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Centre *for*
Environmental Rights
Advancing Environmental Rights in South Africa

Financing of ONSHORE GAS IN SOUTH AFRICA

Collated by
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LIST OF ABBREVIATIONS

ASX	Australian Securities Exchange
bcm	Billion cubic metres
CEF	Central Energy Fund
CER	Centre for Environmental Rights
CNG	Compressed natural gas
CO_2	Carbon dioxide
DFC	US International Development Finance Corporation
DMPR	Department of Mineral and Petroleum Resources (previously Department of Mineral Resources and Energy – DMRE)
EA	Environmental assessment
EIA	Environmental impact assessment
ER	Exploration rights
FSRUs	Floating Storage Regasification Units
GJ	Gigajoule
GMP	Gas Master Plan
IDC	Industrial Development Corporation of South Africa
IEA	International Energy Agency
IRP 2023	Integrated Resource Plan 2023
kg	Kilograms
ktpa	Kilotonnes per annum
LNG	liquified natural gas
MACUA	Mining Affected Communities United in Action
MEJCON – SA	Mining and Environmental Justice Community Network of South Africa
Molopo	Molopo South African Exploration and Production (Pty) Ltd
MW	Megawatt
NGIP	National Gas Infrastructure Plan
NOx	Nitrogen oxides
PAIA	Promotion of Access to Information Act
PASA	Petroleum Agency of South Africa
PJ	Petajoule
Rompco	Republic of Mozambique Pipeline Investments Company
SBSA	Standard Bank of South Africa
TCF	Trillion cubic feet
UPRD	Upstream Petroleum Resources Development (Bill)
VOCs	Volatile organic compounds

KEY DEFINITIONS

Subsidiary: A company controlled by another, larger company.

Financiers: People or institutions that provide funding for a business or project.

Equity: Ownership in a company, usually represented by shares.

Share: A unit of ownership in a company, giving the holder a claim to a part of the company's profits.

Shareholding: The amount of a company's shares owned by an individual or entity.

Publicly traded: A company whose shares are bought and sold on a stock exchange.

Share issuance: The process of offering new shares to investors.

Underwriting: A financial service that guarantees the sale of shares or securities.

Liabilities: Debts or obligations a company owes to others.

Debt: Money borrowed that must be paid back with interest.

Creditors: People or institutions to whom money is owed.

Credit financing: Borrowing money to fund a business or project.

Capital: Money or assets used to start or run a business.

Investors: People or companies that put money into a business expecting a return.

> Africa needs to set its own development agenda, free of harmful, expensive and climate-wrecking fossil fuels.

Environmental and Climate Justice Advocate Ewi Lamma stands in the forest near her village in Cameroon.
© ReWild Team: Alessandra Squarzon

SUMMARY

Proponents of natural gas highlight its potential as a 'transition fuel', offering a cleaner alternative to coal while addressing the nation's energy security and economic growth needs.

However, this narrative is not without its challenges. While natural gas is positioned as a bridge towards a more sustainable energy landscape, the environmental and economic risks associated with its exploitation are immense. Importantly, public and private financiers must decide whether the continued support of gas projects is worth the risks attached, including reputational risk.

This report presents information on two major gas extraction projects in South Africa and the financiers behind the projects as well as the complexities of onshore gas development in South Africa. To illustrate the social, environmental and economic contexts, this report explores the global and regional contexts of gas development, specific dynamics within the country, and critical concerns raised by various stakeholders. It aims to provide an overview of the issues at play, from the potential environmental impact on water resources to the financial risks of stranded assets. With the limited information in the public domain, it examines the role of key players in the industry and scrutinises government policies and plans that will shape the nation's energy landscape in the coming years.

By fostering a deeper understanding of these issues, the aim is to encourage informed public discourse and advocate for energy solutions that prioritise environmental sustainability, economic resilience and transparency in governance. We hope this report is useful for financiers, policymakers, civil society, and companies to fully understand the risks and context of gas development in South Africa.

About this report

Examining onshore gas exploitation in South Africa highlights the interplay of energy security, economic interests, and environmental sustainability. While proponents often present natural gas as a cleaner alternative to coal, there are significant risks and uncertainties, both economic and environmental.

In a global context, the International Energy Agency (IEA) predicts a plateau and subsequent decline in global demand for natural gas post-2030, driven by the rise of renewable energy sources. While there is potential for sustained demand in developing economies, including Africa, the risks of meeting such demand may be too great, especially while cheaper, renewable energy sources are widely available.

In South Africa, the government promotes natural gas as a 'transition fuel' in the Integrated Resource Plan 2023 (IRP 2023) and the 2024 Gas Master Plan (GMP). These plans aim to secure gas supply through diversification, develop the necessary infrastructure, and convert existing power stations to gas.

Civil society, including community-based organisations that prioritise environmental and social sustainability, question this strategy's financial viability and environmental soundness, raising concerns about the risk of stranded assets, potential groundwater contamination, methane leakage, and the diversion of resources from more sustainable renewable energy solutions.

The Petroleum Agency of South Africa (PASA) has provided seven companies with onshore gas exploration or exploitation licenses. However, information on most of these is unavailable, and only publicly listed companies provide any measure of transparency – and only to the extent required by their shareholders and stock exchange regulations. There are two publicly listed companies with projects licensed by PASA:

- **Kinetiko Energy**, an Australian company, is actively exploring and developing the Mpumalanga Gas Project. Despite announcing significant gas discoveries and securing funding from the Industrial Development Corporation of South Africa (IDC), concerns about transparency and adherence to environmental regulations have been raised. Attempts by the Centre for Environmental Rights (CER) to access information about the project's environmental impact and financial agreements have been met with resistance, citing confidentiality agreements. CER has approached the Information Regulator over the IDC's refusal to provide the requested information.

- **Renergen**, focusing on the Virginia Gas Field, is pursuing an ambitious expansion plan to increase the production of liquified natural gas (LNG) and helium. However, the project faces criticism for potential groundwater contamination risks and its contribution to climate change. The environmental assessment (EA) conducted by Renergen has been challenged by interested and affected parties, who have cited inadequate data, flawed modelling, and underestimating the project's environmental impact.

There is a need for greater transparency, robust environmental safeguards, and a balanced approach to energy planning that considers the long-term sustainability and climate implications of relying on natural gas, particularly in a water-scarce country like South Africa. A more cautious approach to onshore gas exploitation would emphasise the need for rigorous EAs, transparent governance, and a greater focus on diversifying energy investments towards renewable energy sources.

