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CONTENTS



02
INDUSTRY OVERVIEW

18
SA INDUSTRY NEWS

30
MERGERS,
ACQUISITIONS &
PARTNERSHIPS

42
INNOVATION &
TECHNOLOGY TRENDS

54
LEGISLATION

12
GLOBAL INDUSTRY NEWS

24
SA COMPANY NEWS

36
SUSTAINABILITY
TRENDS


48
SOCIOPOLITICAL
FACTORS



INDUSTRY **OVERVIEW**



INDUSTRY OVERVIEW



GLOBAL INDUSTRY NEWS

Emerging African Oil-Producing Nations Reluctant to Embrace Global Energy Transition

Energy officials from emerging nations suggested that developing countries should not be required to embrace renewable energy and turn away from fossil fuels. This is because they are dealing with higher fuel costs, limited access to reliable energy and extreme climate events.

Global Oil Prices Rising Due to Ukraine Invasion, Rapidly Rising Demand and Lower Supply

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Low-Carbon Hydrogen Development Set to Increase in 2022

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SA INDUSTRY NEWS

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The South African government has indicated that it is intending on repurposing the country's coal fleet, in a shift towards nuclear energy and a move away from the use of fossil fuels over the next 30 years. This shift was proposed in the government's National Infrastructure Plan 2050.

Construction Progressing on Redstone Concentrated Solar Power Plant

According to Northern Cape Premier Zamani Saul, work on the Redstone Concentrated Solar Power Plant in Postmasburg is progressing well and is expected to add additional power to the country's energy network. Saul says this will be one of the largest capital investment projects in the Northern Cape.

SA Government Set to Purchase and Nationalise Sapref

According to KwaZulu-Natal Premier Sihle Zikalala, the province has entered into talks with BP and Shell, as well as national government, regarding the purchase of South African Petroleum Refineries (Sapref). This comes after BP and Shell indicated that operations at Sapref, the country's largest oil refinery, would be halted while a buyer is found.

SA COMPANY NEWS

Regergen's Cryogenic Pilot Plant Expected to Come into Full Commercial Operation in 2022

According to company sources, Regergen's cryogenic pilot plant, which will be supplying liquefied natural gas (LNG) and helium, is expected to come into full commercial operation in April this year. The company has already secured LNG supply agreements with Consol Glass and Italtile.

Sasol Approves Development Funds and Signs LNG Term Sheet for its Secunda Complex

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Hive Hydrogen, Built Africa and Linde Green Ammonia Project Receives Significant Interest

Following the announcement of plans to build a green ammonia export plant in Nelson Mandela Bay, the partner companies behind the project, including Hive Hydrogen, Built Africa and Afrox subsidiary Linde, have received significant industry interest in this first-of-its-kind project.



MERGERS, ACQUISITIONS & PARTNERSHIPS

Ivanhoe Acquires Stake in SA Helium and LNG Producer, Renergen

In March 2022, it was announced that Canadian mining company Ivanhoe Mines had acquired a 4.35% stake in the helium and liquefied natural gas (LNG) producer, Renergen, as part of a strategic partnership that could result in Ivanhoe owning over half of the company.

Sakhumnotho Power Partners with Keren Energy Investments for POC Project

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Omnia Holdings Sells its Majority Stake in Umongo Petroleum

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SUSTAINABILITY TRENDS

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A sustainable power purchaser agreement has been signed between South African Breweries (SAB) and the Black-woman-owned, industrial-scale biogas waste-to-energy company, Bio2Watt. This will involve the supply of renewable energy from the Cape Dairy Biogas Plant when commercial operations start.

Sawea Indicates Power Generation from Renewable Energy Should be Accelerated

The South African Wind Energy Association (Sawea) has indicated that power generation from



renewable energy sources in South Africa should be accelerated. This comes as South Africa's energy availability factor (EAF) dropped below the 60% mark, and load shedding continued to pose a significant challenge.

Shortage of Gas Threatens SA's Plans to Decarbonise

Although gas is expected to play a significant role in South Africa's strategy of achieving net-zero emissions, shortages are threatening this. In particular, Pande-Temane, South Africa's major gas supplier, is predicted to face constraints from 2025, due to declining reserves.

