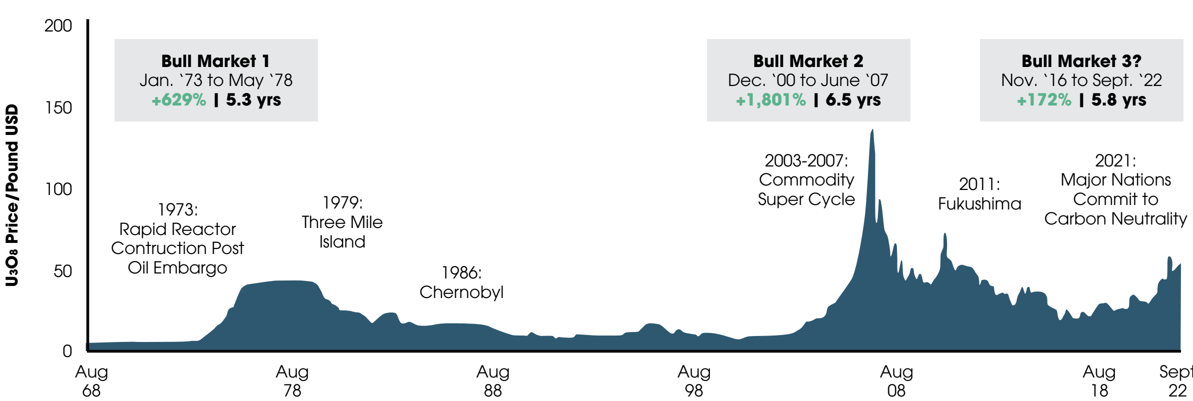
Japan recently ordered the development of new reactors in addition to reactivating 17 more. Not surprisingly France, which has been topping up Germany's power requirements, will be at full capacity this winter. It was only a matter of time before uranium took its rightful place as the shortfall from many renewable initiatives became too hard to ignore. Nuclear energy is also the largest low carbon source of electricity. Despite the renewed interest in nuclear energy, the US Energy Information Administration (EIA) still thinks its share of energy will reduce from 10% in 2020 to 8% in 2030.

Macquarie Research recently pointed out that projected demand is exceeding mine supply over the longer-term. Utilities are now increasing their contracting levels and there have been delays in reactor shutdowns in combination with the restarting of a number of reactors. Macquarie has lifted its uranium spot price projections over FY24 and FY25 to US$55/lb and up to US$80/lb; the latter, in my opinion, representing the incentive price for the restarting of many uranium mines.

The spot price is only a guide however and longer-term contracts are more commonly struck at much higher prices. Given uranium represents only 3-5% of total operating costs for most reactors, whether a utility pays US$50/lb or US$100/lb is not make or break, however reactor shutdowns can cost hundreds of millions. The uranium price can therefore be considered "price inelastic". This cycle may well see the 2007 high of US$136/lb breached in the medium term.

Russia is a key player in global nuclear fuel trade (40% of world supply of enriched uranium, followed by Europe at 33% and China at 16%) and remains unaffected by European Commission sanctions. Russia also accounted for around 20% of the EU's uranium imports in 2021 spending US$203 million in the process. Hungary and Bulgaria have been vocal against Russian sanctions on nuclear power. Russia currently has 18 reactors in Europe, including Finland, Slovakia and Hungary. In fact, Hungary announced in August that Russian company Rosatom was constructing two new plants.

Inventories of uranium have been reducing since the Fukushima incident in 2011 and research house UxC believes the overhang of inventory is over thanks largely to Sprott's Uranium Trust's purchase of 59 million pounds of uranium over recent years. Historically, utilities could go into the spot market to top up inventories, however with financials dominating spot markets, this no longer appears feasible. Primary production looks like the only option for reliable, longer-term supplies of uranium. Good news for the likes of ASX listed Boss Energy (ASX: BOE) and Paladin Energy (ASX: PDN) who have both approved a restart to operations over the next 18 months. And behind these producers, Canadian and Australian explorers are also gearing up for a big push.



Are high oil and gas prices here to stay?

Global energy security fears have been spiking, taking prices with them for the ride

Bevis Yeo

BEVIS YEO

Energy has been one of the defining themes of 2022 with spiralling costs impacting on every aspect of our lives.

While it's tempting to blame Covid-19, the Russian invasion of Ukraine, and other geopolitical tensions for the high oil and gas prices we now face, the truth is that the foundation for this crisis dates a fair bit further back.

There is some level of irony involved in this too.

The push towards embracing renewables as the world seeks to achieve net zero emissions by 2050 has been continuing for some time now and was responsible for years of underinvestment in the sector as banks and other institutions faced pressure over their funding for fossil fuel developments.

Let's stop here and be clear about a couple of things, though. First of all, climate change is very real and renewables are key to our clean energy future. These are indisputable facts.

However, there might have been a severe overreaction in relation to fossil fuel developments, which we're now paying the price for.

Because of underinvestment in new supplies, Europe was left scrambling to fill its badly depleted stocks of gas in late 2021 which in turn led to the region being effectively held to ransom by Russia – the supplier of some 40% of its gas.

Russia has since cut off supplies of gas through the Nord Stream pipeline to Germany in retaliation for European sanctions imposed for its invasion of Ukraine.

Things have not been helped by OPEC and its allies' apparent inability to ramp up production – a point the cartel has tacitly admitted by cutting production by 2 million barrels per day.

The same holds true here in Australia, with the east coast facing the very real prospect of not having enough gas for its needs despite the reassurances of the big liquefied natural gas exporters, who rather coincidentally hold the bulk of gas reserves on that side of the continent.

And greater adoption of renewables – as pushed by the Greens – isn't exactly a piece of cake either.

Not only is every other country scrambling to do the same, which leaves us fighting for limited supply, but renewable energy has thus far been used to replace ageing coal-fired generation, which are bigger polluters.

Renewables also need to be paired up with energy storage for the night or the times when wind isn't really blowing. This is still costly and has other issues, leaving peaking gas-fired plants that can be quickly started up as the only real option at this point in time.

For Australia, there is much left to be done before – and quickly – before the shut-down of coal plants in 2035 leaves us in the dark.

Working pumpjacks are seen in the Montebello Oil Field in Montebello, California

QUICK FACTS

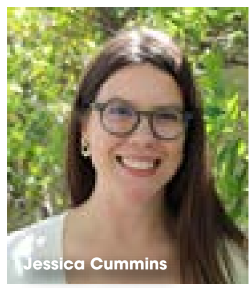
Years of underinvestment in new exploration and development of new hydrocarbon resources both globally and in Australia are as much to blame for elevated oil and gas prices as geopolitical pressures, such as a faster than expected recovery from Covid-19 and Russia's invasion of Ukraine.

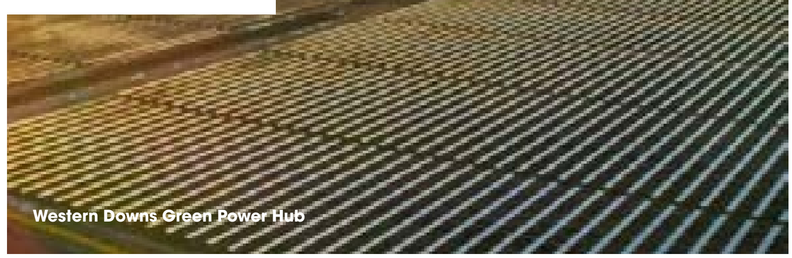
MARKET INSIGHTS

Green hydrogen: Who will win the race?

Can Australia scale up enough to take the lead on clean energy supply?

Modern hydrogen energy storage system with large solar power plant and wind turbine park. 3d rendering.


Jessica Cummins


Western Downs Green Power Hub

JESSICA CUMMINS

The Australian hydrogen industry's transformation from cottage sector to mainstream economic powerhouse is in full swing, as the nation looks to secure a zero-emissions energy future by 2050.

Estimates released in March by PwC found at least $250 billion worth of investment would be needed to develop the 90 hydrogen projects currently in the Australian development pipeline, with gas at the forefront of Australia's green plans.

That is a huge sum, and while most of the capital investment is likely to come from private enterprise, the Australian government is showing support by helping industry fund and develop demonstration and pilot hydrogen projects through a wide array of initiatives.

Since 2018 the Australian Renewable Energy Agency has provided substantial funding to hydrogen projects and studies across the country, committing hundreds of millions to fast-track the development of a renewable hydrogen sector. The Clean Energy Finance Corporation's $300 million Advancing Hydrogen Fund was set up to support the industry through substantial investment, while the $464 million Clean Hydrogen Industrial Hubs program was designed to encourage Australian hydrogen hubs.

Green hydrogen – the type produced from renewables with low carbon emissions – was most recently recognised as a future energy source of significance in the 2022/23 Federal Budget, where $89.5 million was committed over six years to a Hydrogen Highways initiative funding hydrogen refuelling stations on Australian freight lines and $71.7 million was committed over seven years to the development of a green hydrogen hub in Townsville.

The vision is mapped, the path is clear, and government's willingness to invest is evident.

But the question remains – does Australia have what it takes to be a world leader in green hydrogen adaptation and scale up in line with its zero-emission goals?

The hydrogen economy is on its way

The only current established method to produce hydrogen without emitting pollution is through electrolysis, powered by renewable electricity such as wind and/or solar.

Electrolyser technology converts green electricity and water into hydrogen, and industry experts have flagged the sequential doubling of installed electrolyser capacity globally as proof green hydrogen adoption is accelerating faster than even the most bullish market watchers might have expected.

Take these numbers into consideration.

As recently as 2020, the largest electrolyser in the world was a 10MW unit at the Fukushima Hydrogen Energy Research Field (FH2R) in Japan.

This was quickly overshadowed by a 20MW electrolyser at the Bécancour Project in Quebec, Canada, brought online in 2021.

But both of these pale in comparison to the record-breaking 150MW electrolyser that came on stream at China's Baofeng project in 2022.

Even this record will be short-lived now that oil giant Sinopec has plans to construct a 260MW

> "BP's [40.5%] stake of the Asian Renewable Energy Hub is the biggest hydrogen news to come out of Australia this year"

electrolyser at its Kuqa project in northwest China – with a mid-2023 completion date target.

Bahador Tari, Hydrogen and Carbon Markets lead at prominent climate risk and energy transition consultancy Energetics, said Australian industry was bullish too, not only scaling up in terms of the number of projects in the pipeline but also in terms of the average size of these projects – though investment remained a hurdle.

"A number of 'gigawatt (GW)-scale' projects have been announced in Australia, however, it is worth noting that these are still subject to final investment decisions and would only come into operation from 2025 onwards," he said.

"Demand risk and the lack of bankable offtake agreements are potential barriers for some of these projects."

First-mover opportunity beckons.

Australia positioning itself in the hydrogen race

In a positive sign for Australian hydrogen, a total of seven local initiatives made the cut on a list compiled by the International Renewable Energy Agency (IRENA) of the world's 20 largest planned giga-scale hydrogen projects.

The two largest Australian projects on the list were in Western Australia – the $100 billion 28GW Western Green Energy Hub and the 14GW Asian Renewable Energy Hub (AREH) – in which BP recently acquired a 40.5% stake.

According to Tim Buckley, a financial analyst and director at Climate Energy Finance, BP's stake in the AREH project is the biggest hydrogen news to come out of Australia so far this year.