1 GLOBAL GAS OVERVIEW

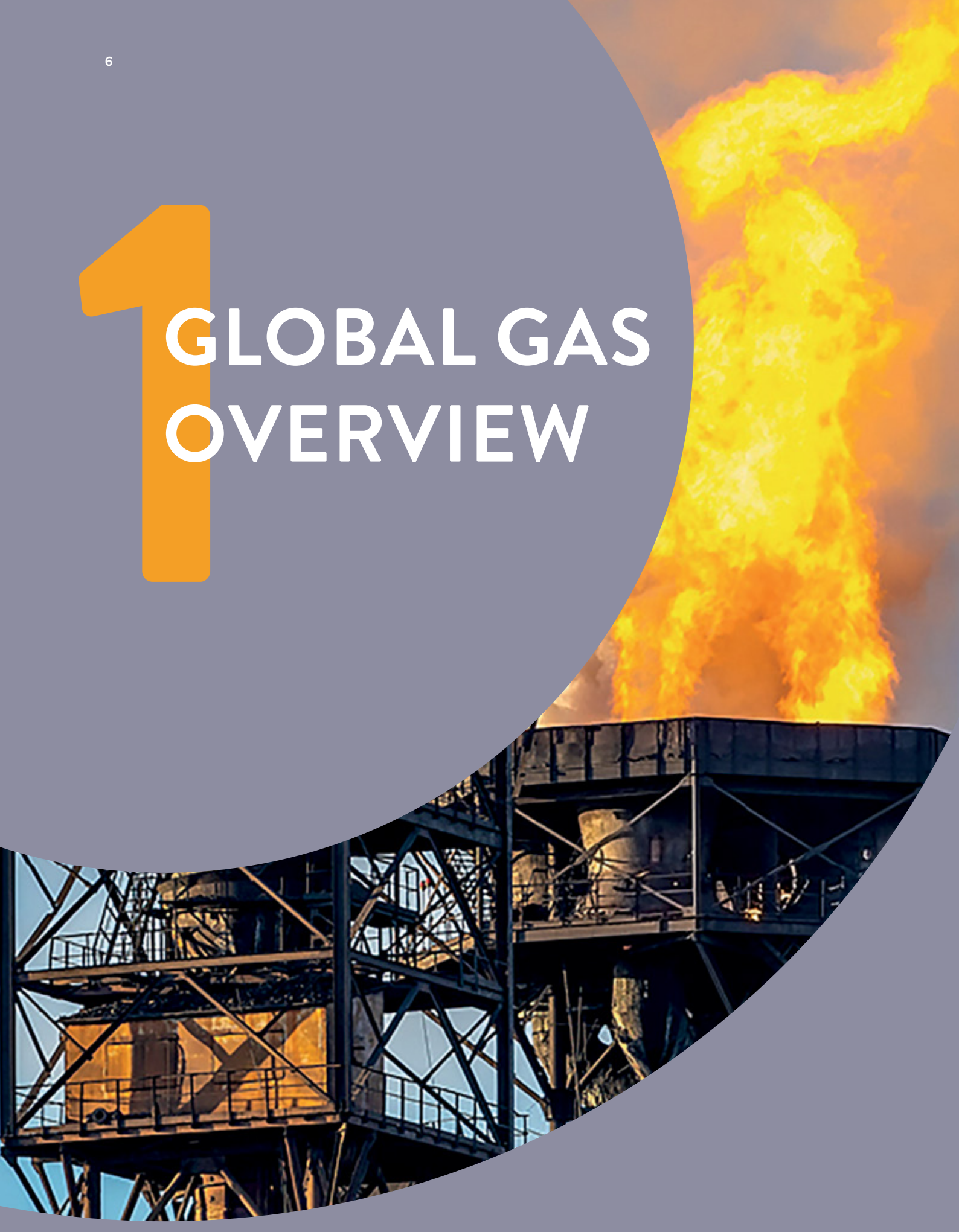


Photo sourced for CER by The Ethical Agency

Natural gas plays a significant role in the global energy mix, according to the International Energy Agency (IEA). **However, the IEA suggests that the 'Golden Age of Gas', a period of significant growth for natural gas, is ending.**[1]

The IEA anticipates that global demand for gas will peak in 2030 at approximately 4 299 billion cubic metres (bcm) and will plateau and gradually decline to around 4 173 bcm by 2050. This estimate is primarily attributed to the increasing adoption of cheaper renewable energy sources and improvements in energy efficiency. Regional demand is expected to vary between developed and developing economies. In advanced economies such as Europe and North America, natural gas demand is expected to decrease in all scenarios post-2030, driven by strong support for clean energy alternatives. In developing economies, the future of natural gas is less certain – ample new LNG supplies could keep prices low, potentially leading to sustained demand. A notable international trend identified by the IEA is the increasing role of LNG in the global gas trade, estimating that two-thirds of traded gas will be delivered as LNG by 2030. This is primarily driven by European efforts to replace pipeline gas supplied by Russia following the Russia-Ukraine conflict.

While the demand for natural gas is still growing, the IEA highlights some significant risks. The most obvious of these are the climate, health and environmental impacts of the production and use of gas. Despite being marketed as a 'cleaner' fossil fuel, natural gas production and consumption still contribute significantly to greenhouse gas emissions. During various stages of the natural gas lifecycle – extraction, processing, transportation, and use – harmful air pollutants are often leaked. These include methane – a potent greenhouse gas – nitrogen oxides (NOx), volatile organic compounds (VOCs), and hazardous air pollutants. These pollutants contribute to respiratory problems, cardiovascular disease, cancer and premature mortality. The construction of gas wells and associated infrastructure leads to habitat loss, fragmentation of wildlife habitats, and potential biodiversity loss. Offshore gas production poses risks similar to those of marine ecosystems.

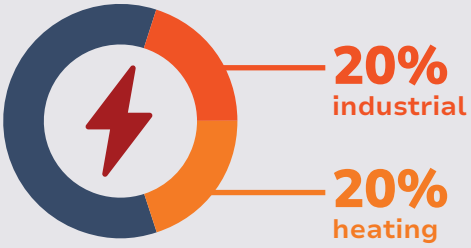
Drilling for gas and hydraulic fracturing can contaminate ground and surface water sources.

Contamination can occur through leaks in gas well seals, improper management of hazardous waste from gas production, and the release of toxic chemicals used in the drilling process. These contaminants include heavy metals, endocrine disruptors, and carcinogens, posing significant risks to human health and ecosystems. The large volumes of water required for gas extraction can also deplete local water supplies, particularly in water-scarce regions.[2]

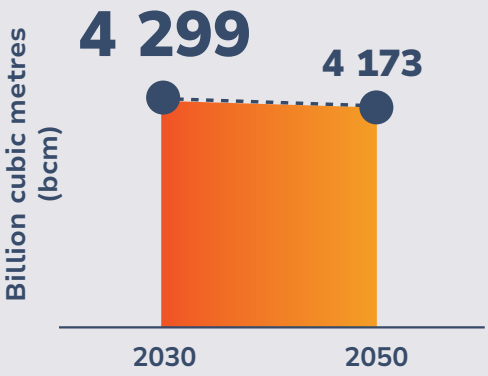
Another risk highlighted by the IEA is geopolitical instability; reliance on single countries or regions for natural gas imports exposes importing countries to geopolitical risks and market volatility, as evidenced by the 2022 energy crisis following Russia's invasion of Ukraine.[3]

Over-investment in gas infrastructure is a further risk.

As the world transitions towards cleaner energy sources and demand for natural gas eventually declines, these assets risk becoming stranded, leading to financial losses for investors. The IEA's Net Zero Emissions (NZE) scenario suggests that up to 75% of LNG projects under construction might fail to recover their invested capital if the world shifts decisively away from fossil fuels.[4] This investment in natural gas infrastructure also creates an opportunity cost. That investment could divert the investment in more sustainable energy solutions like renewable energy sources and energy efficiency improvements. This risks a higher-emissions trajectory and would hinder efforts to achieve global climate goals.[5]



Electricity generation consumes 40% of global natural gas demand



Global demand for gas will peak in 2030 and gradually decline and plateau by 2050

2 GAS IN AFRICA

Photo sourced for CER by The Ethical Agency

Africa is estimated to hold around

9% of the global natural gas reserves,

exploited mainly in North and West Africa.

However, strong lobbies argue that many sub-Saharan countries should exploit their gas reserves. These lobbyists say that "harnessing Africa's gas could provide the baseload power needed to boost Africa's capacity to process its raw materials locally".[6] "The huge reserves of gas can play a significant role in the continent's energy transition, as natural gas has a much lower carbon footprint than oil and coal. Critically, natural gas development and renewable power are not mutually exclusive", writes Jason Mitchell on behalf of the African Energy Chamber (a vocal champion of fossil fuel investment). These lobbyists rely strongly on an argument that a 'baseload' electricity source is required and that renewables and storage cannot provide sufficient generation to supply demand. This is misleading – storage[7] and distributed generation[8] can mitigate the intermittency of solar and wind generation.