INNOVATION & TECHNOLOGY TRENDS

JET Results Show Nuclear Fusion Energy is Almost a Reality

Recent results from the Joint European Torus (JET) facility in the United Kingdom indicate that real world nuclear fusion power could be coming closer to fruition. This technology has proven challenging, in terms of transitioning from laboratory experiments to sustained power production.

Scatec to Develop Hybrid Solar and Battery Plants in Northern Cape

Scatec, a Norwegian renewable energy company, has indicated that it is on track to develop hybrid solar and battery plants in the Northern Cape. These plants are set to add 150 MW of contracted energy capacity to the local grid and allow for continuous energy supply even after sunset.

Largest Global Single Train Petroleum Refinery Under Construction in Nigeria

The Dangote oil refinery and petrochemical complex, currently under construction in Nigeria, will be the world's largest single train petroleum refinery. Once completed, it will be able to process 650 000 barrels of crude oil per day, removing the need to import refined oil for the country. The project is expected to be commissioned by the end of 2022.

SOCIOPOLITICAL FACTORS

UCT Commits to Divest from Fossil Fuels

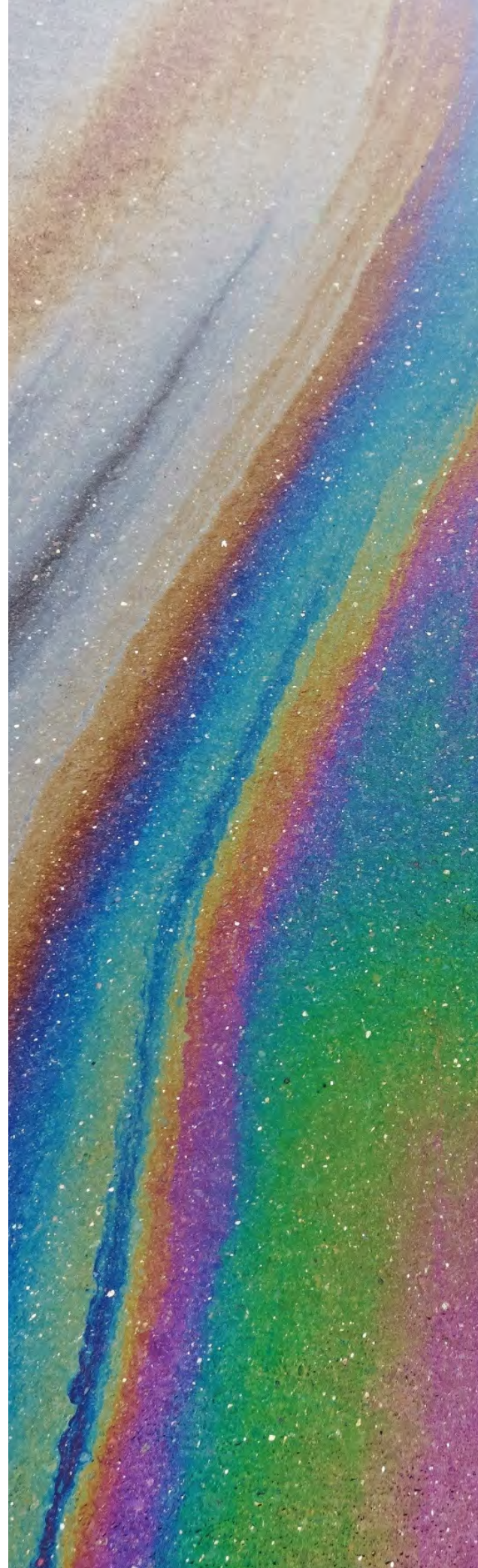
The University of Cape Town (UCT) Council has recently agreed, in principle, to divest from fossil fuels, as well as formally divest its endowment from the fossil fuel industry. This decision forms part of its commitment to long-term sustainability, as well as its Vision 2030 strategy.

SA's Energy Minister Backs Offshore Oil and Gas Exploration, Despite Opposition

South Africa's Minister of Mineral Resources and Energy Gwede Mantashe has indicated that the country should go ahead with the proposed offshore oil and gas exploration. This call comes despite several recent legal setbacks that have halted the exploration.