At full scale, the AREH project plans to produce 1.6Mt of green hydrogen or 9Mt of green ammonia per annum.

Australian Renewable Energy Agency at the Cethana Power Station in Tasmania.

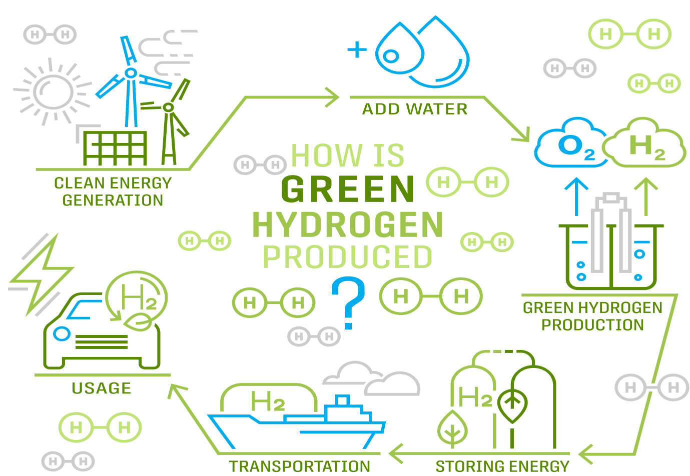
"Although it doesn't necessarily mean the project is going to go ahead right now, it still brings to it a super major's balance sheet and global capacity," he said.

Bringing a powerhouse like BP on to the project would imply that green hydrogen is finally worthy of being considered by the big players as a replacement for oil and gas and is a sign that Australia – and the world – are taking the emerging industry seriously enough to ensure its place in the future of global energy supply.

QUICK FACTS

- The electrolyser is the capital kit or equipment which converts green electricity and water into hydrogen, with industry experts flagging the sequential doubling of installed electrolyser capacity as proof green hydrogen adoption is accelerating faster than even the bulls would have expected.

- Consider the trend in hydrogen electrolyser growth. Each year, the size of the largest electrolyser in the world has grown exponentially.
  - 2020: 10MW in Japan
  - 2021: 20MW in Canada
  - 2022: 150MW in China
  - 2023: 260MW in China (forecast)



FEATURED COMPANIES

As the world chases net zero and low-carbon hydrogen costs fall, a new power paradigm has emerged in the energy sector. Get a jump start on the companies in pole position to fuel our future.

11 ADX Energy (ADX)
12 Bannerman Energy (BMN)
13 Basin Energy (BSN)
14 Blue Star Helium (BNL)
15 BPH Energy (BPH)
16 Buru Energy (BRU)
17 Elevate Uranium (EL8)
18 Frontier Energy (FHE)
19 Galilee Energy (GLL)
20 GTI Energy (GTR)
21 Hartshead Resources (HHR)
22 Jade Gas Holdings (JGH)
23 Kinetiko Energy (KKO)
24 Metgasco (MEL)
25 Port Anthony Renewables
26 Pure Hydrogen (PH2)
27 Red Sky Energy (ROG)
28 Sacgasco (SGC)
29 Steam Resources
30 Talon Energy (TPD)
31 TMK Energy (TMK)
32 3D Oil (TDO)
33 Yellow Rocks Energy

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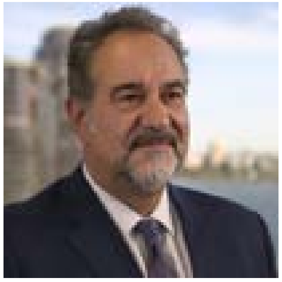


IAN TCHACOS
EXECUTIVE CHAIRMAN

ADX ENERGY

(ASX:ADX)

- **Company Name:** ADX Energy
- **Company ASX code:** ADX
- **Key areas:** Oil, gas, hydrogen, geothermal
- **Key Personnel:** Ian Tchacos, Executive Chairman | Paul Fink, Chief Executive Officer | Edouard Etienvre, Non-Executive Director
- **Locations:** Austria, Romania, Italy
- **Market Cap as of 15/10/22:** $24.53M
- **52 Week share price as of 15/10/22:** $0.005 - $0.013
- **Company Website:** www.adx-energy.com

COMPANY PROFILE

ADX Energy is an oil and gas junior with operations right in the middle of Europe, arguably the most energy hungry region in the world.

Its primary focus is Austria, due to the country's supportive regime, proven yet largely unrecognised oil and gas resources, and excellent existing infrastructure.

ADX currently produces oil and gas at a rate of about 270 barrels of oil equivalent per day in the Vienna Basin and has brought its Anshof oil discovery in Upper Austria – where it has a dominant 1022km^2 exploration portfolio – into production, increasing overall output by approximately 100 barrels/day.

Anshof is expected to up ADX's production in the coming year by up to 900 barrels/day from development drilling planned over the next 12 months which is expected to further boost its emerging status.

However the real prize might well be the giant Welchau gas prospect in Upper Austria, which has a best technical prospective resource estimate of 800 billion cubic feet of gas close to existing gas infrastructure.

With European gas prices averaging about €100 per megawatt (MW) hour – or US$30 per thousand cubic feet – due to Russia restricting supplies, this is not only hugely economic for the company, it could help address the region's gas security concerns. ADX is looking to drill Welchau in the next nine months.

Welchau's location close to a deeper, previously tested gas discovery also increases the likelihood that the prospect hosts condensate-rich, pipeline quality gas.

Additionally, ADX has a portfolio of drill-ready appraisal and exploration targets along with exploration licences in Romania and Italy.

The company is also well positioned to benefit from Europe's push to transition to clean energy, with its assets offering the opportunity to generate complementary renewable energy projects at low cost.

Its Vienna Basin green hydrogen production and storage project seeks to utilise large sources of energy from wind farms surrounding ADX's oil fields to generate green hydrogen, which will be economically stored in multiple depleted gas reservoirs at its Vienna Basin fields.

This can be drawn for sale via the existing gas pipeline system, which can accept up to 10% hydrogen, or supplied directly to high-value markets.

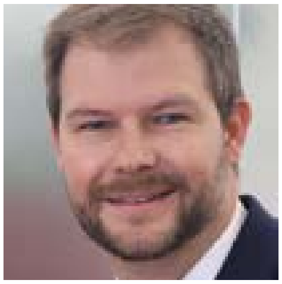
Each Vienna Basin reservoir can store about 500 times more energy than the largest Tesla energy storage Megapack at a much lower price.

Separately, the company is undertaking feasibility studies for a 2MW solar power project at its Vienna Basin fields to reduce operating expenses by providing stable and predictable electricity prices.

ADX is also seeking to form partnerships for the development of the Gmunden multi energy resource prospect, which has shallow gas targets and a deeper geothermal play with the potential to produce between 15 to 20 MW renewable energy.

KEY INVESTMENT HIGHLIGHTS

- Low-EV, cashflow positive oil producer with increasing production from an existing field, along with a recent oil discovery which recently commenced production.
- Plans to drill a high-impact gas exploration well close to an existing discovery to meet Europe's gas crisis as well as further oil development wells in 2023.
- Several renewable projects covering hydrogen, solar and geothermal.



BRANDON MUNRO
CEO

BANNERMAN ENERGY

(ASX:BMN)

- **Company Name:** Bannerman Energy
- **Company ASX code:** BMN
- **Key areas:** Uranium
- **Key Personnel:** Brandon Munro, CEO | Ronnie Beevor, Chairman | Mike Leech, Non-Executive Director & Chairman (Bannerman Namibia)
- **Locations:** Namibia
- **Market Cap as of 15/10/22:** $291M
- **52 Week share price as of 15/10/22:** $3.70 - $1.95
- **Company Website:** www.bannermanenergy.com

COMPANY PROFILE

Bannerman Energy is progressing its Etango-8 development towards construction in a buoyant uranium market, with global prospects for nuclear power at their strongest in decades.

The company is leading the next generation of uranium suppliers, having already locked in environmental approval and about to release the results of a definitive feasibility study (DFS).

Etango is a large-scale, advanced project ranking in the top five globally with a resource of 208 million pounds (Mlb) and an estimated starting annual production of 3.5Mlb, with strong scalability potential.

A previous pre-feasibility study demonstrated Etango-8 would be a highly robust project, with an initial 15-year mine life, and strong economics.

Etango couldn't be in a better spot, with Namibia a top three global uranium producer hosting major mines such as the Rossing, Langer Heinrich and Husab operations.

The country has a highly established nuclear regulatory regime; having produced and exported uranium for the past 45 years. This long history provides it with already established and accessible port, road, rail, water, and power infrastructure.

Uranium is a key pillar of the government's national development agenda, meaning it has strong political and social support.

In early August 2022, Bannerman lodged a mining licence application for the proposed Etango-8 mine.

CEO Brandon Munro said this was the culmination of extensive technical and economic evaluation of the Etango project, including more recently on the fast-tracked Etango-8 development route.

"We can demonstrate a robust development case at Etango, which also delivers extensive social and economic benefits to local communities and the nation of Namibia," he said.

In mid-August 2022, Bannerman completed the bolt-on acquisition of a 41.8% stake in TSX-V listed heavy rare earths developer Namibia Critical Minerals, which provides significant alignment and synergies with the Etango project.

The Bannerman team has deep Namibian uranium and nuclear expertise and includes the former managing director of Rossing Uranium, Mike Leech, who is also the former president of the Namibian Chamber of Mines.

Rossing, which was once majority owned by Rio Tinto, is one of the longest-running and largest open pit uranium mines in the world.

Munro, an experienced corporate financial lawyer and resources executive, is the former chair of the World Nuclear Association Nuclear Fuel Demand Working Group and previously lived in Namibia for over five years.

He said the Etango project offered unparalleled valuation leverage to the continued growth in the uranium price.

The highly anticipated DFS for Etango-8 is due for release imminently and set to be an investment catalyst.

Front-end engineering and design (FEED) is equity funded and on track for completion in the second quarter of 2023. Project financing and offtake workstreams are currently underway.

Bannerman expects to make a final investment decision in late 2023.

KEY INVESTMENT HIGHLIGHTS

- Etango is a world-class, large-scale uranium deposit with a resource of 208Mlb, environmental approval and a DFS due in Q4.
- Namibia is a premier, politically stable jurisdiction with a 45-year history of producing and exporting uranium and ranked top three for production globally.
- A team with extensive experience in mining uranium, operating in Namibia, and financing and construction.

PETE MOORHOUSE
MANAGING DIRECTOR

BASIN ENERGY

(ASX:BSN)

- **Company Name:** Basin Energy
- **Company ASX code:** BSN
- **Key areas:** Uranium
- **Key Personnel:** Pete Moorhouse, Managing Director | Blake Steele, Chairman
- **Locations:** Saskatchewan, Canada
- **Market Cap as of 15/10/22:** $14.62M
- **52 Week share price as of 15/10/22:** $0.170 - $0.205
- **Company Website:** www.basinenergy.com.au

COMPANY PROFILE

Fresh off a $9 million IPO and ASX listing, uranium explorer Basin Energy is busy preparing to commence a maiden drilling program at its Geikie project – just outside the southeastern edge of the famed Athabasca Basin in Saskatchewan, Canada.

Steered by former Alligator Energy exploration manager Pete Moorhouse, Basin acquired an initial 40% stake in the Geikie project and the nearby North Millennium project from Toronto-listed CanAlaska Uranium in April.

The deal is an earn-in, which allows Basin to earn up to 80% in the projects over 48 months by undertaking exploration work and conducting expenditure.