According to Don't Gas Africa,[9] an African Civil Society Campaign working to ensure that Africa is not locked into fossil gas production:

> ***"Since our fights for independence, Africa has spent decades and billions investing in fossil-fuelled energy systems that have failed to provide modern energy access to 600 million people, about half of the continent's population. Expanding this centralised infrastructure is costly, inefficient and unviable as a way of providing universal energy access, particularly in poor and rural communities. It would misallocate scarce resources, lock Africa into obsolete energy technologies and systems, and delay the provision of universal energy access to hundreds of millions of people through renewable energy."***

Campaigner Omar Danso holds a Don't Gas Africa sign at The Real Africa Climate Summit March in September 2023.
© Phumla Duma

3 GAS IN SOUTH AFRICA

In South Africa, the natural gas market is currently monopolised by Sasol.[10]

In 2004, Sasol became 50% owner of a joint venture, Rompco[11] (Republic of Mozambique Pipeline Investments Company), together with the South African Gas Development Company (iGas) and the government of Mozambique's gas company (Companhia Mocambiçana de Gasoduto). In 2021, Sasol sold 30% of the equity in Rompco to a consortium of private investors. Sasol retains a 20% equity share and continues maintaining and operating the Rompco Mozambique to Secunda (MSP) pipeline, which pipes gas from the Pande and Temane gas fields to Sasol's processing plant in Mpumalanga. Sasol provides natural gas to consumers and industry for feedstock, drying, steam generation and heating. It sells natural gas to municipalities and traders for domestic and residential use.

Sasol has announced that the Temane and Pande gas fields are nearly exhausted and that they will apply curbs to supply starting in 2026.[12] There is currently no alternative gas supply, although large industrial gas consumers are counting on the construction of an LNG terminal in Matola, Mozambique to make up for the decreased supply. However, the current industrial demand in South Africa – approximately 50 petajoules (PJ) – does not justify the cost of building this terminal.[13] These users argue that, for the terminal to be economical, an additional 50–60 PJ of demand will need to be created, likely by gas-to-power projects. This is despite South Africa's Presidential Climate Commission finding, in its electricity planning recommendations,[14] that gas-to-power is unnecessary at any significant scale to ensure secure and reliable electricity. These industrial users are concerned that the cost of imported LNG will be significantly higher than the existing supply from Sasol. Other sources of natural gas within South Africa are local onshore gas wells. Rights for onshore gas exploration and production in South Africa are granted under the auspices of PASA.[15] The seven companies that hold rights to natural gas are:

- **Tetra4 (Pty) Ltd**, a wholly owned subsidiary of Renergen Ltd. They are the holders of the environmental authorisation (EA) the Department of Mineral and Petroleum Resources (DMPR) granted to produce natural gas from gas fields near Virginia in the Free State.
- **Afro Energy (Pty) Ltd**, a subsidiary of Kinetiko Energy Ltd, an Australian-based energy exploration company. Afro Energy holds exploration rights and technical corporation permits in Mpumalanga's Amersfoort and Volksrust areas.
- **Inert Gas Industries**, which holds rights in Heilbronn, Free State.
- **Anglo Operations Limited**, which holds rights in Lephalale, Limpopo.
- **Badimo Gas (Pty) Ltd**, which holds rights in Waterberg, Limpopo, and Aliwal North in the Eastern Cape.
- **Booi Brothers (Pty) Ltd**, which holds rights in Mutale and Malamulele, Mpumalanga.
- **Gold One Africa (Pty) Ltd**, which holds rights in Hennenman, Free State.

Apart from Tetra4 and Afro Energy, CER has reported difficulties in contacting these companies, even those with websites, and accessing copies of their granted rights. Promotion of Access to Information Act (PAIA) applications to PASA have also been unsuccessful.[16] This lack of transparency raises concerns about the accessibility of information regarding onshore gas activities in South Africa.

IRP 2023, Upstream Petroleum Resources Development Bill and the Gas Master Plan

The South African government is pursuing a multi-pronged strategy to incorporate gas into its energy mix. The South African DMPR states that this approach encompasses securing the gas supply, developing necessary infrastructure, and positioning natural gas as a transition fuel.[17] Two draft documents, IRP 2023[18] and the 2024 GMP, along with the Upstream Petroleum Resources Development (UPRD)[19] Bill (which will regulate petroleum exploitation once signed into law), highlight how the government is strongly focused on developing gas, not simply as a transitional electricity generation solution, but rather as a core economic activity.

The DMPR plans to ensure gas supply security through diversification and tapping into local and international markets. Projecting a supply shortage between 2026 and 2030, the government plans to engage with regional partners to unlock additional supply, although exactly what this would be is not clear.

It is, however, clear that there is some difference in opinion between the DMPR and the newly created Ministry of Electricity and Energy. In August 2024, Electricity and Energy Minister Kgosientsho Ramakgopa[20] indicated that the GMP needs substantial revision to incorporate public comments. He also noted that the shortage of generation that had led to load-shedding had been mitigated due to improved plant performance at Eskom. This had led to over 150 days without loadshedding. This may signal that the government is reconsidering their approach to gas-to-power projects.

Infrastructure

A key element of the government's plan is developing infrastructure. This includes constructing pipelines and Floating Storage Regasification Units (FSRUs) at ports such as Richards Bay, Ngqura, and Saldanha Bay.[21] Not coincidentally, these ports are the same as those that Karpowership had won electricity supply contracts for under the Risk Mitigation Independent Power Producer Procurement Programme (RMIPPPP) in 2020.[22] Karpowership intended to use FSRUs at these ports, but those projects seem to have permanently stalled. According to the draft 2024 GMP, the government's strategy also involves converting existing diesel turbine power stations to natural gas, as well as building new gas-fired power plants for peaking generation. The plan also mentions, but without much detail, the intention to shift some industrial production to natural gas as an energy source. The DMPR has also stated that a National Gas Infrastructure Plan (NGIP) is under development. There is no public information on this NGIP besides what is included in the GMP.

Political leadership

Minerals and Petroleum Minister Gwede Mantashe has championed the role of gas in South Africa's energy future.[23] He has publicly stated that his vision includes extracting gas from onshore and offshore reserves, converting six older Eskom coal power plants to gas, transitioning trucks and taxis to run on gas instead of diesel, and constructing thousands of kilometres of new gas pipelines. He states that this plan will rejuvenate South Africa's energy infrastructure, reduce energy shortfalls, and stimulate the economy.

Criticism of the IRP 2023, UPRD Bill, and the GMP

The South African government positions gas as a key transition fuel for the country's energy future through documents like the draft 2024 GMP and statements by Minister Gwede Mantashe. However, there are several significant reasons why this approach is not ideal.