Studies Show that Women are Keen to Participate in Energy Efficient Projects

According to the Department of Mineral Resources and Energy (DMRE) Gender Mainstreaming and Transformation National Co-ordinator Winnie Mamatsharaga, research shows that women are seeking to participate in the energy sector, and, in particular, the energy efficiency sector. Both sectors currently have poor female representation.



LEGISLATION


Nersa Publishes Consultation Paper for Maximum Piped-Gas Prices

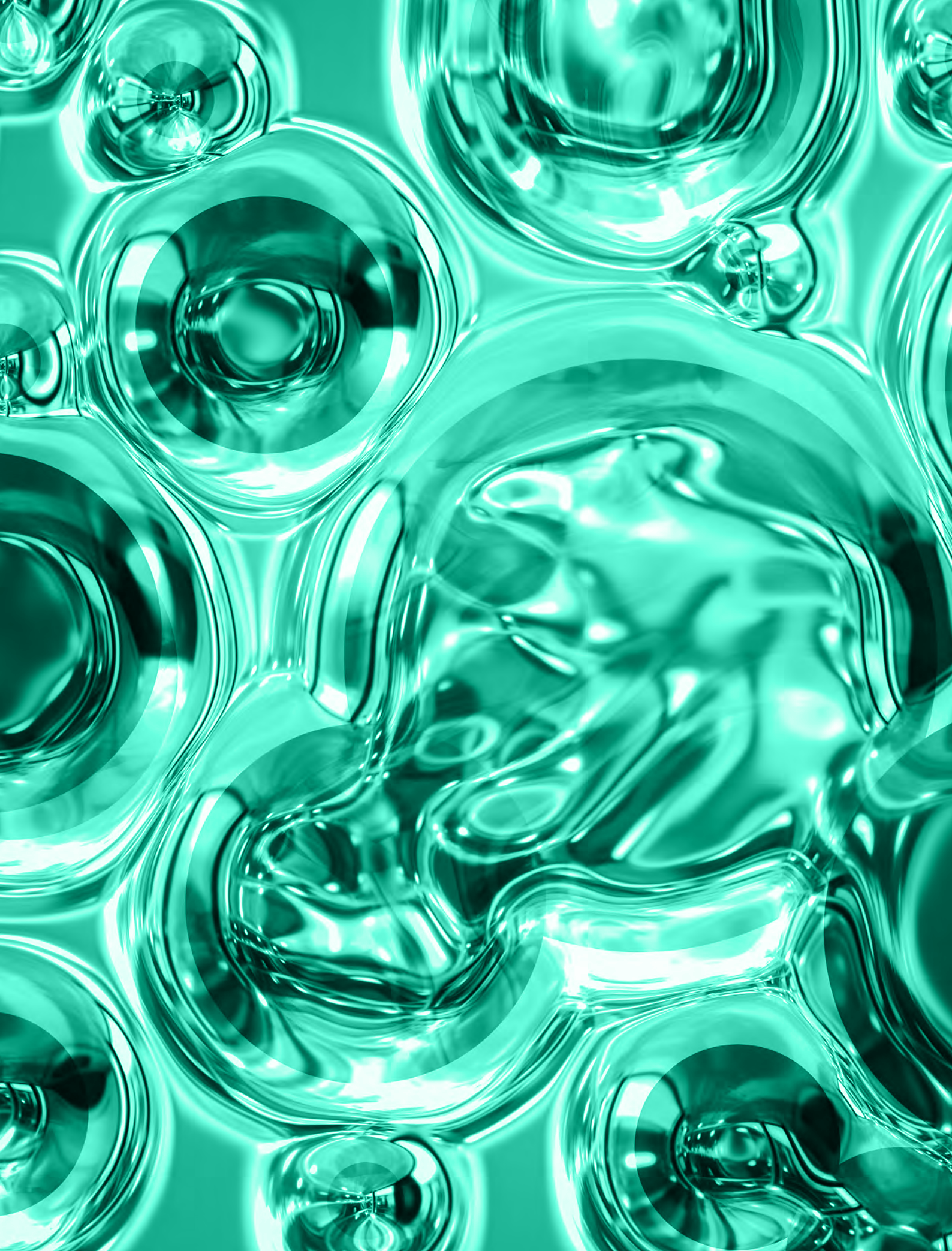
In light of the recent hike in international gas prices and ahead of the anticipated increase in July, Nersa published a consultation paper on an interim methodology, as well as launched a review of the prevailing methodology, for a cap on piped-gas prices.

