



Renergren CEO Stefano Marani.

Renergren's Virginia Gas Project – SA's

JSE-listed Renergen's Virginia Gas Project is a game-changer for the South African economy, firmly setting the country on a clean energy, low carbon path. With a CAPEX outlay of R1 billion for Phase 1 and an estimated \$1 billion for Phase 2, the project is one of the country's top initiatives currently being advanced. **By Nelendhre Moodley.**

“By diversifying the economy of the Free State away from mining towards manufacturing, towns in the area can become economically sustainable and able to thrive.”

The Virginia Gas Project is the country's only onshore petroleum production right, which means that it is also the flagship project pioneering South Africa's upstream gas generation. The success of this venture is a showcase to international investors, who already have an ardent interest in investing in onshore natural gas and petroleum projects. Essentially, the project is the poster child for future investment in upstream gas initiatives,” Renergen CEO Stefano Marani tells *Modern Mining*.

In early September, the Virginia Gas Project became operational, transitioning Renergen from explorer to producer of liquid hydrocarbons, and an imminent helium producer.

The project involved developing 52 km of gas assemblage pipeline and cryogenic liquefaction processing facilities in Virginia and Theunissen, in the Free State Province.

According to Marani, the project is a catalyst for the economy, not only as South Africa's first commercial liquified natural gas (LNG) project but also as one able to catalyse the Free State and the surrounding area into a sustainable clean energy hub.

Renergren is currently lobbying government to rezone its area of production as a special economic zone (SEZ), which will encourage businesses with heavy energy requirements to relocate and sustainably transition their operations to adopt a cleaner energy source, thus increasing efficiency and reducing costs.

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Importantly, as the industry transitions to LNG, South Africa, an energy importer, will be able to improve its balance of payments by producing some energy domestically and thus importing less.

“For every litre of LNG produced locally, South Africa will be able to displace a litre of diesel it imports, thereby adding to South Africa's domestic energy security and improving the country's balance of payments. We need to wean ourselves off foreign energy if we are going to stop the economy bleeding out our exchange reserves” explains Marani.

Virginia Gas Project

The Virginia Gas Project comprises exploration and production rights on 187 000 ha of gas fields across Welkom, Virginia and Theunissen.

The asset is home to living microbial organisms that produce a constant, renewable source of gas and exceptionally high helium concentrations from large quantities of uranium and thorium deposits found underground, which renders the site a potential major global helium resource.

Renergren holds the production right on the Virginia Gas Project until 2042, with the option to extend it for a further 30 years.

Since it began production in September, the natural gas producer has been ramping up operations

Virginia Gas Plant.



pre-eminent clean energy project

to full Phase 1 capacity of 2 500 GJ of LNG per day, equivalent to 70 000 litres per day of diesel and 350 kg/d of helium.

“We have drilled, proved up the resource, designed, built and brought into operation the country’s first commercial LNG plant, and are close to turning on the first liquid helium plant in sub-Saharan Africa, which will position South Africa as the world’s 8th largest producer of liquid helium.”

Leading producers of helium include the US, followed by Qatar, Algeria, Russia, Australia, Poland, China, and Canada.

According to Marani, barring the challenges and delays of some nine months, the Renergen team has done exceptionally well in bringing the project into production.

“We faced numerous headwinds, especially those related to the Covid-19 pandemic, including construction and supply chain delays as well as domestic strikes – all of which we have managed to navigate. The team has shown its mettle and resolve to deliver a pioneering project during trying circumstances.”

The LNG produced is being supplied to customers including Consol and Ceramic Industries, with Marani already in advanced talks with key industry players keen to ink LNG supply agreements for both Phase 1 and Phase 2.

Phase 2 is significantly larger than Phase 1, with an estimated capital outlay of \$1 billion, to produce 36 000 GJ per day, or the equivalent of 100 000 litres of diesel per day, as well as five t/d of helium, which accounts for roughly 8% of the world’s helium market.

Phase 2 is in the planning stage, with Renergen anticipating “production by the end of 2025/ beginning 2026”.

Looking ahead, Marani says a key milestone in advancing Phase 2 is achieving financial investment decision.