Financial concerns

Gas infrastructure requires significant capital investment. Developing this gas infrastructure, including pipelines, FSRUs, and conversion of existing power plants, requires substantial upfront investment. This financial burden could strain South Africa's already constrained fiscus, potentially diverting resources from critical sectors like healthcare and education.[24]

Global gas prices are subject to significant fluctuations, influenced by geopolitical tensions and supply disruptions. Relying heavily on gas exposes South Africa to these price volatilities, potentially leading to significant energy price spikes for consumers and businesses.[25]

> **Gas extraction and processing places pressure on water resources, both in terms of usage and potential pollution.**

Investing heavily in gas infrastructure also risks locking South Africa into a fossil fuel-dependent trajectory, potentially diverting resources and political will away from more sustainable and cost-effective renewable energy solutions.[26]

There are also significant economic risks associated with goods and services produced using fossil fuels. As the world moves away from fossil fuels, such goods face exposure to increased taxes and costs, such as the European Union's Carbon Border Adjustment Mechanism (CBAM), impacting economic development plans.[27]

Petroleum development is also associated with significant health impacts and economic costs. This includes increased mortality, morbidity, and the strain on healthcare systems.[28]

Environmental concerns

While touted as a 'cleaner' fossil fuel, gas still emits greenhouse gases, contributing to climate change. Burning methane produces CO_2, albeit at lower levels than that of burning coal. However, methane itself is a powerful greenhouse gas (arguably eighty times more potent than CO_2 over a 20-year period),[29] and there is significant methane leakage throughout the gas supply chain.[30] South Africa is also a water-scarce country. Gas extraction and processing places pressure on water resources,[31] both in terms of usage and potential pollution.[32]

Transparency

The government's planning and regulation process seems opaque. Large-scale infrastructure projects, including gas-related ones, are often susceptible to corruption

and mismanagement. Without transparency, public participation in these decisions is flawed, and meaningful engagements with businesses, communities, independent experts and civil society organisations are impossible.[33, 34]

Stranded assets

As the world transitions to cleaner energy sources, investments in gas infrastructure risk becoming stranded assets. The GMP acknowledges the "uncertainty in demand and the potential transition to cleaner fuels in the future",[35] highlighting the risk of investing heavily in gas. In addition, rapid advancements in renewable energy technologies and energy storage solutions are making cleaner energy alternatives increasingly cost-competitive.[36] This further amplifies the risk of gas investments becoming stranded assets in the near future.[37]

Climate goals

South Africa is a signatory to the Paris Agreement and has committed to reducing its greenhouse gas emissions. Pursuing gas as a significant part of the energy mix would make it challenging to meet these commitments and contribute to global efforts in combating climate change. CER has argued that the UPRD Bill's promotion of oil and gas exploration contradicts South Africa's Nationally Determined Contributions (NDCs),[38] which outline the country's commitment to reducing greenhouse gas emissions.

Constitutional matters

The South African Constitution[39] guarantees the right to an environment that does not harm health and well-being. The environmental and health risks associated with gas extraction, processing, and combustion raise concerns about the constitutionality of pursuing gas as a major energy source.[40]

Investing heavily in gas infrastructure risks burdening future generations with the environmental and economic costs of a carbon-intensive energy system. A transition to cleaner energy sources is essential for ensuring a just and equitable future for all South Africans.[41]

Relying on gas, a finite fossil fuel, does not provide a sustainable pathway to long-term energy security. Investing in renewable energy sources, on the other hand, offers a more resilient and sustainable solution for South Africa's energy future.[42]

Investing heavily in gas infrastructure also risks locking South Africa into a fossil fuel-dependent trajectory, diverting resources away from more sustainable and cost-effective renewable energy solutions.

Photo sourced for CER by The Ethical Agency

4 KINETIKO, AFRO ENERGY AND THE MPUMALANGA GAS PROJECT

Kinetiko Energy Limited (Kinetiko), an Australian gas exploration company listed on the Australian Securities Exchange, primarily focuses on shallow conventional gas opportunities in South Africa.

Mpumalanga Gas Project development timeline

In January 2020, Afro Energy – a joint venture between Kinetiko Energy and Badimo Gas (Pty) Ltd – was granted exploration rights for an area of approximately 3 600 km^2 in Mpumalanga, South Africa,[43] and began exploratory drilling. In September 2022, Kinetiko announced[44] that they estimated a 2C contingent resource[45] of 4.9 trillion cubic feet (TCF)[46] of methane in sandstone layers above coal reserves. This follows an application and environmental impact assessment (EIA) submitted to PASA in 2017.[47] This EIA specifically addresses the exploration phase and explicitly states that future exploration and production would require separate authorisation and approvals.

In 2023, Afro Energy entered into a joint-development agreement with the IDC.[48] The project would involve the development of up to 30 gas wells.[49] In addition, the IDC would have the first right to participate in up to 45% of the next 60 wells developed by Afro Energy.

The initial project budget was set at ZAR15 million, with the IDC contributing 45% (ZAR70 million) and Afro Energy (i.e. Kinetiko) contributing 55%. To manage this project, a Special Purpose Vehicle (SPV) was created – Afro Gas Development SA (Pty) Ltd.

In August 2023, it was announced that Afro Energy had made a major gas find in ER272,[51] significant because this is close to Sasol's Secunda plant and the Lilly pipeline which runs to Durban. Following this announcement, an independent assessment increased the 2C contingent gas reserves in the Mpumalanga field by 20% to 6 TCF.[52]

In September 2023, Kinetiko acquired the remaining 51% of Afro Energy from Badimo Gas, through an exchange of shares in Kinetiko.[53] Kinetiko now owns 100% of Afro Energy.

Also in September 2023, Kinetiko entered into a non-binding term sheet with the IDC[54] to appraise and produce LNG. The project aims to produce 60 kilotonnes per annum (ktpa)[55] of LNG – sufficient to generate 50 megawatts (MW) of electricity – with plans to expand to 600 ktpa (equivalent to 500 MW of electricity).

In May of 2024, Kinetiko, in partnership with FFS Refiners, successfully demonstrated power production from a gas well at its Amersfoort project.[56] A fully compliant gas train was constructed on-site to feed a 1.2 MW gas generator. No additional EIA seems to have been submitted. So this production and exploitation seems contrary to the exploration rights that have been granted and specifically counter to the terms of the original EIA submitted to PASA. It should be noted that 1.2 MW is a very small generator in grid terms.

The National Transmission Company of South Africa (NTCSA) estimates that South Africa has approximately **5.7 gigawatts** (GW)[57] of installed rooftop photovoltaic (PV), i.e., solar capacity.

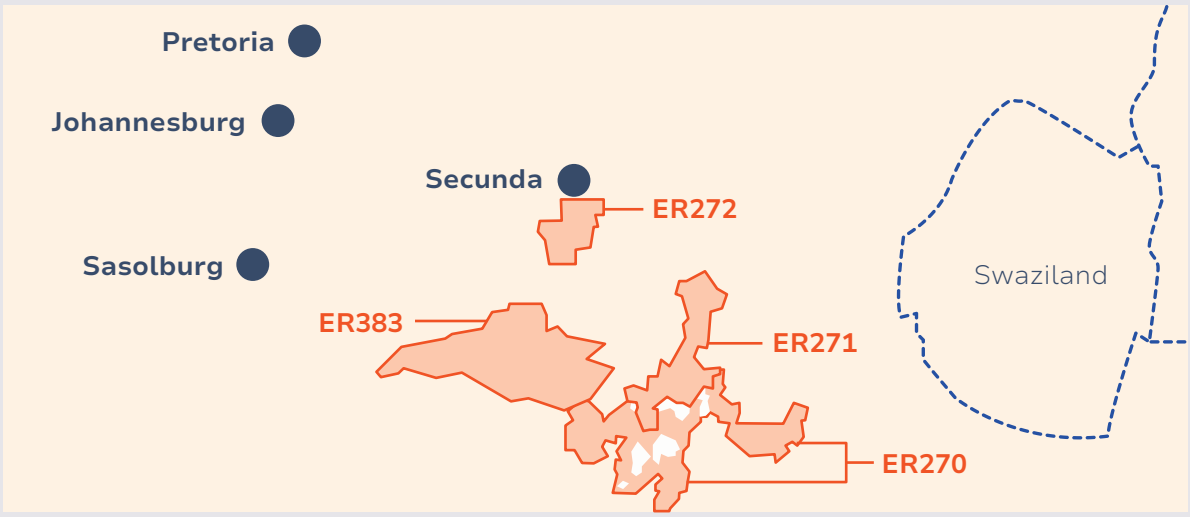


Figure 1: Location of Mpumalanga Gas Field. Information sourced from PASA Petroleum exploration and production activities in South Africa map, June 2024[50]
Note: Afro Energy (Pty) Ltd licenses are highlighted in red.