It also included a 100% interest in the Marshall project, which is next to the North Millennium project in the Athabasca Basin – a high-grade, top-three global uranium producing region for more than 40 years.

Basin Energy's initial focus will be at the Geikie project, an area historically overlooked for its uranium potential despite being located adjacent to and sharing geological similarities with the world-class Athabasca uranium field. Initial mapping, ground and aerial surveys are underway.

Recent airborne radiometric and magnetic surveying identified four new targets at the site. The data also identified two new structural corridors in the project area.

The results solidified Basin Energy's initial analysis that Geikie is highly prospective for near-surface uranium mineralisation and have been a catalyst for its plans to pursue an aggressive exploration program at the project.

The company has fast-tracked plans for a versatile time domain electromagnetics airborne survey in November, to firm up targets before the start of diamond drilling early next year.

Ground surveys and sampling will begin at North Millennium and Marshall in the first half of 2023, with a diamond drilling campaign expected in the second half.

Importantly, Basin has listed at the perfect time. Uranium has rallied in price this year, from an average of around US$31 per pound to ~US$53 per pound, as concern over energy disruption in Europe grew due to the war in Ukraine.

Those concerns have so far proven true – Russian gas supply has been restricted, and the EU is now phasing in a plan to cut down on Russian crude oil imports.

The uranium rally was also prompted by shifting views of nuclear as a carbon-free energy source. As a result, governments in the EU are taking another look at nuclear energy.

Germany announced plans to delay the shutdown of two reactors, while Japan signaled a policy reversal in August when it confirmed plans to restart some of its idle reactors and confirmed a review into the construction of more.

Meanwhile, just over the border from Canada in the US, the Biden government has expressed its desire to wean off Russian uranium supply as its nuclear renaissance takes shape.

KEY INVESTMENT HIGHLIGHTS

- October IPO raised $9 million. Surface mapping and sampling underway, with further geophysics in November before maiden drilling at Geikie in H1 2023.
- Airborne radiometric and magnetic surveys identified multiple priority targets at Geikie, adjacent to zones with promising drill results.
- Nuclear essential to many countries developing carbon emission strategies. The EU recently classified nuclear investment as green.

TRENT SPRY
CEO & MANAGING DIRECTOR

BLUE STAR HELIUM

(ASX:BNL)

- **Company Name:** Blue Star Helium
- **Company ASX code:** BNL
- **Key areas:** Helium
- **Key Personnel:** Ross Warner, Executive Chairman | Trent Spry, CEO & Managing Director | Peter Kondrat, Chief Operating Officer | Scott Fenoglio, Chief Financial Officer
- **Locations:** Colorado, US
- **Market Cap as of 15/10/22:** $44.41
- **52 Week share price as of 15/10/22:** $0.025 - $0.069
- **Company Website:** www.bluestarhelium.com

COMPANY PROFILE

Helium is an irreplaceable gas used in a multitude of high-tech applications including MRIs, semiconductor manufacturing, nuclear reactor cooling and fibre optics.

Growing demand and continued supply scarcity have combined to increase helium prices to historic highs over US$1,000 per thousand cubic feet - around 140 times the current Henry Hub natural gas spot price.

It is little wonder Blue Star Helium has aggressively progressed an exploration and development program across its portfolio in Colorado's Las Animas County, near the historically significant and government-owned Model Dome helium field.

BNL's work in Las Animas has paid off in spades so far, with the company making five helium discoveries – four at the Galactica/Pegasus field and one at the Voyager field, while gas has also been logged at two wells within the Enterprise field.

At Galactica/Pegasus, Blue Star recently declared its fourth exploration well – JXSN#4 – to be a high helium concentration discovery, registering 6.06% helium concentration – nearly double the 3.14% helium content of its JXSN#2 discovery. JXSN wells have flowed at rates of up to 412,000 cubic feet of gas to surface during drilling.

"The results of this well will be integrated into the current resource update process for Galactica/Pegasus which is expected to culminate in the declaration of contingent resources for this field," BNL managing director Trent Spry said.

Over at the Voyager project, the successful BBB#1 well that intersected a 134ft gas column with 8.8% helium concentration – comparable to that found at the Model Dome field – has allowed the company to pencil in an unrisked best estimate contingent resource of 643 million standard cubic feet.

This is additional to the existing prospective helium resource across Blue Star's Las Animas prospects - previously reported at 13.4 billion cubic feet and currently being updated.

And this is just the activity within its wholly-owned projects.

Blue Star has also participated in the successful drilling of the Sammons 315310C well within the Serenity Area of Mutual Interest – the first of four wells shared between itself (50%), operator Vecta Oil & Gas (25%) and Prospero Oil and Gas (25%).

This well flowed gas at rates of up to 500,000 cubic feet in testing carried out during drilling, and the partners are currently reviewing flow test, pressure and compositional data after encountering additional gas in the lower Lyons formation.

With successful exploration under its belt, the well-funded company ($10.8m cash at 30 June 2022) is planning development and FEED studies for processing facilities across its projects.

It is also gearing up for drilling helium development wells, with 56 planned across its land position at varying stages of permitting.

This includes seven offset development wells in advanced stages of permitting at the Galactica/Pegasus and Voyager fields.

BLUE STAR | HELIUM

KEY INVESTMENT HIGHLIGHTS

- A pure helium play with a largely untested strategic US land position in Las Animas County, Colorado.
- Ongoing low-cost, high-impact exploration and development drilling program has made several discoveries at the Galactica/Pegasus and Voyager fields, allowing for significant, high-grade green helium contingent resources to be booked.
- Clear commercialisation pathways are available for the critically under-supplied helium market.

DAVID BREEZE
EXECUTIVE CHAIRMAN
& MANAGING DIRECTOR

BPH ENERGY

(ASX:BPH)

- **Company Name:** BPH Energy
- **Company ASX code:** BPH
- **Key areas:** Natural gas
- **Key Personnel:** David Breeze, Executive Chairman & Managing Director | Tony Huston, Non-Executive Director | Charles Maling, Non-Executive Director
- **Locations:** New South Wales
- **Market Cap as of 15/10/22:** $19.81M
- **52 Week share price as of 15/10/22:** $0.009 - $0.063
- **Company Website:** www.bphenergy.com.au

COMPANY PROFILE

A diversified business with investments across biotech and resources, BPH Energy is uniquely leveraged to the Australian energy market courtesy of a 36% stake in offshore gas explorer Advent Energy.

Perfectly timed to fuel a market hungry for domestic gas, Advent seeks to drill an offshore exploration well at the Baleen prospect within the PEP-11 exploration license, around 26km southeast of Newcastle.

That location is significant – Newcastle is home to the world's largest coal export port, with heavy commercial shipping traffic and major onshore industrial activity including industrial gas customers in energy and manufacturing.

Gas currently powers around 1.3 million households and 33,000 businesses in NSW, while the manufacturing sector consumes about 84% of the state's industrial gas load. Some 250,000 industry jobs in the state depend on gas as a feedstock.

But winter saw sharp gas price hikes in Australia's east coast energy market, following a disruption of global supplies due to the war in Ukraine. The Australian market was simultaneously affected by the shutdown of some coal-fired generators over the winter, spurring higher reliance on gas generation.

The market tumult has highlighted the need for additional gas supply, especially in the south east, where Bass Strait gas production is tapering off. Victoria's offshore gas output is also expected to fall by about 43% by 2025, according to a report from the Australian Energy Market Operator.

With a project considered to be of national significance on their books, it's perfect timing for Advent, 15% JV partner Bounty Oil & Gas, and BPH and its shareholders.

The entities are working towards securing an extension to their existing exploration permit at PEP-11 through government regulator the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) – a license which would allow the drilling of an exploration well at Baleen.

BPH executive chairman and managing director David Breeze is also executive director of Advent, and a corporate finance specialist with experience in structuring, capital raising and listing of more than 70 companies including many in the energy sector.

The company is also exploring its opportunities for carbon capture, usage and storage (CCUS) technology off the NSW coast, which was identified in Australia's Technology Investment Roadmap as a priority technology.

CCUS is considered by the International Energy Agency to be the only large-scale mitigation option available to deliver additional carbon dioxide emission reductions to help meet 2050 climate goals.

PEP-11 is well located to assist with the delivery of carbon storage, with BPH highlighting the fact that around 30% of the entire Australian CO2 sits in close proximity to the project.

The companies expect to be able to test the CCUS viabilities of PEP-11 once the extension to the exploration permit is granted.

bphenergy

KEY INVESTMENT HIGHLIGHTS

- BPH holds a 36% interest in unlisted Advent Energy – an 85% partner in a JV exploring for gas at PEP-11, off NSW's lower Hunter region.
- The company believes there is ~5.7 trillion cubic feet of gas off the Hunter – enough to supply NSW for +20 years.
- Proposed production would supply Australia's south-east, where shortages have pushed up gas prices significantly.

THOMAS NADOR
CEO

BURU ENERGY
(ASX:BRU)

- **Company Name:** Buru Energy
- **Company ASX code:** BRU
- **Key areas:** Oil, gas, carbon capture and storage, hydrogen, zinc, lead
- **Key Personnel:** Thomas Nador, CEO | Eric Streitberg, Executive Chairman | Dr Kris Waddington, Chief Operating Officer | Paul Bird, Chief Financial Officer
- **Locations:** Australia
- **Market Cap as of 15/10/22:** $57.81M
- **52 Week share price as of 15/10/22:** $0.12- $0.29
- **Company Website:** www.buruenergy.com

COMPANY PROFILE

Chaired by veteran oil and gas man Eric Streitberg, who founded ARC Energy and transformed it from a junior explorer into a mid-sized oil and gas producer before it was acquired by AWE Limited, Buru Energy is no stranger to oil and gas exploration and development.

With a history of exploring the still relatively underexplored onshore Canning and Carnarvon Basins, the company has built a strong portfolio covering over 24,500km² that provides current cash-flow and strong development opportunities.

Its bread and butter is its 50% operated interest in the Ungani oil field (production licences L1 and L2) in the Canning Basin, about 100km east of Broome that is shared equally with Roc Oil – a subsidiary of Chinese multinational conglomerate Fosun International.

Crude oil produced from the field is trucked to a storage tank at the Port of Wyndham where it is then sold under a marketing agreement with BP Singapore to primarily South East Asian refineries.

During the first half of 2022, the field produced about 91,400 barrels of oil (bbl) while total sales receipts totalled about $14.2 million from two liftings of about 106,600bbl.

Commercial and technical analysis to optimise oil production from its Ungani oil field to capitalise on the current high oil price environment is continuing.

The company also holds a 50% interest in and is the operator of the Rafael gas and condensate discovery in EP 428, about 50km east of Ungani which was discovered by the Rafael-1 well.

Rafael has been independently certified to host high estimate (3C) contingent resources of 1.02 trillion cubic feet of gas and 20.5 million barrels of condensate, more than enough to be considered a significant project capable of supporting an export development.

Other oil and gas assets held by the company are its 100% interest in the Yulleroo field tight gas accumulation with a substantial independently certified contingent gas and condensate resource, and exploration acreage in the onshore Carnarvon Basin.

Through its Geovault subsidiary, Buru is also undertaking studies to evaluate the carbon capture storage (CCS) potential of the Carnarvon Basin around the EP 510 permit it shares with Energy Resources, and in the Canning Basin where it operates all of its permits.