Government Slows Carbon Tax Rollout But Hefty 2026 Carbon Taxes are Expected

According to the latest budget review presented by Finance Minister Enoch Godongwana, South Africa will extend the first phase of its carbon tax plan by three years, which could delay an increase in rates for companies, such as Eskom. However, the National Budget indicated that increases in carbon taxes will become more substantial from 2026.

Shell and Energy Minister Lose Court Bid Challenging Wild Coast Seismic Survey Interdict

In February 2022, the Makhanda High Court dismissed Shell and Mineral Resources and Energy Minister Gwede Mantashe's application for leave to appeal a ruling that temporarily halted a Wild Coast seismic survey. This means that the interim interdict remains in place. 

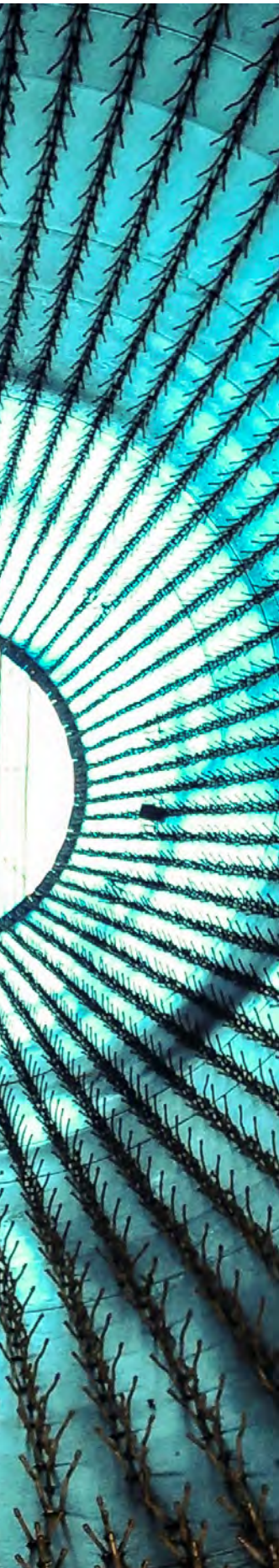


GLOBAL INDUSTRY **NEWS**



GLOBAL INDUSTRY NEWS





10 March 2022

Emerging African Oil-Producing Nations Reluctant to Embrace Global Energy Transition

Energy officials from emerging nations suggested that developing countries should not be required to embrace renewable energy and turn away from fossil fuels. This is because they are dealing with higher fuel costs, limited access to reliable energy and extreme climate events.

The Minister of State for Petroleum Resources in Nigeria, Timipre Marlin Sylva, indicated that about 900 million people globally do not have access to energy for basic needs. Sylva also added that emerging countries are still in the firewood-to-gas transition and should be left to continue the energy transition process.

Furthermore, the Equatorial Guinea Minister of Mines and Hydrocarbons, Gabriel Obiang Lima, suggested that pressure over renewables is unjust and energy transition talks are possible only after the energy crisis is resolved.

Several other developing countries that have oil discoveries in development, including Ghana, Guyana, and Suriname, have indicated that they should not be

expected to give up a chance to benefit from their oil resources, as developed economies have.

According to the Nigerian National Petroleum Corporation (NNPC) General Manager, Bala Wunti, emerging countries are being expected to carry the transition burden, while not having food security.

As an illustration of this pressure, Nigeria has been forced to cut production to under 1.5 million barrels per day due to a lack of investment. This lost production could have contributed to the global supply, following the shortage as a result of Russia's invasion of Ukraine.