Investors, financiers and current creditors

Investors

Kinetiko is publicly listed on the Australian Stock Exchange with 57.94% free float. Twenty strategic entities hold 42.06% of shares. This includes South African Phefo Power (Pty) Ltd,[58] which holds 8.2% of the equity. Individual board members and management hold a combined 9.8% of shares. Phefo Power's investment in Kinetiko is estimated at AUD8 million (approximately ZAR95 million).[59]

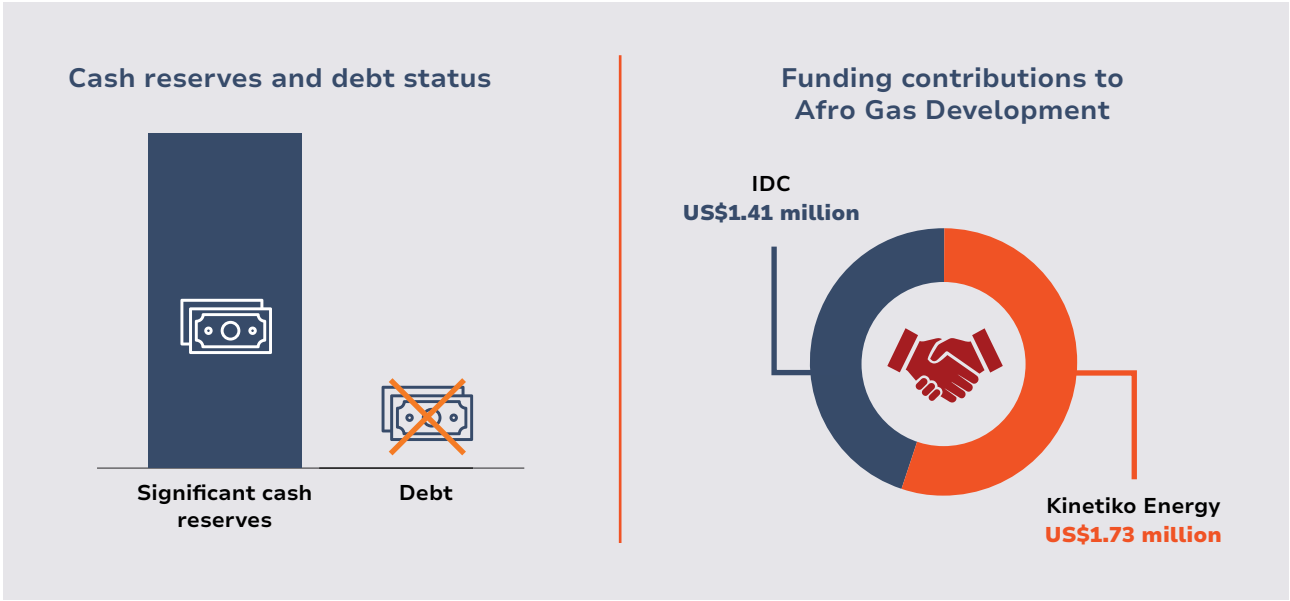
Table 1: Top ten investors in Kinetiko Energy Ltd[60] as of December 2023

Investor	Shareholding	Type of investor
Brendan David Gore	8.73%	Individual investor
Phefo Power (Pty) Ltd.	8.2%	Corporation
Adam James Sierakowski	4.9%	Individual investor
Donald Ncube	4.1%	Individual investor
Agapitos Marcus Michael	2.4%	Individual investor
Robert Bulder	2.3%	Individual investor
Holdrey Pty. Ltd.	1.5%	Corporation
Robert James Macmillan	1.1%	Individual investor
JGST Pty. Ltd.	0.9%	Corporation
MFM Australia Pty. Ltd.	0.8%	Corporation

Note: It is important to differentiate between direct shareholdings in Kinetiko Energy and investment in specific projects. For example, the IDC holds equity stakes in projects operated by Kinetiko's subsidiary, Afro Energy, but does not directly own shares in Kinetiko Energy.

Financiers and creditors

As of June 2024, Kinetiko Energy Ltd has significant cash reserves and no debt. Kinetiko has funded Afro Gas Development Pty Ltd with US$1.73 million. The IDC, as part of that same joint venture, has contributed US$ 1.41 million.[61]



The Mpumalanga area already suffers from one of the **highest air pollution problems in the world.**

Environmental concerns

CER has attempted to gain additional information on the project and, specifically, Afro Energy's contractual relationship with the IDC. Using the provisions of PAIA, CER made a request to the IDC for documents relating to the decision-making process of IDC's joint venture with Afro Energy in December 2023.[62]

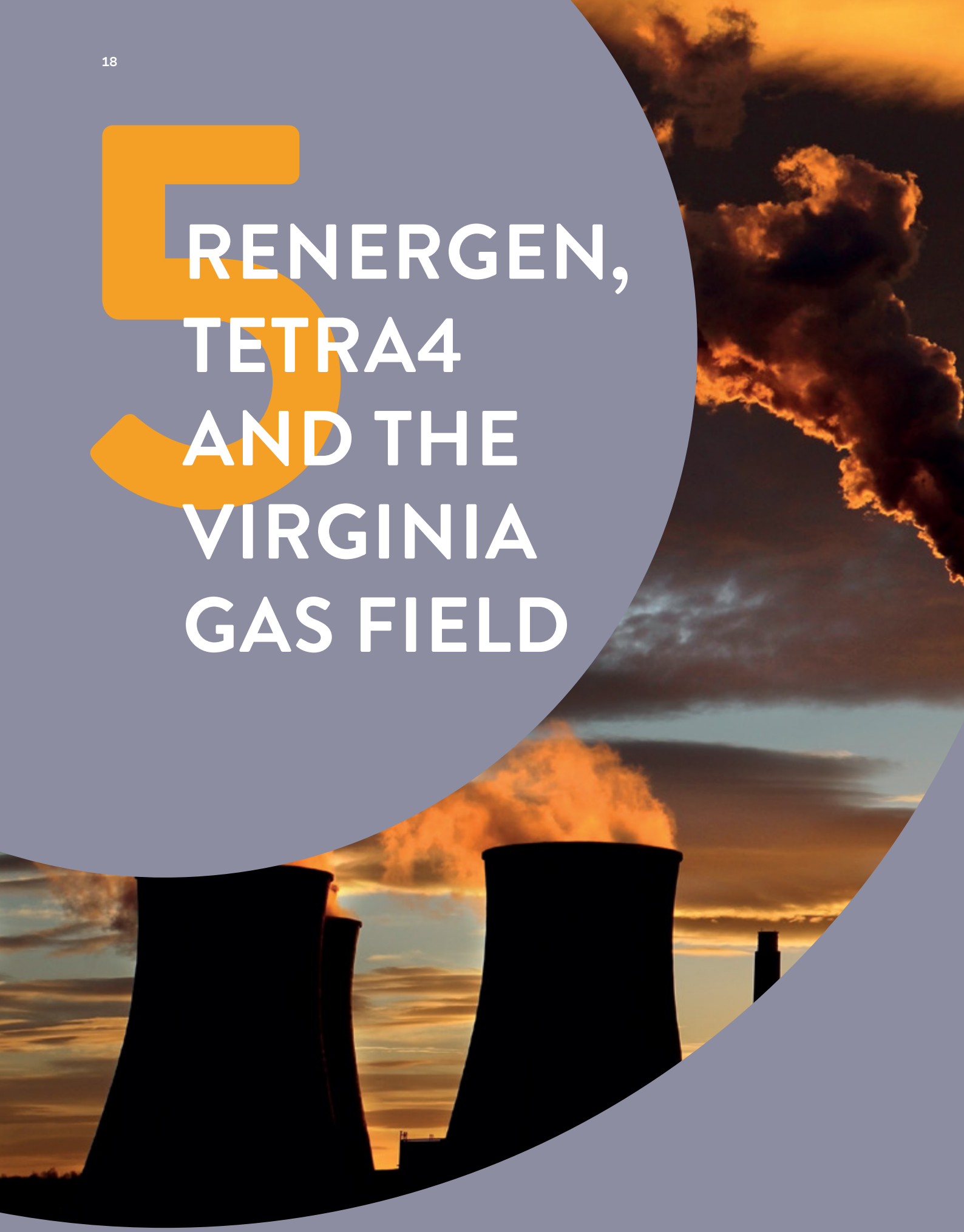
The PAIA request asked for documentation relating to the joint-venture agreement between the IDC and Kinetiko or its subsidiaries, including details on the funding conditions. It also requested documents relating to the decision-making process of the IDC, including the due diligence undertaken regarding funding, financial viability assessments, environmental and social impact assessments, and the criteria used in this process. It further requested documents on the project's compliance with environmental regulations and any pertinent funding conditions.