Separately, Buru has established an exploration portfolio in South Australia for natural hydrogen and is actively evaluating other areas where there is potential for natural hydrogen occurrences.

It is also in joint venture with Sipa Resources and has had initial success in the Barbwire Terrace area of the Canning Basin exploring for hydrothermal lead-zinc targets.

BuruEnergy

KEY INVESTMENT HIGHLIGHTS

- Buru is focused on exploring and developing oil and gas resources in Western Australia's onshore Canning and Carnarvon Basins and has existing conventional oil production, and a world class conventional gas and condensate discovery.
- The company has new energy businesses in carbon capture and storage (CCS) to service third party emitters as well as natural hydrogen.
- It is also involved in a joint venture searching for zinc and lead, key components for energy storage solutions.

MURRAY HILL
CEO & MANAGING DIRECTOR

ELEVATE URANIUM

(ASX:EL8)

- **Company Name:** Elevate Uranium
- **Company ASX code:** EL8
- **Key areas:** Uranium
- **Key Personnel:** Murray Hill, CEO & Managing Director | Shane McBride, CFO & Company Secretary
- **Locations:** Namibia, Australia
- **Market Cap as of 15/10/22:** $133.61M
- **52 Week share price as of 15/10/22:** $0.345 - $0.825
- **Company Website:** www.elevateuranium.com.au

COMPANY PROFILE

With a growing need for carbon-free baseload power to combat climate change, uranium demand is rapidly rising and the commodity is a good space for explorers to be in.

Nuclear is central to the world's clean energy transition, but there is a shortage of major new discoveries around the world to help meet demand.

That's where Elevate Uranium is stepping up to the plate, having made four significant discoveries in Namibia and Australia over the past three years.

In May 2022, the company announced a maiden resource of 20.3 million pounds (Mlb) for the Koppies project in Namibia, increasing its total uranium resource inventory to 115Mlb.

EL8 has also uncovered significant extensions to the mineralisation.

"The potential of Koppies continues to improve with each drill line," Elevate managing director Murray Hill said.

"We currently have a mineral resource of 20.3Mlb of uranium at Koppies and we have identified that uranium mineralisation extends for another 10 kilometres to the northeast of the Koppies 1 and 2 resources.

"As is the case at Koppies 1 and 2, the uranium mineralisation is shallow and generally less than 10 metres below the surface."

Both Namibia and Australia are globally significant uranium jurisdictions. Namibia is the world's fourth-largest producer and has the fifth-largest resources, while Australia is the third-largest producer and has the largest resources.

Elevate owns the largest tenement area for uranium in Namibia.

The company has another valuable string to its bow – its 100% owned patented U-pgrade™ beneficiation process.

U-pgrade™ rejects waste ore to produce low-mass, high-grade concentrate at a significantly lower cost.

The process has demonstrated it can increase the grade of ore from Elevate's Marenica project in Namibia by over 50 times, and reduce acid consumption at the Angela project in Australia by 80%.

As a result, U-pgrade™ has shown potential to reduce capital and operating costs by as much as 50% compared to conventional processes.

The environmental benefit is also significant. The process is capable of substantially reducing the amount of acid needed and producing inert, environmentally safe tailings.

It also cuts down the amount of ore being sent to the leach plant, which results in a smaller tailings storage area requirements.

Elevate's projects in Namibia and Australia have shown that they are amenable to beneficiation using the U-pgrade™ process.

This provides flexibility and optionality in project design and development, and due to the anticipated lower cost of production, has the potential to allow Elevate to develop a mining operation at lower uranium prices than its peers.

Elevate is headed by an experienced team with over 40 years in uranium and a proven track record in the exploration and development of mining projects.

KEY INVESTMENT HIGHLIGHTS

- Elevate delivers a maiden resource of 20.3Mlb for the Koppies uranium project in Namibia within the first three years of tenure.
- Koppies is one of four discoveries made by Elevate in Namibia and Australia in the past three years.
- Elevate's proprietary U-pgrade™ beneficiation process provides a value-add produce low-mass, high-grade concentrate at significantly lower costs.

SAMUEL LEE MOHAN
MANAGING DIRECTOR

FRONTIER ENERGY

(ASX:FHE)

- **Company Name:** Frontier Energy
- **Company ASX code:** FHE
- **Key areas:** Renewable energy, green hydrogen
- **Key Personnel:** Grant Davey, Executive Chair | Samuel Lee Mohan, Managing Director | Chris Bath, Executive Director
- **Locations:** Australia
- **Market Cap as of 15/10/22:** $119.26M
- **52 Week share price as of 15/10/22:** $0.155 - $0.510
- **Company Website:** www.frontierhe.com

COMPANY PROFILE

The renewable sector is front and centre as Australia embraces ambitious emission reduction targets, so the timing couldn't be better for Frontier Energy to push ahead with its aggressive green energy goals.

Frontier is focused on developing the Bristol Springs project in Western Australia's South West, with stage one forecast to produce at least 4.4 million kilograms of green hydrogen per annum, powered through a 114MW solar farm and a 36.6MW electrolyser.

The company is well-advanced, with a hydrogen study already in place outlining outstanding economics. Chief among these is a low all-inclusive cost of $2.83 per kilogram of green hydrogen. FHE says this places Bristol Springs as one of the lowest cost green hydrogen projects in Australia, and indeed the world.

The company owes this relatively low cost to the project's location, which allows for a palatable initial capital requirement of $166.3 million for the solar plant and $69.9 million for the electrolyser.

On top of the low initial cost, the Australian government's ambition to make Australia a leader in the hydrogen industry means attractive financing terms are likely from government bodies including the Clean Energy Finance Corporation (CEFC) and Australian Renewable Energy Agency (ARENA).

The site is just 3.5km from the nearest connection to the South West Interconnected System – allowing it to both export excess solar renewable energy to the state's grid and purchase renewable energy like wind from other providers during periods of low or no sun.

It also provides access to multiple fresh water sources, with the company announcing an agreement for scheme water with the Water Corporation which eliminates the need for an expensive desalination facility which would extend approval timelines.

Bristol Springs is also surrounded by major infrastructure and industries likely to be early movers in the transition from fossil fuels to hydrogen.

Opportunities include blending hydrogen into the Dampier to Bunbury Natural Gas Pipeline – WA's most significant gas transmission asset – which has a connection point 3km from the project where it branches off to provide gas to Alcoa's Wagerup Alumina Refinery.

With these advantages in mind Frontier is pushing ahead, and recently shortlisted two engineering, procurement and construction contractors for its stage one solar farm.

A separate EPC tender process for the development of the electrolyser to produce green hydrogen will begin following completion of the preliminary front-end engineering and design study (Pre-FEED), due for release in the current quarter.

Frontier has also charted a path for further expansion with a study finding the 846 hectares of land it holds to be enough to host a solar-only facility that could produce at least an additional 438MW of solar.

This would deliver a corresponding increase in green hydrogen production and further improve project economics.

FRONTIER
ENERGY LTD

KEY INVESTMENT HIGHLIGHTS

- Frontier is on track to becoming one of the first commercial green hydrogen producers in Australia.
- Its flagship Bristol Springs green hydrogen project in WA's South West shapes as one of Australia's lowest cost green hydrogen projects.
- The project benefits from surrounding existing infrastructure, driving low costs as well as speed toward first production – targeted for 2025.

DAVID CASEY
CEO & MANAGING DIRECTOR

GALILEE ENERGY

(ASX:GLL)

- **Company Name:** Galilee Energy
- **Company ASX code:** GLL
- **Key areas:** Gas, energy
- **Key Personnel:** David Casey, CEO & Managing Director | Ray Shorrocks, Non-Executive Chairman | David Woodley, Chief Technical Officer
- **Locations:** Queensland, Australia
- **Market Cap as of 15/10/22:** $94.79M
- **52 Week share price as of 15/10/22:** $0.240 - $0.500
- **Company Website:** www.galilee-energy.com.au

COMPANY PROFILE

Galilee Energy is making strides towards becoming a significant supplier of gas into Australia's east coast market to help ease the continuing and worsening energy shortage.

The company is on the cusp of commercialisation at the Glenaras coal seam gas (CSG) project, which spans 4000km2 and is strategically located in western Queensland's Galilee Basin.

The project has one of the largest certified, uncontracted 3C contingent resources on the east coast of about 5 trillion cubic feet (TCF) of gas. GLL's immediate focus is on converting this to a maiden reserve, scheduled for early 2023.

CSG is an important energy resource in Queensland and production of this gas now makes up an increasing proportion of the state's demand.

The Glenaras project was identified very early on as a sweet spot for CSG and has seen considerable exploration activity over the last 15 years.

For a CSG project to be successful, it requires three things – resource concentration (thickness, gas content), productivity (thickness, permeability), and pressure drawdown in the coal.

The Betts Creek coals at Glenaras have excellent resource concentration and coal productivity and this has been proven across the entire permit through an extensive exploration history.

Since Galilee resumed full ownership and control of the project in late 2015, the company has been focused on establishing Glenaras as a major new source of gas.

In October 2022, the company achieved steady operational performance, with 15 wells online and producing at ~90 million standard cubic feet per day (Mscfd) and 30,000 barrels water per day (BWPD).

David Casey, who was appointed managing director in December 2021, is an internationally recognised expert in CSG exploration and development.

He previously served in senior executive roles in several ASX-listed companies, most notably

Eastern Star Gas, where, as managing director, he was instrumental in the establishment of a +2TCF reserve at the Narrabri Gunnedah Basin CSG project in NSW prior to its acquisition by Santos for over $1 billion.

With its continued progress, Galilee has made an unequivocal move towards a long-awaited change in its status from an explorer to a key gas supplier into an extraordinarily tight eastern Australia gas market.

GLL's investment value lies not only in its strong potential to become a significant near-term supplier of gas, but also in the upside opportunities like the essentially fresh water that accompanies its gas production, which is highly unusual for this type of project.

The low-salinity water can be used for irrigation, delivering high value crop yields and increasing land value, offering a potential additional revenue stream.

Galilee is also well positioned for the transition to a lower carbon future with other initiatives being assessed including solar power, hydrogen, and carbon capture and storage technology.

GALILEE ENERGY

KEY INVESTMENT HIGHLIGHTS

- 100% ownership of one of the largest uncontracted natural gas resources (~5TCF) in eastern Australia - EV of ~$100m underpins unique value proposition.
- Well over $100m investment at Glenaras, set to yield maiden reserve certification early 2023.
- Outstanding environmental credentials with fresh water produced as a by-product of gas production, opening up commercial opportunities for crop production and carbon sequestration.

BRUCE LANE
CEO & EXECUTIVE DIRECTOR

GTI ENERGY

(ASX:GTR)

- **Company Name:** GTI Energy
- **Company ASX code:** GTR
- **Key areas:** ISR Uranium
- **Key Personnel:** Bruce Lane, CEO & Executive Director | James Baughman, Non-Executive Director (Wyoming) | Doug Beahm, Consultant (Wyoming)
- **Locations:** Wyoming, US
- **Market Cap as of 15/10/22:** $22.58M
- **52 Week share price as of 15/10/22:** $0.011 - $0.036
- **Company Website:** www.gtienergy.au

COMPANY PROFILE

With the clean energy transition well in play, the global climate response is driving sustained rapid growth in nuclear power.

At the same time, uranium supply is falling short and unable to meet this fast-growing demand because of global underinvestment in new projects, geopolitical instability, major mines coming to the end of their lives, and Covid-related disruptions.