“There is strong interest from investors, and we are already in discussions with the US government, which has signed a retainer of \$500 million of debt funding for Phase 2 and has several financial intuitions eager to co-lend. The Central Energy Fund announced that it would invest R1 billion to aid with Phase 2 development in return for a 10% stake in the project. Furthermore, the revenue from the first phase would also be used to develop the second phase.”

Cleaning the trucking business

As vehicles are key contributors to carbon emissions, a move to LNG will revolutionise the trucking industry and positively impact the country’s carbon footprint.

According to the eNatis website, South Africa has



Virginia Gas project.

an estimated 377 000 registered heavy-duty trucks operating nationwide.

“If you wanted to electrify the vast number of heavy-duty trucks currently operating on South African roads, you would need an additional 15 GW of installed capacity to recharge the trucks. As it stands, we do not have sufficient energy to meet our current needs. However, another viable way to lower carbon emissions is to transition heavy-duty trucks from diesel to LNG. In Phase 1 of the Virginia project, we are pioneering the use of LNG in heavy-duty trucks, which will radically reduce the CO₂ emissions the trucking industry produces. Apart from improving

Virginia project compression station.





Regergen has drilled, designed and built the country's first commercial LNG plant.

overall air quality, we will also be helping to reduce the vast quantities of carcinogens associated with emissions from traditional fuel sources," explains Marani.

Regergen currently supplies LNG directly (to Ceramic Industries and Consol); however, once Phase 2 is in production, the miner plans to develop LNG filling stations across the country.

"We will have dedicated LNG filling stations along all the major routes in South Africa – the N1, N4, N5, N3, N2, and N11 – which will make the transition to LNG seamless.

"Globally, there are around 24 million vehicles using gas. Petroleum producer, Total, recently invested in rolling out 750 LNG filling stations across the US; in Europe, there is a growing movement to

Pipeline being laid.



adopt clean energy, be it battery electric or LNG-powered or dual fuel-powered trucks. China is also fast-tracking the switch from diesel to LNG and has 400 000 6x4 lorries on the road that run on LNG, while Nigeria has over 1 000 trucks fueled by LNG. LNG works; it is cheaper and cleaner. Under the right circumstances, the saving over three years is equivalent to the purchase cost of a new truck – imagine a free truck every year for improving your ESG."

Helium hero

Marani points out that the helium market is under severe pressure, exacerbated by increasing demand from the space race and hospitals – which require large volumes of helium for magnetic resonance imaging (MRI) machines – and from semiconductor manufacturers.

"The US government has seeded \$500 billion in stimulus for semiconductors, which has doubled the requirements for helium in the semiconductor space and sent the price of helium skyrocketing."

Aside from project delays related to new helium initiatives, constant challenges associated with existing projects continue to intensify helium supply pressures. For instance, the Bureau of Land Management (BLM), which is responsible for the US's federally owned helium, continues to face challenges with its plant.

"The BLM is in the process of being sold, which questions its ability to continue long-term production. Moreover, Russia, which was meant to bring a helium plant online, has suffered a setback, with no certainty of when, or if, the plant will come into production. Additionally, Qatar's (Ras Laffan Helium 1 plant) continues to suffer intermittent outages and this, combined with the fact that its next phase helium projects have been delayed until 2026, means further supply pressures."

Given these supply pressures, the commodity is trading at attractive prices, particularly on the spot market.

Two key factors inform the spot price of helium – the urgency of need and whether it is in liquid or gas form.

"On the spot market helium can easily sell anywhere between \$1 700 and \$2 500 per thousand cubic feet (mcf), which is fantastic, especially compared to 2015 when the price for a spot load of helium was around \$750 per mcf."

Although the clean energy producer remains hopeful that the prices for its products will continue to be robust, it has priced its models conservatively to ensure that the Virginia project remains viable and attractive, even when prices come off their peaks.

Bearing in mind the spot-market attractiveness, Regergen's Phase 2 capital outlay includes the acquisition of helium trailers, which will enable the helium producer to participate in the spot market as well as long-term off-take agreements. ■

Virginia Gas Project ticks the boxes

- ❑ First and only onshore petroleum production right in South Africa
- ❑ One of the richest sources of helium recorded globally
- ❑ Proven reserves of methane-rich natural gas
- ❑ A clean substitute for transport fuel, thermal fuel, and power
- ❑ Scalable plant

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