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8 March 2022

Global Oil Prices Rising Due to Ukraine Invasion, Rapidly Rising Demand and Lower Supply

Globally, oil prices have been increasing significantly with a barrel of oil being priced at almost \$130 in the United States as of 8 March 2022. This increase has been largely due to Russia's invasion of Ukraine, rising consumer demand and reduced production from leading oil-producing nations, as they throttle output.

In terms of the Russian invasion of Ukraine, the price of crude oil has steadily increased, following the imposition of sanctions on Russia by the US and its Western allies. Major energy companies, including Shell, BP and Exxon, have all recently withdrawn from Russia.

According to David Bahnsen, the Chief Investment Officer at The Bahnsen Group, the Russia-Ukraine crisis has significantly changed oil supply forecasts and is resulting in steep price increases. This is largely due to changing supply and demand dynamics resulting from the invasion.

In terms of demand, there has been a swift recovery in late 2020 and 2021 following the low demand experienced during the COVID-19 pandemic. According to the Bank of America, demand in the last three months of 2021 was within one million barrels per day of pre-pandemic demand, resulting in increased prices.

This recovery in consumption has resulted in decreased inventories, with supply now unable to keep up with demand. As a result, the Organisation of Petroleum Exporting Countries (OPEC) has been called on to increase its production. However, OPEC is maintaining its commitment to throttle back production at its oil wells, which will continue to maintain upward pressure on prices.

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23 February 2022

Low-Carbon Hydrogen Development Set to Increase in 2022

According to market research and analysis firm Fitch Solutions, the development of low-carbon hydrogen production technologies and projects will rise in 2022. It is expected that sustained hydrogen production capacity growth will drive hydrogen-fuelled electricity projects.

According to Fitch Solutions Senior Power and Renewables Analyst Thomas van Lanschot, the ongoing energy crisis, together with the outcomes of COP26, have led to increased demand



for flexible low-carbon energy sources, such as hydrogen.

New hydrogen-fuelled electricity generation projects in 2022 are expected to take the form of combustible fuels and fuel cell plants. In terms of combustible fuels, gas generation operators are likely to implement hybrid technologies allowing for the adoption of a blend of gases, including hydrogen, while still making use of existing gas assets and infrastructure.