This has created the "perfect storm" climate, accompanied by much higher uranium prices, for GTI Energy to help supply the uranium gap as part of the uranium renaissance.

GTI is exploring a significant land position for in-situ recovery (ISR) uranium in Wyoming, the leading uranium state in the US which accounts for ~80% of output.

The US has the world's largest reactor fleet but most of its domestic production collapsed in past years due to subeconomic pricing, forcing the country to import 95% of its 47 million pound annual requirement.

Now the government is handing out US$6 billion (~A$8.15 billion) in grants plus hundreds of millions in green tax credits to maintain its nuclear fleet, and has established a strategic uranium reserve that commits US$1.5 billion to buying US-produced uranium over 10 years.

Most of Wyoming's uranium has come from ISR mining, the lowest cost and lowest environmentally impactful means of extraction. ISR mining has been practised commercially in Wyoming since the mid-1980s.

Successful maiden drilling at the Thor prospect in early 2022 resulted in the discovery of 17,640 feet of uranium mineralised roll fronts.

With the completion of initial drilling, GTI is on track to deliver 100,000 feet of new drilling before the end of 2022 followed by a maiden resource in 2023.

Two rigs are working around the clock at the Thor prospect, which will be followed by drilling at the Wicket East, Teebo, Odin and Loki prospects.

Most of the first 25 holes drilled at Thor have met or exceeded the target uranium grade cut-off.

GTI CEO & executive director Bruce Lane said the results from the first 25 holes strongly justified the follow-up campaign at Thor.

"The historical drill maps combined with interpretation from our previous drilling have generated a high strike rate," he said. "The mineralisation identified continues to show potential for ISR development as we extend our understanding of the roll fronts and work towards a resource report."

With ESG high on the investment agenda, GTI is ticking the boxes with its transition to carbon neutral operations.

Besides securing carbon credits to offset emissions from drilling and implementing ESG reporting, GTI is advancing an application for the Australian government's rubber-stamped Climate Active certification.

Climate Active certification is an achievement that currently only around 350+ of over 2.4 million (or 0.01%) actively trading Australian businesses have managed to attain.

KEY INVESTMENT HIGHLIGHTS

- A 100,000-foot drilling program underway at the Great Divide Basin projects in Wyoming to explore known roll fronts for ISR-amenable uranium.
- Positive start to drilling at the Thor prospect with new roll fronts discovered and most holes drilled so far meeting or exceeding target uranium grade.
- Set to deliver a maiden JORC resource in Q1 2023.

CHRISTOPHER LEWIS
CEO

HARTSHEAD RESOURCES

(ASX:HHR)

- **Company Name:** Hartshead Resources
- **Company ASX code:** HHR
- **Key areas:** Natural gas
- **Key Personnel:** Bevan Tarratt, Non-Executive Chairman | Christopher Lewis, Chief Executive Officer | Nathan Lude, Executive Director
- **Locations:** United Kingdom
- **Market Cap as of 15/10/22:** $111.10M
- **52 Week share price as of 15/10/22:** $0.016 - $0.054
- **Company Website:** www.hartshead-resources.com.au

COMPANY PROFILE

With a licence comprising multiple gas fields in the South North Sea, Hartshead Resources is in the right place at the right time – and with the right partners – as the UK races to secure its energy needs while transitioning to a low-carbon future.

Within an area that's a key part of the UK's new Energy Security Strategy, the ASX-lister has an impressive near-term resource base of ~0.8 trillion cubic feet (Tcf) of high quality gas.

The experienced O&G team at Hartshead is targeting the resources in a phased development and exploration program. The keystone Phase I will benefit from the UK Government's focus on bringing projects on stream faster to reduce dependency on imports amid continuing supply constraints in Europe.

In a major boost for Hartshead, it inked in August a breakthrough agreement with Shell on an engineering study for tie-in of Hartshead's Phase I gas field development to Shell's infrastructure and required brownfield facility modifications.

The study will define Hartshead's route to transport its natural gas and condensate via Shell's infrastructure to prospective points of sale in the UK. It will also form an important part of the front-end engineering and design (FEED) and Field Development Plan (FDP) work.

The study will be undertaken by international energy services major Petrofac and managed by Hartshead. Shell will provide project assurance on the final study prior to the FEED and the FDP submission to the UK government.

To fund the study Hartshead completed an oversubscribed $11 million placement in August.

Phase I will target independently audited proven and probable (2P) reserves of 301.5 billion cubic feet (Bcf) with first gas expected late 2024. All six Phase I wells are forecast to be on-stream by mid 2026. Phase II and III, including development and exploration of other prospects, will build off Phase I in 2024/25.

Hartshead is in the final stages of a partial divestment process with a view to monetising 301 Bcf of 2P reserves.

HHR CEO Christopher Lewis said the company wanted to retain as much interest as it could but put in place capital as efficiently as possible. Lewis said it couldn't be a better time to attract an industry partner and launch a process to bring assets to production.

"The gas market in the UK has been transformed in the past nine months," he said.

"UK gas has historically traded around 50 pence per therm however this year the price has exceeded £5 per therm. Even out to 2024 prices are forecast to remain above £2 per therm.

"In Phase I we have 301 Bcf which approximately equates to 3 billion therms, and even with gas prices at 50 pence per therm, that's about £1.5 billion in revenue, so we have very valuable molecules."

KEY INVESTMENT HIGHLIGHTS

- As the UK gas price soars, HHR is one of the only ASX-listed companies to have a near-term production asset in the South North Sea.
- Recent infrastructure study agreement with Shell.
- Investment upside - HHR in final stages of partial divestment to monetise 2P reserves of 301 Bcf while trading in the region of just US$1/barrel of oil equivalent.

CHRIS JAMIESON
CEO & MANAGING DIRECTOR

JADE GAS HOLDINGS

(ASX:JGH)

- **Company Name:** Jade Gas Holdings
- **Company ASX code:** JGH
- **Key areas:** Gas
- **Key Personnel:** Chris Jamieson, CEO & Managing Director | Mark Pitkin, GM Technical | Joe Burke, Executive Director
- **Locations:** Mongolia
- **Market Cap as of 15/10/22:** $66.87M
- **52 Week share price as of 15/10/22:** $0.043 - $0.092
- **Company Website:** www.jadegas.com.au

COMPANY PROFILE

Jade Gas is focused on delivering game-changing gas supply for Mongolia while supporting the nation's transition to a cleaner, domestically sourced energy mix.

Mongolia has transformed into a vibrant democracy, and since 1991 has tripled its per capita GDP. While it seeks continued growth, its government is also committed to meeting climate targets and improving the population's wellbeing.

Aligning with Mongolia's goals is JGH's focus on coal-bed methane (CBM) gas projects in the country. The priority is developing the large-scale TTCBM Project within the Tavantolgoi XXXIII unconventional gas basin in the South Gobi region.

A sign of the project's strategic importance, Jade is operating its flagship through subsidiary Methane Gas Resource in a JV with Mongolian government representative company Erdenes Methane.

Part of a defined work program, Jade is nearing the end of a six-well drilling campaign focused on the Red Lake area of TTCBM. To date, four wells have reached total depth with extensive gas-bearing coals extracted.

In a significant milestone for TTCBM as it moves towards pilot production in 2023, Jade announced in August the booking of a gross unrisked 2C contingent resource of 246 billion standard cubic feet (Bcf) of gas.

The permit has a significant gross prospective resource of 1 trillion cubic feet (Tcf) of gas, with Permian coals similar in age to those of Australia's prolific Bowen Basin.

"Our maiden contingent resources booking at our flagship TTCBM project is the largest in Mongolia and, critically, only covers a small portion of the prospective area within our permit," Jade CEO & managing director Chris Jamieson said.

"The initial gross 2C contingent resources of 246 Bcf is a solid foundation demonstrating the significant scale and potential ahead of us."

Resources north of 100 Bcf are considered to have commercialisation potential.

Jamieson believes there is a ready-made downstream market for future gas production at TTCBM, having had promising discussions around supply and with the project located in the heart of an energy hungry, resource-rich area of the South Gobi.

In September, Jade extended TTCBM 25km to the east of Red Lake by successfully drilling the Vista-1 exploration well.

"With the recent signing of the prospecting agreement over the Baruun Naran permit, which is adjacent to TTCBM and is an extension of the Tavantolgoi coal basin, we're confident we will further extend the TTCBM play to the west as well," Jamieson said.

Jade has commenced drilling at the 66%-held Baruun Naran with results expected soon. A discovery would result in an east-west plane of gassy coals over an impressive 60-70km strike.

Jade has two more highly prospective 100%-owned CBM permits – Shivee Gobi and Eastern Gobi. Its permits cover 19,000km² within existing coal basins and active coal mines.

JADE GAS

KEY INVESTMENT HIGHLIGHTS

- Large 19,000km² Mongolian groundholding prospective for gas, with an initial gross 2C contingent resources of 246 Bcf of gas.
- Strategic partnership with the Mongolian government to deliver a new cleaner domestic energy source.
- TTCBM Project plays into the decarbonisation mega-trend, with large-scale gas demand in-country and from nearby downstream customers.

NICK DE BLOCQ
CEO

KINETIKO ENERGY

(ASX:KKO)

- **Company Name:** Kinetiko Energy
- **Company ASX code:** KKO
- **Key areas:** Coal seam gas, natural gas
- **Key Personnel:** Adam Sierakowski, Executive Chairman | Nick de Blocq, Chief Executive Officer
- **Locations:** South Africa
- **Market Cap as of 15/10/22:** $63.60M
- **52 Week share price as of 15/10/22:** $0.047 - $0.119
- **Company Website:** www.kinetiko.com.au

COMPANY PROFILE

South Africa has embraced the shift away from coal-fired power to renewable energy but has also flagged that a reliable and economical source of energy such as natural gas is needed to enable the transition.

The official imprimatur to the acceptance of gas has been given by South African President Cyril Ramaphosa and power utility CEO André de Ruyter, who have both espoused the need for domestic gas supplies.

This has placed Kinetiko Energy and the giant best estimate (2C) contingent resource of 4.9 trillion cubic feet of gas within the borders of its extensive 7000km^2 Amersfoort coal seam gas project in the spotlight as a replacement for gas sourced from Mozambique, expected to be in decline from 2024.

Highlighting this recognition, the company recently secured a $5 million investment from South African energy investment institution Phefo Power to accelerate exploration.

A program of seven exploration core wells is underway with the first – 271-23C – located close to the Majuba Power Station, which has a built-in co-firing design and a 20MW gas generator awaiting a fuel source.

The remaining six wells will be drilled in the northern and southern parts of the rights areas over the coming months, representing initial exploration activity in blocks ER270 and ER272.

Kinetiko will also develop a 20-well pilot production project from the first half of 2023 in conjunction with the South African government's institutional investment arm, the Industrial Development Corporation of South Africa (IDC).

The IDC is contributing 70 million rand (A$6.1 million) to earn 45% of the pilot program, which seeks to produce gas under the existing bulk production permit of 500 million standard cubic feet of gas per annum.

IDC also has the right to retain this ownership level in up to 60 more wells.

The first phase of the pilot program will involve about 10 wells and the construction of a gas terminal with a gas treatment and processing plant metering station and pipeline gathering system.

The second phase will comprise the start of gas production from existing wells and the development of the remaining wells, along with the maintenance and expansion of facilities as required.