On 29 January 2024, the IDC responded[63] that they would consult with Afro Energy regarding the request, as PAIA mandates that third parties are informed about relevant requests. Subsequently, on 19 February, the IDC issued a response,[64] refusing access to information on two grounds. The IDC claimed that the request fell within the scope of ongoing litigation, making PAIA inapplicable. It also argued that disclosing the information would jeopardise Kinetiko's commercial interests. The IDC reported that Kinetiko/Afro Energy had refused access to this information on the grounds of confidentiality. Correspondence from Kinetiko was included in the refusal, which referenced a non-disclosure agreement between Kinetiko and the IDC. CER subsequently filed a complaint to the Information Regulator over the IDC's refusal to provide the requested information.

The Mpumalanga area where this exploration is taking place already suffers from one of the highest air pollution problems in the world – so much so that a South African court has ordered that the levels of pollution in this area are in breach of the residents' constitutional right to an environment that does not harm their health and well-being.[65] Toxic pollutants such as sulphur dioxide, nitrogen oxides, hydrogen sulphides and particulate matter are highly prevalent in the area and are predominantly emitted by coal-fired power stations and the coal-to-liquid facilities located there. These pollutants have been found to lead to conditions such as asthma, chronic bronchitis, ischaemic heart disease, cancer, strokes and pre-term births.

Communities and at-risk individuals receive little support from the state, with poor and inadequately capacitated public health care and regulators who grant exemptions from compliance with air pollution laws and regulations. To add to the toxic atmospheric load with emissions from new sources would compromise a situation that can already be thought of as a health and socio-economic crisis caused by humans.

5 RENERGEN, TETRA4 AND THE VIRGINIA GAS FIELD



Tetra4 development timeline

First phase

In 2005, Molopo South African Exploration and Production (Pty) Ltd (Molopo) was formed. In 2007, it was granted gas exploration rights in the Wits Basin for an area near Virginia in the Free State.[66] In 2012, Molopo was granted the first and, to date, only full onshore petroleum production right in South Africa.

Molopo was unable to raise the required capital to exploit this right and, in 2013, sold the company to Windfall Energy (Pty) Ltd for ZAR5 million, as well as the Virginia Gas Project for the equivalent of US$1.[67]

Windfall Energy was wholly owned by Stefano Marani, also the CEO of Renergen. Despite the apparent conflict of interest, in August 2015, Renergen purchased 90% of Windfall Energy for ZAR650 million – in the form of 70 million Renergen shares and ZAR5 million in cash, netting Marani ZAR644 million profit.

Renergen was listed on the Johannesburg Stock Exchange in June 2015. Subsequently, Renergen was also listed on the Australian Securities Exchange (ASX) in June 2019 and on South Africa's A2X Markets exchange in November 2019.[68]

Renergen renamed Molopo as Tetra4 (Pty) Ltd and initially planned to exploit and market compressed natural gas (CNG).[69] To proceed with this project, Renergen/Tetra4 entered a loan agreement in 2017 with the IDC for ZAR218 million. Renergen reportedly intended to partner with Total Energies to provide CNG filling stations as an alternative to diesel. This project seems to have stalled, possibly because it wasn't economically feasible or the market wasn't significantly developed.[70] In 2019, the agreement with the IDC was cancelled, and Renergen shifted its focus from CNG to LNG and helium. While initially, a provision was made for commitment and administration fees for this loan, it was later reversed when a new loan agreement with the IDC was established.[71]

In 2018, Renergen raised ZAR125 million in a rights offer, and, in 2019, was granted a loan of US$40 million (c. ZAR670 million) by the US International Development Finance Corporation (DFC).[72] Also in 2019, the listing on the ASX raised approximately AUD10 million (c. ZAR100 million).[73]

Renergen had noted a commercial concentration of helium in their gas offtake early in the project and had signed a deal with Afrox in 2016 for future helium supply.[74] Renergen commenced a Front-End Engineering and Design (FEED) for a helium liquefier in 2017. This move marked the start of Renergen's attempt to become a major helium producer. Despite this early interest, selling helium commercially proved challenging for Renergen, with missed deadlines and production challenges delaying the process significantly.[75, 76]

The first phase of the Tetra4 project in the Virginia gas field was nominally completed in September 2022, and was supposed to produce 2 700 gigajoules (GJ) – 50 tons – of LNG and 350 kilograms (kg) of helium per day.[77] However, as of June 2024, the production volumes were nowhere near these levels.[78] Commercial helium production had not yet begun due to technical issues with the OEM cooling system employed. Production of LNG in the period March to May 2024 totalled 1 344 tons, significantly less than the production estimate of 50 tons per day.

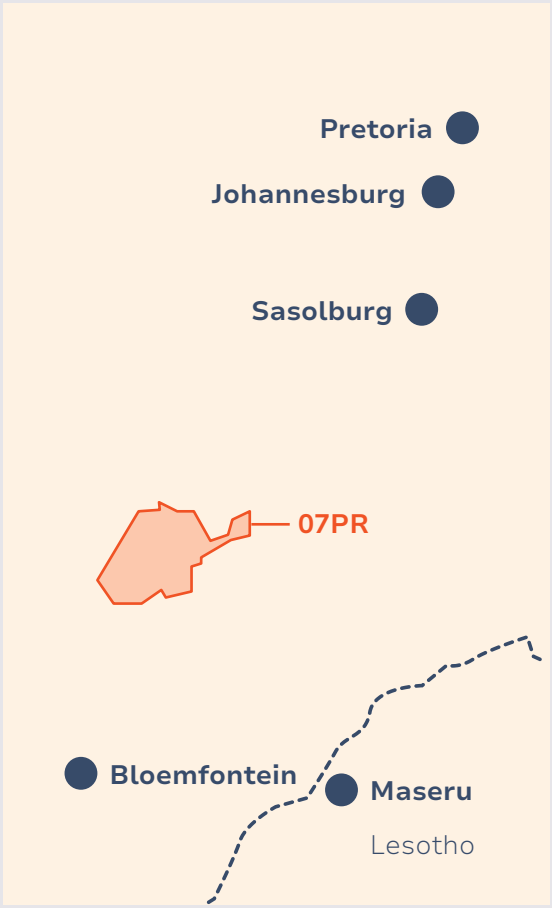


Figure 2: Location of Free State Gas Field. Information sourced from PASA Petroleum exploration and production activities in South Africa map, June 2024

Second phase

Phase 2 of the Tetra4 project involves a significant expansion of the existing operation, aiming to increase the production capacity of LNG and helium. This will involve drilling approximately 350 new wells, installing 480 kilometres of gas transmission pipelines and constructing additional infrastructure, including three new compressor stations and a combined LNG and liquid helium plant.[79]

Phase 2 aims to produce 34 400 GJ/day of LNG for the South African market and 4 200 kg/day of liquid helium for international export, more than ten times the production than predicted from phase one.