Bringing this pilot project to production will pave the way for Kinetiko to carry out other similar developments across its project area, allowing for the conversion of its resource into a reserve.

Development is simple given the recent Korhaan exploration wells were drilled to depths below 500m, the accessible flat land around Amersfoort and excellent landowner relations.

Previous wells drilled by the company have also demonstrated high flow rates – including sustained rates of 83,000 cubic feet per day from Korhaan-3, indicating high permeability of the target sands and coals which will not require fracture stimulation to achieve commercial success.

KINETIKO
ENERGY LTD

KEY INVESTMENT HIGHLIGHTS

- Kinetiko is a gas explorer and developer with a major sandstone and coal seam gas resource in South Africa.
- Its Amersfoort project is in a region with an abundance of existing infrastructure including gas pipelines, power generation, power transmission lines, and road and rail networks connecting major cities.
- The existence of multiple commercialisation pathways with pilot production to commence imminently.

KEN AITKEN
MANAGING DIRECTOR

METGASCO

(ASX:MEL)

- **Company Name:** Metgasco
- **Company ASX code:** MEL
- **Key areas:** Gas
- **Key Personnel:** Phil Amery, Chairman | Ken Aitken, Managing Director | Victoria Mclellan, CFO & Company Secretary
- **Locations:** Queensland, South Australia
- **Market Cap as of 15/10/22:** $18.60M
- **52 Week share price as of 15/10/22:** $0.020 - $0.053
- **Company Website:** www.metgasco.com.au

COMPANY PROFILE

Metgasco has defined, available and uncontracted gas reserves with a production pathway – smack in the middle of massive gas supply concerns on Australia's east coast.

In July, Australia's competition watchdog the ACCC warned 2023 would exacerbate a serious national gas shortfall, with the east coast to be hardest hit.

The prediction was 10 times the organisation's forecast shortfall for 2022, released just one year prior, a fact which highlights just how rapidly escalating the nation's gas security conundrum has been.

With demand comes opportunity. The gas shortfall puts near-term Australian producers with uncontracted gas reserves and resources like Metgasco in pole position for strong interest from retailers domestically.

The Vali field in Queensland is 25% owned by MEL and hosts a proved plus probable (2P) reserve of gross 101 petajoules (PJ). First gas production from Vali is just months away, anticipated to begin in January 2023.

MEL and its JV partners have already secured a gas sales agreement with major retailer AGL, which will take 9-16 PJ of gas – roughly 9-16% of Vali's 2P reserves – over about 4.5 years, leaving 84% of the Vali 2P gas reserve uncontracted.

As gas prices rise and demand increases, having this much of the 2P reserve uncontracted to offer to the market is potentially significant.

That the Vali field pipeline and facilities field project activities are anticipated to deliver first gas in January CY23 means maiden revenue for Metgasco is just around the corner – a significant milestone for any project developer.

Proximate to Vali is the Odin joint venture, which has a second gas discovery in South Australia where a two-stage development plan has been announced to fast track connection to the Vali project's pipeline and facilities.

Odin, 25% owned by MEL, is scheduled to be online in Q3 of 2023 and hosts a gross 2C (best estimate) contingent resource of 36.4 billion cubic feet (Bcf) of gas – all uncontracted and attracting significant customer interest in its own right.

Metgasco managing director Ken Aitken said Metgasco recognised eastern Australia required multiple new sources of gas to help alleviate the supply/demand imbalance – a factor which led to the development decisions around both Vali and Odin.

"Eastern Australia requires multiple new sources of gas to help alleviate the current supply/demand imbalance, and the commercial value drivers were compelling for the JV to decide to fast track Odin gas to market via the Vali pipeline infrastructure," he said.

Importantly, significant exploration upside exists within Metgasco's Cooper Basin licences, with work planned in CY23 to define future drilling prospects.

Future gas exploration success near the Vali/Odin production hub would allow rapid low-cost development and high profit margins to be realised.

METGASCO

KEY INVESTMENT HIGHLIGHTS

- First production and maiden revenue anticipated from Vali in January CY23.
- Odin gas field connection to Vali pipeline fast tracked to enable sales within 9 months to meet strong east coast gas demand.
- Significant uncontracted Cooper Basin gas reserves and resources connected or close to existing infrastructure. Large exploration prospects near production hub, allowing rapid and low-cost tie opportunity on drilling success.

BENJAMIN ANTHONY
EXECUTIVE CHAIRMAN

PORT ANTHONY RENEWABLES

- **Company Name:** Port Anthony Renewables
- **Company ASX code:** Unlisted
- **Key areas:** Renewable energy, green hydrogen, ammonia
- **Key Personnel:** Benjamin Anthony, Executive Chairman | Brad Lingo, Executive Chairman | Brian Kitney, Non-Executive Director
- **Locations:** Victoria, Australia

Company Website:
www.portanthonyrenewables.com.au

COMPANY PROFILE

The need for Australia to transition to a low-carbon domestic energy supply offering robust, long-term energy security has never been clearer, and hydrogen is key to the solution.

The situation is particularly prevalent in energy markets across the eastern seaboard, making it an ideal place to develop a green energy hub designed to capture and deliver secure, sustainable power.

Enter Port Anthony Renewables (PAR), a soon-to-be-listed green energy, hydrogen and ammonia play well advanced in its ambition to develop the largest green energy hub in south-eastern Australia at its namesake port in Victoria – just 196km from Melbourne.

On the 600-acre site in Gippsland, PAR is developing a hydrogen and green energy facility under long-term agreements with the port for strategic utilisation of its facilities for the purposes of handling, storage and export of ammonia and hydrogen related products, while strategically surrounded by some of the east coast's largest renewable energy developments.

The company aims to produce hydrogen by late 2025, predominantly from electrolysis, using energy drawn from renewable projects.

Early in 2022, PAR engaged Exceed Energy Australia to assist with the development of a 48MW onsite wind farm, as well as to develop an agreement with Ausnet Services. PAR will seek to derive income from power feed in via an agreement with Ausnet. The company is also evaluating opportunities with suitable surrounding wind projects.

That includes an adjacent wind development project known as the Gelliondale Wind Farm (GWF).

The GWF will generate 80MW and is located ~13km from PAR's project site. It will be developed in addition to the company's 48MW wind farm, potentially providing the site with 128MW of its own "behind the meter" wind energy for its own needs.

To lay the foundation for hydrogen production, PAR has locked in technology supply arrangements with early movers in the space.

The company is working towards hydrogen production from three project stages, scaling up at five-year intervals from 2025 with an ultimate scale-up goal of 200t/day of hydrogen by 2035 for domestic use and domestic and international export.

The headline number incorporates all three planned project stages, with the second and third to include plants which would also generate liquid ammonia for export.

With the Australian hydrogen sector alone estimated to be worth $56 billion by 2050, PAR stands as an attractive first-mover in an emergent space.

With development activities ramping up in the Gippsland region, the company's immediate priorities include seeking development and regulatory approvals for its wind farm development, as well as commencing a hydrogen pipeline tie-in study.

Port Anthony is eyeing a listing on the ASX in early 2023.

PORT ANTHONY RENEWABLES

KEY INVESTMENT HIGHLIGHTS

- Ideal location for key markets surrounded by the largest cumulative proposed green, renewable energy projects in Victoria.
- Access to key infrastructure facilities for storage, domestic distribution and export of hydrogen via strategic relationship with existing port.
- Plans to build and operate the largest green hydrogen hub in south-east Australia, with the ultimate goal of scaling up to 200t/day by 2035.

SCOTT BROWN
MANAGING DIRECTOR

PURE HYDROGEN

(ASX:PH2)

- **Company Name:** Pure Hydrogen
- **Company ASX code:** PH2
- **Key areas:** Hydrogen, hydrogen fuel cell technology, coal seam gas, natural gas
- **Key Personnel:** Ron Prefontaine, Non-Executive Chairman | Scott Brown, Managing Director | Lan Nguyen, Non-Executive Director
- **Locations:** Australia, Botswana
- **Market Cap as of 15/10/22:** $88.36M
- **52 Week share price as of 15/10/22:** $0.190 - $0.830
- **Company Website:** www.purehydrogen.com.au

COMPANY PROFILE

Hydrogen is widely flagged as the fuel of the future, and ASX-listed Pure Hydrogen is making tremendous progress establishing an integrated ecosystem in the field by investing across technology, manufacturing, infrastructure, and product development.

Pure Hydrogen aims to be a leading supplier of hydrogen in the Australian market. To achieve this Pure Hydrogen is looking to establish sites near Brisbane, Sydney and Melbourne with strategic development partner CAC-H2, the latter of which will fund construction and operation.

The first project is expected to deliver a completed production plant capable of producing at least 500kg rising to 5000kg of hydrogen per day, from the second half of 2023.

Pure Hydrogen has also partnered with French plasma technology company Plenesys to develop the HyPlasma methane decomposition processes to create hydrogen from methane, known as turquoise hydrogen, and value-add solid carbon products without carbon dioxide emissions when powered using renewable energy.

The JV is aiming for a fully adjustable prototype in Australia with an initial capacity of 150kg per day of hydrogen in mid-2023, and also seeks to produce a low-priced graphene product to establish an Australian graphene economy.

Its next stage will consist of 1500kg and 5000kg HyPlasma modules housed in standard shipping containers which can be installed nearly anywhere where there is enough methane.

Another key investment is Pure Hydrogen's 23% stake in HFCV manufacturing company H2X Global, which is ramping up its hydrogen fuel cell (HFC) powered trucks and buses, and advancing a technology partnership with global motorcycle and power parts business KTM.

H2X recently unveiled its long-awaited Warrego hydrogen ute which is now undergoing formal certification, launched HFC power generators, and is developing a demonstration model hydrogen-powered garbage truck for JJ Waste.

Concurrently, Pure Hydrogen signed a deal with PepsiCo to trial a Hydrogen Fuel Cell prime mover which could lead to a long-term rental or further orders, as well as a master supply agreement with BLK Auto to distribute HFC trucks and buses in the Asia Pacific and Africa over 10 years.

It is not just hydrogen. PH2 has interest in natural gas projects with 2C resources of 578.3 Petajoules (net to pure) across two natural gas projects in Australia and a 30% interest in the Serowe Gas Project in Botswana. Meanwhile Pure Hydrogen has a 19.99% stake in Botala Energy, which is using its $5 million IPO proceeds to progress a multi-well program to prove commercial gas flows from the Serowe coal seam gas project in Botswana – a project with 316.7 billion cubic feet of 2C contingent resources.

Pure Hydrogen also owns Project Venus, which has 130Pj of 2C contingent resources within the proven Walloon CSG Fairway, immediately adjacent to pipeline infrastructure in the Surat Basin.

Pure Hydrogen

KEY INVESTMENT HIGHLIGHTS

- PH2 is focused on becoming a leader in clean hydrogen and energy projects through the use of cutting-edge technology.
- Initiatives include growth and development of a hydrogen fuel hub on Australia's east coast, and a hydrogen fuel cell vehicle business through partnerships with other companies.
- PH2 is developing natural gas projects directly in Australia and through strategic investment in Botala Energy.

ANDREW KNOX
EXECUTIVE DIRECTOR

RED SKY ENERGY

(ASX:ROG)

- **Company Name:** Red Sky Energy
- **Company ASX code:** ROG
- **Key areas:** Oil and gas
- **Key Personnel:** Andrew Knox, Executive Director | Robert Annells, Non-Executive Chairman | Serge Toulekima, New Ventures & Development Manager
- **Locations:** South Australia
- **Market Cap as of 15/10/22:** $29.16M
- **52 Week share price as of 15/10/22:** $0.004 - $0.009
- **Company Website:** www.redskyenergy.com.au

COMPANY PROFILE

Red Sky Energy is stepping on the gas to take advantage of the strong energy market by developing and acquiring near-production or producing assets – and it has the support of a major player at a key project.

While all Red Sky Energy projects have existing contingent resources with potential upside, including the flagship Killanoola, it's Innamincka that attracted Santos to enter into a joint operating agreement.

The farm-out agreement with the ASX-200 oil and gas pioneer with substantial experience in South Australia's prolific Cooper Basin is paying off. The Yarrow 3 Well at Innamincka is now cased and suspended after drilling operations wrapped up in late September. Santos have informed Red Sky they intend to frac Yarrow 3 as soon as possible to assess completion as a potential future producer.

Yarrow has an estimated 2C contingent resource of 18 billion cubic feet (BCF), and results are being further evaluated for forward planning.

Red Sky Energy holds 20% of six Petroleum Retention Licences (PRLs) at Innamincka and is free-carried through the drilling of the current well up to a cap of $3 million.

A further 20 BCF is estimated just 8km away at Flax, a shut-in oil field with associated gas that has not yet been produced but hosts in-place infrastructure and six production wells.

Yarrow and Flax offer strong development opportunities in the coming 18 months. A pipeline route has already been approved, and approximately 18km would potentially be built to tie into the Napowie grid south of Yarrow.

Flax's wells produced about 180,000 barrels of oil between 2009 and 2015 before the field was closed due to low Australian dollar oil prices.

Innamincka also contains the Juniper oil and gas target with significant exploration potential, and three other unexplored licences.

There's also been positive news out of Red Sky Energy's 100% owned Killanoola project in South Australia's onshore Otway Basin, with an upward revision in May of an eye-popping 1228% to its discovered potential petroleum initially in place (PIIP).

The PIIP was revised upward from 7 million barrels (mmbbls) to a 93 mmbbls best estimate in an independent report completed in May by Global Resources and Infrastructure.

Killanoola is primed for long-term production with Red Sky taking concrete steps to realise cashflow in the near-to-medium term, including contracting a rig to punch already identified additional zones of interest.

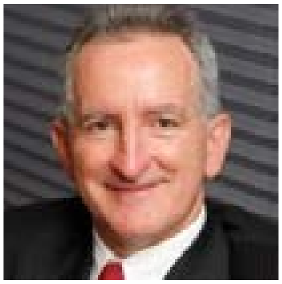
Additionally, Killanoola crude distillation results indicate 65% premium-priced gasoil.

"We're focused on near-term cash flow by purchasing near-production or producing projects and turning resources into reserves," executive director Andrew Knox said.

"We also have low capital expenditure, with everything funded, and wells and infrastructure in place, as well as exploration upside at a time when oil and gas prices are very robust."

KEY INVESTMENT HIGHLIGHTS

- Substantial and near-term oil and gas exploration potential across all projects.
- Wholly-owned Killanoola oil project primed for long-term production with concrete steps underway to realise cashflow in the near to medium term.
- Activity underway at Yarrow (Innamincka) via operator Santos, offering development opportunities with high potential in the coming 18 months.



GARY JEFFERY
MANAGING DIRECTOR

SACGASCO

(ASX:SGC)

- **Company Name:** Sacgasco
- **Company ASX code:** SGC
- **Key areas:** Oil and gas, hydrogen, helium
- **Key Personnel:** Andrew Childs, Chairman | Gary Jeffery, Managing Director | William Ashby, Non-Executive Director
- **Locations:** California, Canada, Philippines
- **Market Cap as of 15/10/22:** $10.94M
- **52 Week share price as of 15/10/22:** $0.018 - $0.04
- **Company Website:** www.sacgasco.com

COMPANY PROFILE

Sacgasco is a rare ASX gem given it already has producing oil and gas assets that are generating cashflow to fund further exploration, but has a market cap of just $10.94 million.

In the last 18 months, Sacgasco has transformed into a significant exploration and production company with forward cashflows expected to underpin production, development and exploration projects in Canada, California, and the Philippines.

SGC is banking cash from oil and gas production in Alberta, Canada and the Sacramento Basin in California at a time of high prices as the global energy shortage continues to deepen.

In July 2021, Sacgasco entered the energy hungry Philippines market and acquired six oil discoveries, spanning 3.6 million acres, in the underexplored, oil and gas rich Palawan Basin.

The Northwest Palawan Basin is a prolific petroleum province with discovered resources of 897 million barrels of oil equivalent (mmboe) but sadly lacking in exploration and investment over the past two decades.

The proof is in the pudding though, with four out of the five wells drilled by Sacgasco's subsidiary, Nido Petroleum, all resulting in discoveries with more potentially game changing exploration upside for the company to investigate.

The Cadlao Oilfield has a 2C contingent resource of 6.2 million barrels oil, while the Nandino prospect has a P50 prospective resource of 22 million barrels of recoverable oil.

Sacgasco managing director Gary Jeffery said Nido would undertake drilling and an extended well test (EWT) at Cadlao in early 2023 as the first well in its two-well Philippines drilling campaign because it could provide early cash flow and was the lowest risk well.

"Placing the Cadlao EWT as a priority in our planned drilling program, to be followed by a Nandino exploration well, with an EWT upon success, will make for an exciting and potentially transformational eight-month period for Sacgasco and Nido in the Philippines," he said.

Around 45% of the initial drilling and EWT at Cadlao will be funded by Blue Sky investment.

Sacgasco's leadership team are veterans of the oil and gas industry with nearly 130 years of experience collectively.

Chairman Andrew Childs has spent over 40 years in the industry and also serves on the boards of ASX-listed energy companies including ADX Energy and Xstate Resources.

Jeffery has 50+ years' experience in oil and gas exploration and production including internationally, having been a director of public companies in Australia, Uganda, and Canada.

Non-executive director William Ashby brings the Southeast Asia experience to the table, having spent 15 years in the region and nearly 40 years total in oil and gas with small and mid-cap ASX experience.

All three continue to increase their shareholdings, demonstrating their confidence in Sacgasco's current and future success.

KEY INVESTMENT HIGHLIGHTS

- Sacgasco is a cashflow positive oil and gas producer and explorer with an extensive footprint in California, Canada, and the Philippines.
- Producing properties fund exploration activity and general and administration expenditure.
- Plenty of exploration blue sky and multiple opportunities for rapid growth, including in helium and hydrogen, with underexplored, recently overlooked, world-class oil and gas opportunities close to undersupplied markets.

JOSH PUCKRIDGE
CEO

STEAM RESOURCES

- **Company Name:** Steam Resources
- **Company ASX code:** Unlisted
- **Key areas:** Green hydrogen
- **Key Personnel:** Josh Puckridge, CEO & Managing Director | Jonathan Downes, Chairman
- **Locations:** Australia, Solomon Islands
- **Company Website:** www.steamresources.com.au

COMPANY PROFILE

Renewable energy explorer Steam Resources is focused on establishing significant green hydrogen production by tapping Australia's valuable geothermal resources.

Geothermal energy is a totally renewable, zero-emission energy source ideal for producing green hydrogen because of its low cost.

It is estimated that just 1% of the hot rock energy found less than 5km under the surface would be enough to meet Australia's entire power needs for 26,000 years.

Geothermal energy ticks all the boxes for clean energy production because it provides predictable base load power generation that isn't affected by weather, with some of the lowest environmental impacts and decommissioning costs.

Steam, which is preparing to list on the ASX, holds a large portfolio of highly prospective geothermal exploration ground, representing more than 2.2% of Australia's surface area.

The extensive landholding was identified for its geophysical and logistical prospectivity to produce green hydrogen for domestic use and export.

Its projects are in the Beetaloo Basin in the Northern Territory, South Australia, and the Solomon Islands.

Steam's Beetaloo Basin exploration ground spans more than 128,000km^2 – the entirety of the basin, sits close to two ports and is intersected by the proposed Sun Cable development.

When operational, the Sun Cable will transmit 17-20GW of power from the Northern Territory directly to Singapore via an above ground and underwater power cable.

The Beetaloo East project area contains recent petroleum well drilling indicating potential geothermal heat of over 150°C at approximately 3km depth.

It is estimated the project hosts over 84,000 petajoules of stored geothermal energy, which is the equivalent energy of more than 13.7 billion barrels of oil and would provide generating capacity of 460,000 gigawatt-hours.

In South Australia, the company's exploration ground covers over 46,000km^2 in a state with some of the country's most promising infrastructure for commercial geothermal production.

This ground covers a significant portion of the South Australian Heat Anomaly, which hosts significant anomalous targets.

Steam also recently expanded its portfolio to include highly prospective exploration ground in the Solomon Islands.

The transition to a hydrogen energy economy is critical to Australia's decarbonation strategy.

Like wind and solar energy, geothermal energy is moving to provide a solution to coal, gas and other carbon emitting energy sources.

The move to a hydrogen centric fuel economy creates new opportunities for establishing economic geothermal projects in Australia, and Steam is in the box seat as it works to unlock the world's largest energy source.

KEY INVESTMENT HIGHLIGHTS

- Steam Resources holds the world's largest portfolio of highly prospective geothermal exploration ground, representing more than 2.2% of Australia's surface area.
- Significant portfolio was identified and secured for its geophysical and logistical prospectivity to produce green hydrogen for domestic and international sale.
- Geothermal is one of the cheapest sources of green hydrogen with some of the lowest negative environmental impacts.

COLBY HAUSER
CEO & MANAGING DIRECTOR

TALON ENERGY

(ASX:TPD)

- **Company Name:** Talon Energy
- **Company ASX code:** TPD
- **Key areas:** Oil & gas
- **Key Personnel:** Colby Hauser, CEO & Managing Director | Douglas Jendry, Non-Executive Chairman | Darren Ferdinando, Exploration Manager
- **Locations:** Australia, Mongolia
- **Market Cap as of 15/10/22:** $81.46M
- **52 Week share price as of 15/10/22:** $0.115 - $0.240
- **Company Website:** www.talonenergy.com.au

COMPANY PROFILE

Talon Energy is very close to reaching a pivotal point in any explorer's evolution, with first gas from its 45%-owned Walyering discovery in Western Australia's Perth Basin set to flow in Q1 2023.

TPD, in partnership with Strike Energy, has made a significant discovery at Walyering, within the gas-rich Perth Basin.

In August 2022, the partners gave the green light for the Walyering project's development following the independent certification of a 2P (proved and probable) reserve of 54.2 petajoules of gas.

"With this investment decision, Talon makes a rare transition from explorer to producer," Colby Hauser, Talon CEO & managing director, said.

"The project showcases a quick, low-cost development which will see Talon generating significant cashflows from early 2023 in an environment where access to capital is increasingly difficult."

The project, which has a target nameplate capacity of 33 terajoules of gas and 400 barrels of condensate per day, is projected to deliver up to $30 million annually in cashflow net to Talon.

The company has timed the transition well, with the average spot gas price nearly doubling in the past two years as domestic supply tightens across Australia.

Gas marketing is well advanced, according to TPD, with sales agreements to be secured in Q4 2022.