The total cost of constructing Phase 2 is estimated at US$1.2 billion. Renergen has been pursuing funding from multiple avenues:

- Loans from the US DFC and Standard Bank South Africa (SBSA) secured debt financing of US$750 million. The DFC approved up to US$500 million, and SBSA agreed to underwrite the remaining US$250 million.[80]
- A 10% stake in Tetra4 was to be sold to the Central Energy Fund (CEF) for ZAR1.0 billion. However, this was pending the CEF securing funding.[81]
- Additional equity funding through initiatives such as a potential initial public offering, particularly targeting the US Nasdaq exchange, is also being considered.[82]
- Mahlako Gas Energy recently acquired a 5.5% stake in Tetra4 for ZAR550 million, injecting additional capital into the project.[83]

As of June 2023, the DFC and SBSA had completed their due diligence and approved the debt funding package for Phase 2. The project was awaiting the fulfilment of certain conditions before the funding could be accessed. Construction was expected to take three to four years, to commence commercial operations in 2026.

Renergen's 2024 annual report notes that commercial operation is now anticipated during 2027 with a target to reach 75% capacity initially and full capacity within nine months. However, even this revised timeline may be ambitious as certain environmental approvals are being appealed.

Investors, financiers and current creditors

Investors

Renergen is a publicly traded company on the South African and Australian stock exchanges, with 56% free float. The largest shareholder is Mazi Capital, with 8% of the shares. The South African government owns 15.4% of Tetra4, a subsidiary of Renergen, through the state-owned companies Public Investment Corporation and the Central Energy Fund.[84]

Table 2: Top ten investors in Renergen Ltd[85] as of December 2023

Investor	Investor country	Shareholding (US$ million)	Type of investor
Mazi Asset Management	South Africa	13.7	Investment manager
Notable Pioneer	Australia	10.2	Corporate
Marani (Stefano)	South Africa	10.0	Individual
Matc Investments	South Africa	9.7	Investment manager
CRT Investments	Australia	9.5	Investment manager
Mitchell (Nick)	South Africa	9.5	Individual
FRB ITF Northshore Prime Flexible Qualified Investor Hedge Fund	South Africa	8.7	Investment manager
Public Investment Corporation	South Africa	7.8	Government
Turquoise Hill Resources	Canada	6.2	Investment manager
Tamryn Investment Holdings	South Africa	5.4	Investment manager

Financiers

Overall, between January 2016 and December 2023, Renergen and its subsidiaries received credit financing totalling US$829 million. This financing comprised US$807 million in loans and US$22 million in share issuance underwriting services. Notably, International Finance Institutions (DFC and IDC) contributed US$557 million, representing 67% of the total funding.[86]

This approved credit includes **US$500 million** from the DFC and **US$250 million** from SBSA for Phase 2 of the Virginia gas project. Furthermore, another loan agreement with DFC is in the proposal stage, concerning a loan up to **US$535 million**, within an all-source funding total of **US$1 167 million**.

Table 3: Financiers: Renergen Ltd[87] as of December 2023

Financier	Country	Borrower's name	Loans (US$ million)	Underwriting (US$ million)	Total (US$ million)
DFC	United States	Renergen Ltd	40	0	40
DFC	United States	Virginia Gas	500	0	500
Standard Bank	South Africa	Virginia Gas	250	0	250
IDC	South Africa	Virginia Gas Pipeline, Power	17	0	17
MST Financial	Australia	Renergen Ltd	15	0	15
The Eights Group	Australia	Renergen Ltd	5	0	5
Gleneagle	Australia	Renergen Ltd	2	0	2
Total loans			**807**	**0**	**807**
MST Financial	Australia	Renergen Ltd	0	15	15
The Eights Group	Australia	Renergen Ltd	0	5	5
Gleneagle	Australia	Renergen Ltd	0	2	2
Total underwriting services			**0**	**22**	**22**
TOTAL			**807**	**22**	**829**

Creditors

According to its financial reports,[88] Renergen had a total debt load of ZAR1 236 billion as of 29 February 2024. This does not include the loans granted for Tetra4 Phase 2, as these have not yet been drawn down.

The breakdown of creditors is as follows:

- **Molopo Energy Limited, ZAR47 million.** Tetra4, Renergen's wholly owned subsidiary, entered this loan agreement on 11 May 2014. The loan is unsecured and interest-free and due to be repaid in August 2024.
- **The United States DFC, R624.2 million.** Tetra4 entered this US$40 million finance agreement on 20 August 2019. The loan is secured by a pledge of the group's assets under construction, land and the debt service reserve account.
- **IDC, ZAR160.7 million.**
- **SBSA, ZAR333.8 million.** This was a secured bridge loan that Renergen entered into on 30 June 2023. The security for the loan was a third-ranking pledge of Tetra4's assets under construction, land, the global business account, and shares held by Renergen in Tetra4. This loan was subsequently settled in March 2024.
- **AIRSOL, ZAR57.8 million.** AIRSOL is an Italian wholly-owned subsidiary of SOLS.p.A. Renergen entered this unsecured convertible debenture subscription agreement on 30 August 2023.

Renergen also had other liabilities, such as trade and other payables, lease liabilities and provisions, totalling ZAR151.4 million as of 29 February 2024.

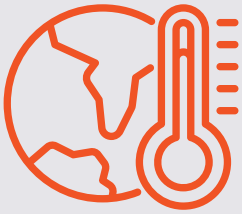
Environmental concerns

Critics raise significant concerns regarding the environmental impact of Tetra4's proposed Cluster 2 expansion of their natural gas field in Virginia. The Mining and Environmental Justice Community Network of South Africa (MEJCON – SA) and Mining Affected Communities United in Action (MACUA) are two organisations raising the alarm, particularly regarding potential groundwater contamination and the project's contribution to climate change.[89] These organisations have submitted an appeal to the South African government to set aside the environmental authorisation granted to Tetra4.

Groundwater impact analysis

MEJCON-SA and MACUA, represented by CER, argue that Tetra4's EA fails to adequately consider the project's impact on groundwater. Their concerns are supported by an independent expert report[90] from Dr Steven Campbell, who found the assessment "fatally flawed" due to:

- **Reliance on inadequate data**: Tetra4 relies on existing water-supply wells for groundwater monitoring, but their construction and location are often unknown, making it difficult to establish a reliable baseline for assessing potential contamination.
- **Dubious groundwater modelling**: The computer models used to simulate groundwater flow and contaminant transport are considered unreliable because they don't adequately account for the complex nature of fractured rock aquifers, which are highly vulnerable to contamination.
- **Lack of mitigation and remediation plans**: The assessment lacks detailed plans to address potential contamination incidents and ensure the long-term protection of groundwater resources.



Climate change impact

The organisations also raise concerns about the assessment's inadequate evaluation of the project's contribution to climate change. An expert critique[91] by Dr Eloise Marais highlights several critical flaws, including:

- **Outdated global warming potentials**: The assessment uses outdated values for the global warming potential of methane, leading to an underestimation of the project's climate impact.
- **Unrealistically high flaring efficiency**: The assumed efficiency of gas processing flaring is considered unrealistic, further contributing to an underestimation of methane emissions.
- **Omission of key emission sources**: The assessment fails to consider emissions from operational gas production, well drilling and testing, and the downstream transportation and combustion of the produced gas.

MEJCON-SA and MACUA, with expert backing, argued that Tetra4's EIA is fundamentally flawed in its assessment of both groundwater contamination and climate change impacts. They call for a more rigorous and comprehensive assessment that addresses these shortcomings to ensure the protection of vital resources and minimise potential harm to the environment and local communities in a water-scarce region.

On 1 August 2024, the Minister of Forestry, Fisheries and the Environment upheld the MEJCON-SA and MACUA appeal.[92] The Minister returned Tetra4's EA application to the DMPR for further review. Tetra4 is required to fix the issues in their EIA report concerning two appeal points: the impact on the water system and the impact of climate change on the project. The Minister requested a more detailed climate change impact assessment, noting the concerns from the Marais report about Tetra4's greenhouse gas emissions estimates that need to be addressed. He also ordered a thorough evaluation of the geohydrological impacts, agreeing with the findings that there are significant gaps in Tetra4's data modelling. Tetra4's claim that LNG is a 'bridging fuel' was also questioned.

Tetra4 must now resubmit their EA after affording interested and affected parties a chance to review and comment on it.

> **Tetra4 is required to fix the issues in their EIA report.**

6 CONCLUSION

Onshore gas exploitation presents considerable risks, particularly in a global energy transition.

Environmental concerns such as groundwater contamination and methane leaks are compounded by a lack of transparency in project planning and regulation, as exemplified by the difficulties encountered by CER in accessing information about onshore gas activities in South Africa. This opacity hinders public participation and informed decision-making. Moreover, the considerable financial investments in gas infrastructure risk becoming stranded assets as the world shifts towards cleaner energy alternatives. To mitigate these risks, EAs and regulations should be firmer, and robust water conservation measures and transparent governance frameworks should be put in place. Furthermore, diversifying energy investments towards renewable energy sources appears to be a more sustainable and climate-resilient path for the future.

Gas extraction companies in South Africa have adopted the fossil fuel company playbook, underestimating the environmental, social and economic risks associated with their projects. The legal and reputational risks associated with their projects are hardly mentioned at all. The question is whether financiers will continue to fund gas development in South Africa. Ignoring the financial risks of gas projects could be perilous for them and their shareholders.

Civil society faces the health impacts of mining and fossil fuel burning, as well as the direct consequences of climate change across the country. Civil society and community-based organisations are not challenging development in South Africa. Rather, they are challenging fossil fuel and gas companies that are exploiting and destroying our environment and thus negatively impacting development, and therefore impacting people's right to a healthy environment.

Environmental concerns are compounded by a lack of transparency in project planning and regulation.

Dr David Mike Terungwa is pictured with one of the portable solar energy systems he presents to the poor communities near the Niger Delta.© ReWild Team: Alessandra Squarzon

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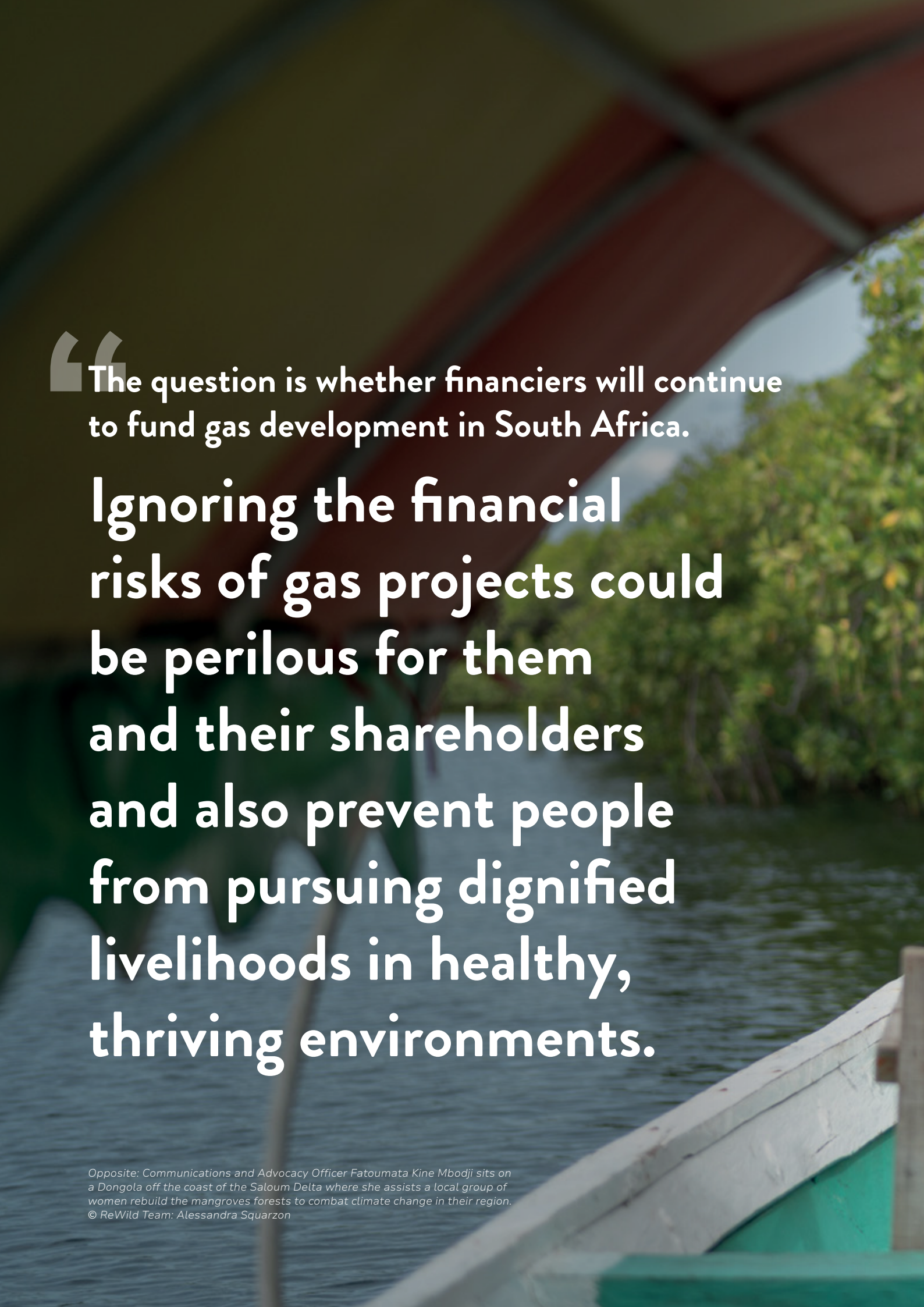

> The question is whether financiers will continue to fund gas development in South Africa.

Ignoring the financial risks of gas projects could be perilous for them and their shareholders and also prevent people from pursuing dignified livelihoods in healthy, thriving environments.

Opposite: Communications and Advocacy Officer Fatoumata Kine Mbodji sits on a Dongola off the coast of the Saloum Delta where she assists a local group of women rebuild the mangroves forests to combat climate change in their region.


GASOLINE

> Leapfrogging dirty, expensive gas projects is crucial to ensuring that we preserve our environment for present and future generations.

Community member in Cameroon stands in forest with fruit in hand.
© ReWild Team: Alessandra Squarzon

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