There is also huge exploration upside at both the Gurvantes XXXV coal seam gas (CSG) project in Mongolia and TPD's second Perth Basin gas opportunity, Condor.

Condor is the largest untested Jurassic wet gas structure in the Perth Basin and has the potential to be up to 5x larger than the Walyering project, with a prospective resource of 408 billion cubic feet.

It is also significantly shallower than Walyering, which allows for cheaper drilling costs and a better quality reservoir.

Meanwhile, over in southern Mongolia, the Gurvantes XXXV project is emerging as a world-class CSG project right on the doorstep of the energy hungry Chinese market.

Located in the South Gobi Basin, Gurvantes is the closest of Mongolia's CSG projects to China's major gas pipelines.

Talon is earning a 33% working interest in the project, which two independent certification agencies have indicated has prospective resources of ~6 trillion cubic feet.

Drilling by operator TMK Energy continues to demonstrate the strong potential of the Gurvantes project, delivering good coal seam thickness, containing high gas content, resulting in a very high resource concentration.

TMK and Talon released the project's maiden contingent resource this month, revealing it to be the largest to date in Mongolia.

With Talon on the cusp of becoming a high-margin producer, based on a capital efficient business model and plenty of exploration upside in the Perth Basin and Mongolia, there is significant runway for a potential share price uptick.

KEY INVESTMENT HIGHLIGHTS

- Near-term cashflow from the Walyering gas discovery in the Perth Basin will transition Talon Energy from an explorer to a producer in early 2023, generating up to $30M each year.
- Significant exploration upside at the Gurvantes XXXV project in Mongolia and the Condor project in the Perth Basin.
- Talon runs a lean operation with a highly efficient business model.

BRENDAN STATS
CEO

TMK ENERGY
(ASX:TMK)

- **Company Name:** TMK Energy
- **Company ASX code:** TMK
- **Key areas:** Coal seam gas
- **Key Personnel:** Brendan Stats, CEO | Dougal Ferguson, Chief Commercial Officer
- **Locations:** Mongolia, Australia
- **Market Cap as of 15/10/22:** $66.89M
- **52 Week share price as of 15/10/22:** $0.007 - $0.022
- **Company Website:** www.tmkenergy.com.au

COMPANY PROFILE

TMK Energy has just delivered Mongolia's largest gas resource so far at its Gurvantes XXXV coal seam gas (CSG) project – the closest of the country's CSG projects to China's major gas pipelines.

As a gas exploration jurisdiction, few parts of the world rival Mongolia. The nation currently has no gas production, but an abundance of untapped resources in the South Gobi Basin and a government desire to access them.

Mongolia imported US$49 million (~A$77.4 million) worth of natural gas in 2019, and mining projects currently account for ~40% of the country's energy consumption. It is also right on the doorstep of one of the world's largest economies and energy consumers – China.

Chinese gas demand has risen continuously for the last 20 years, and is predicted to double again by 2050. Given its proximity to major pipelines, gas in Mongolia's south has a significant cost advantage over current suppliers to China.

All this bodes well for TMK, which is actively progressing the development of its 8400km^2 Gurvantes project in the South Gobi.

Gurvantes hosts multiple very thick (>50m), high quality coal seams that outcrop at the surface and extend along strike for about 150km and was recently granted a 2C certified resource of 1.2 billion cubic feet (Bcf) of gas.

The team anticipates the start of a pilot well program before the end of 2022.

The current work program is fully-funded by TMK's farm-in partner Talon Energy, which can earn up to a 33% stake in the project.

In August 2022, TMK struck a major deal with Asia's largest oil and gas producer, PetroChina, to "enhance and accelerate" the development of the Gurvantes project.

"Being able to introduce a subsidiary of PetroChina to the project at such an early stage is extremely encouraging and a validation of the excellent technical results we have had to date and talks to the quality and size of the overall project," TMK CEO Brendan Stats said.

"PetroChina has expertise in the full value chain of oil and gas, from drilling through to development and eventually commercial production."

TMK also has a 20% stake in the offshore Talisman Deep project in the oil and gas prolific Northwest Shelf in Australia, which an independent assessment confirmed as a "world-class" gas condensate target with mean gross unrisked prospective resources of 1.5 Tcf of gas and 66 million barrels (MMbbls) of condensate.

The project hosts the 400km^2 Napoleon structure, similar in size to the large Dorado and neighbouring Wanaea discoveries and located in the Barrow-Dampier Sub-basin of the Northern Carnarvon Basin.

The Carnarvon Basin is Australia's premier hydrocarbon province.

KEY INVESTMENT HIGHLIGHTS

- Delivered a maiden contingent resource for the Gurvantes XXXV coal seam gas project in Mongolia, a 2C certified 1.2 trillion cubic ft contingent gas resource.
- Fast-track to early commercialisation after securing partnership with PetroChina, with the aim of moving into development in 2023.
- Strategically located close to the extensive Northern China gas transmission and distribution network.

NOEL NEWELL
MANAGING DIRECTOR

3D OIL
(ASX:TDO)

- **Company Name:** 3D Oil
- **Company ASX code:** TDO
- **Key areas:** Natural gas
- **Key Personnel:** Noel Newell, Managing Director | Dr Daniel Thompson, Chief Geoscientist
- **Locations:** Australia
- **Market Cap as of 15/10/22:** $15.38M
- **52 Week share price as of 15/10/22:** $0.042 - $0.073
- **Company Website:** www.3doil.com.au

COMPANY PROFILE

The Australian Energy Market Operator has flagged the possibility of gas shortfalls during extreme weather conditions from winter 2023 – a significant concern given it expects natural gas to remain an important part of the Australian energy mix until at least 2040.

As such, finding and developing new sources of gas has taken on greater urgency – especially after years of underinvestment.

3D Oil is exquisitely positioned to meet this expected demand, with a sizeable package of tenements located in the offshore Otway Basin which have the potential to address these concerns.

Highlighting just how prospective its assets are, the company has managed to attract the attention of ConocoPhilips – the world's fifth-largest oil and gas company by market capitalisation.

The resulting farm-in agreements, which carry with them funding commitments totalling US$65 million (A$103.5 million), are arguably some of the best of their type seen in the sector for almost two decades – testament to the ability of the company's management to negotiate deals.

Under the agreement for VIC/P79 offshore Victoria, which was awarded to 3D Oil in February, the supermajor paid the company US$3 million in cash and committed to pay US$35 million for an exploration well in return for an 80% interest.

It follows the June 2020 farm-out of 80% in T/49P – just across the border into Tasmanian waters – to ConocoPhillips for $5 million in cash, the acquisition of at least 1580km2 of 3D seismic, and the option to pay for up to US$30 million of costs for an exploration well.

Over at VIC/P79, 3D Oil has already identified the Vanguard prospect, with a best estimate prospective resource of 160 billion cubic feet of gas, as a potential drill target.

Vanguard has associated seismic amplitude anomalies which are comparable to anomalies encountered in fields drilled in the Otway basin that have achieved a 100% success rate over almost two decades, while additional amplitude supported features are a clear sign that there's more to find in the permit.

Likewise, the company noted that while it is still too early to map prospects on the data from the Sequoia 3D seismic survey completed in November last year, all signs are very encouraging.

Other permits in the portfolio include VIC/P74 in the Gippsland Basin and WA-527-P, which is adjacent to the third-party Pavo oil discovery in the Bedout Sub-Basin offshore Western Australia.

Looking before gas exploration, 3D Oil has also secured a gas storage exploration licence in South Australia's Otway Basin, which contains the depleted and abandoned Caroline gas reservoir close to existing infrastructure.

This depleted reservoir will be assessed for storage of hydrogen, natural gas or carbon dioxide and is part of the company's emerging broader energy strategy.

KEY INVESTMENT HIGHLIGHTS

- 3D Oil is focused on finding and developing a major gas resource in the offshore Otway Basin to ease the expected gas shortage on the east coast.
- Giant energy company ConocoPhilips has committed to free carrying the company for the drilling of two offshore wells.
- Farm-out being sought for offshore WA permit while work is underway on energy transition strategies.

MARCEL HILMER
CEO

YELLOW ROCKS ENERGY

- **Company Name:** Yellow Rocks Energy
- **Company ASX code:** Unlisted
- **Key areas:** Uranium
- **Key Personnel:** Marcel Hilmer, Chief Executive Officer | Jeremy King, Non-Executive Chairman
- **Locations:** Athabasca Basin, Canada
- **Company Website:** www.arqcapital.com.au

COMPANY PROFILE

A proven, well-credentialed board and management team and compelling projects are the key ingredients needed for a junior explorer to succeed.

This is what Yellow Rocks Energy brings to the table as it puts the finishing touches on its proposed ASX listing.

Providing strategic direction and management is veteran mining executive Marcel Hilmer, who brings more than 30 years' experience in executive management of global public and private organisations to the company as CEO.

Hilmer has significant international mergers and acquisitions expertise, having worked in Africa, Europe, Asia and Australia, and was the CEO and executive director of Forsys Metals for 10 years, developing uranium projects in Namibia.

Hilmer was also finance and business development executive at uranium developer Vimy Resources and worked for six years at First Quantum Minerals, a global developer and producer of base and precious metals mines.

The board is chaired by Jeremy King, a corporate advisor with more than 20 years' experience in domestic and international legal, financial and corporate matters, while Dr Greg Shirtliff and Paul Williams are non-executive directors.

Shirtliff brings over 20 years' experience in uranium geology and geochemistry working with companies such as Rio Tinto and Cameco Australasia, and Williams has a broad range of commercial and legal expertise – especially in mining and exploration.

This team is looking to develop two uranium projects – Wallee and Usam, in the highly prospective tier 1 jurisdiction of Northern Saskatchewan, Canada, to help meet the anticipated global uranium demand increases.

Both are basement-hosted exploration projects, which are typically conducive to open pit mining, with mineralisation nearer to surface and simpler geology compared with unconformity deposits, meaning lower capex and opex requirements.

Usam consists of eight claims totalling 421km^2 about 16km northeast of Cameco's Eagle Point mine, which produced 202.2 million pounds of uranium oxide (U3O8) between 1975 and 2015, and has numerous electromagnetic conductors that are associated with significant magnetic lows of the Wollaston Domain.

Historical exploration includes 12 diamond drill holes, lake sediment sampling, soil sampling, geological mapping, ground and airborne geophysics, marine seismic, prospecting, and other geochemical sampling. Trenching on the Cleveland Island target uncovered up to 0.31% U3O8 in mineralised pegmatite.

Additionally, drilling on the Gilles Island target intersected anomalous uranium, indicating that the basement rocks underlying the Usam property are fertile sources of uranium.

Wallee covers about 207km^2 in four claims about 35km northeast of Eagle Point and is just outside the currently mapped extent of the Athabasca Basin sandstone.

While no drilling has been done on the property, work in the surrounding area has revealed several uranium-thorium-REE mineralised basement showings in outcrop and boulders, suggesting the basement rocks could be sources of basement-hosted unconformity-related uranium deposits.

KEY INVESTMENT HIGHLIGHTS

- Yellow Rocks has uranium assets with historical exploration and significant upside, and is exploring on the fringe of the Athabasca Basin, Canada – the highest grade uranium jurisdiction globally.
- A strong pipeline of post-IPO news is expected with a stream of results from projects in Canada, including geochemistry, geophysics and drilling.
- Uranium project development team and board led by Marcel Hilmer.