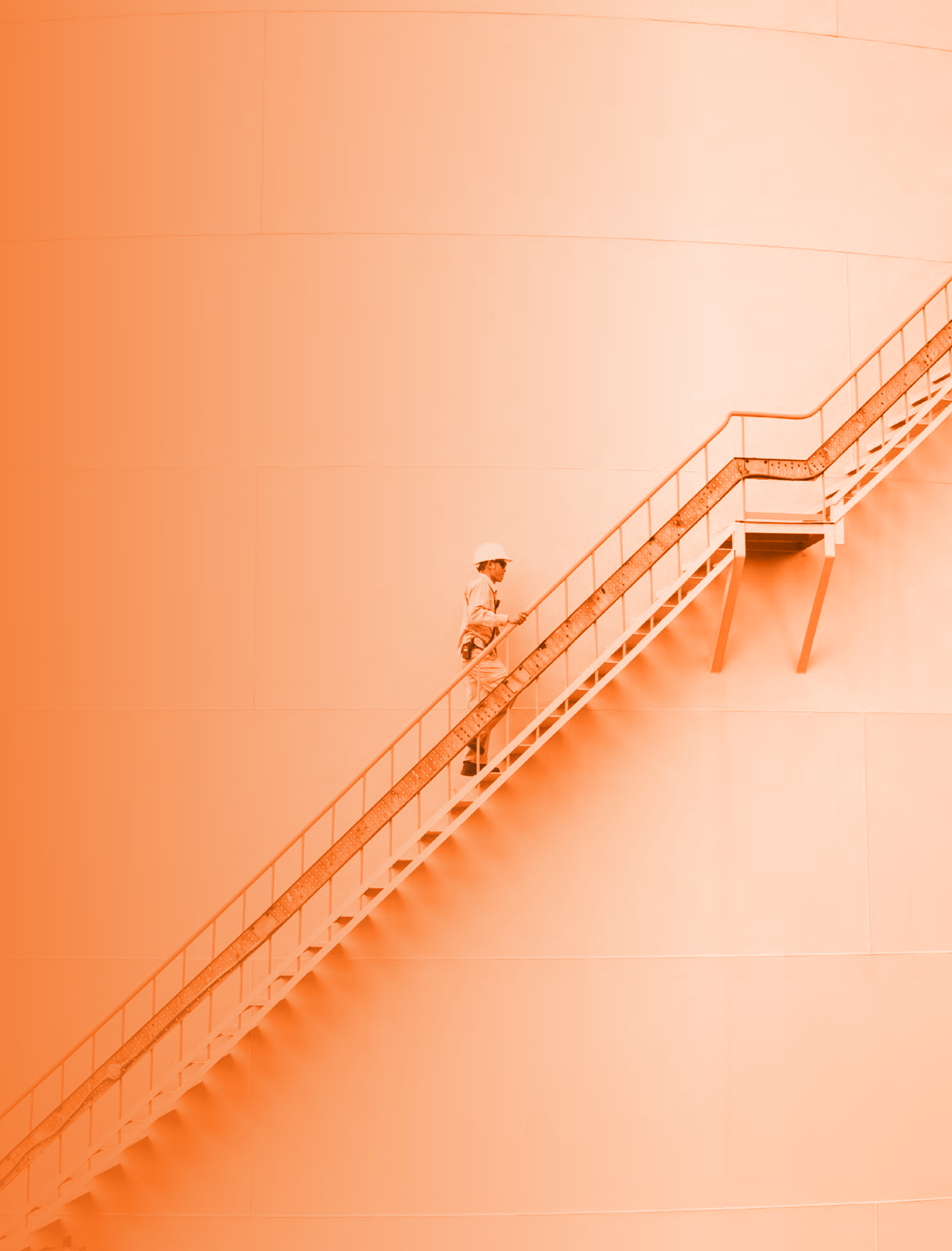
Regarding fuel cell plants, this technology is designed to operate like a battery and is set to make use of hydrogen fuel cells to convert hydrogen into electricity.

A major development has been the announcement of a 78 MW fuel cell power plant in South Korea.

It has also been suggested that opportunities for investment in hydrogen infrastructure will be significant over the next decade, supporting the predicted growth in low-carbon hydrogen production. Interestingly, while investment in green hydrogen has increased, prices have risen throughout the wind and solar power value chains in 2022, thereby stifling investment in these technologies. **EP**

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SA INDUSTRY NEWS

14 March 2022

SA Aims to Shift Towards Nuclear Energy and Away from Coal

The South African government has indicated that it is intending on repurposing the country's coal fleet, in a shift towards nuclear energy and a move away from the use of fossil fuels over the next 30 years. This shift was proposed in the government's National Infrastructure Plan 2050 published on 11 March 2022 by Minister of Public Works and Infrastructure Patricia De Lille.

According to the plan, government is set to consider the repurpose and retrofit of the country's baseload coal fleet with advanced and innovative baseload nuclear-energy systems. These systems will then be capable of being deployed inland, thereby providing an opportunity for

the reskilling and retention of the existing coal workforce.

Government also indicated that no country can be completely powered by renewable energy. However, there is an opportunity to use hybrid systems, where the baseload energy would then kick in when intermittent renewables are unavailable.

According to the National Infrastructure Plan, the reduced costs of clean nuclear energy, with the introduction of small modular reactors (SMRs), is a potential game changer in terms of future energy planning. These reactors can be used in hydrogen energy production, as well as industrial process heating and water desalination.

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28 February 2022

Construction Progressing on Redstone Concentrated Solar Power Plant

According to Northern Cape Premier Zamani Saul, work on the Redstone Concentrated Solar Power Plant in Postmasburg is progressing well and is expected to add additional power to the country's energy network. Saul indicated that this is to be one of the largest capital investment projects in the Northern Cape.

The project comprises 100 MW of concentrated solar power (CSP) and is expected to be in full commercial operation by the end of October 2023. It includes the construction and operation of a CSP power plant located in the Hay District, which is about 30 kilometres from Postmasburg in the Northern Cape

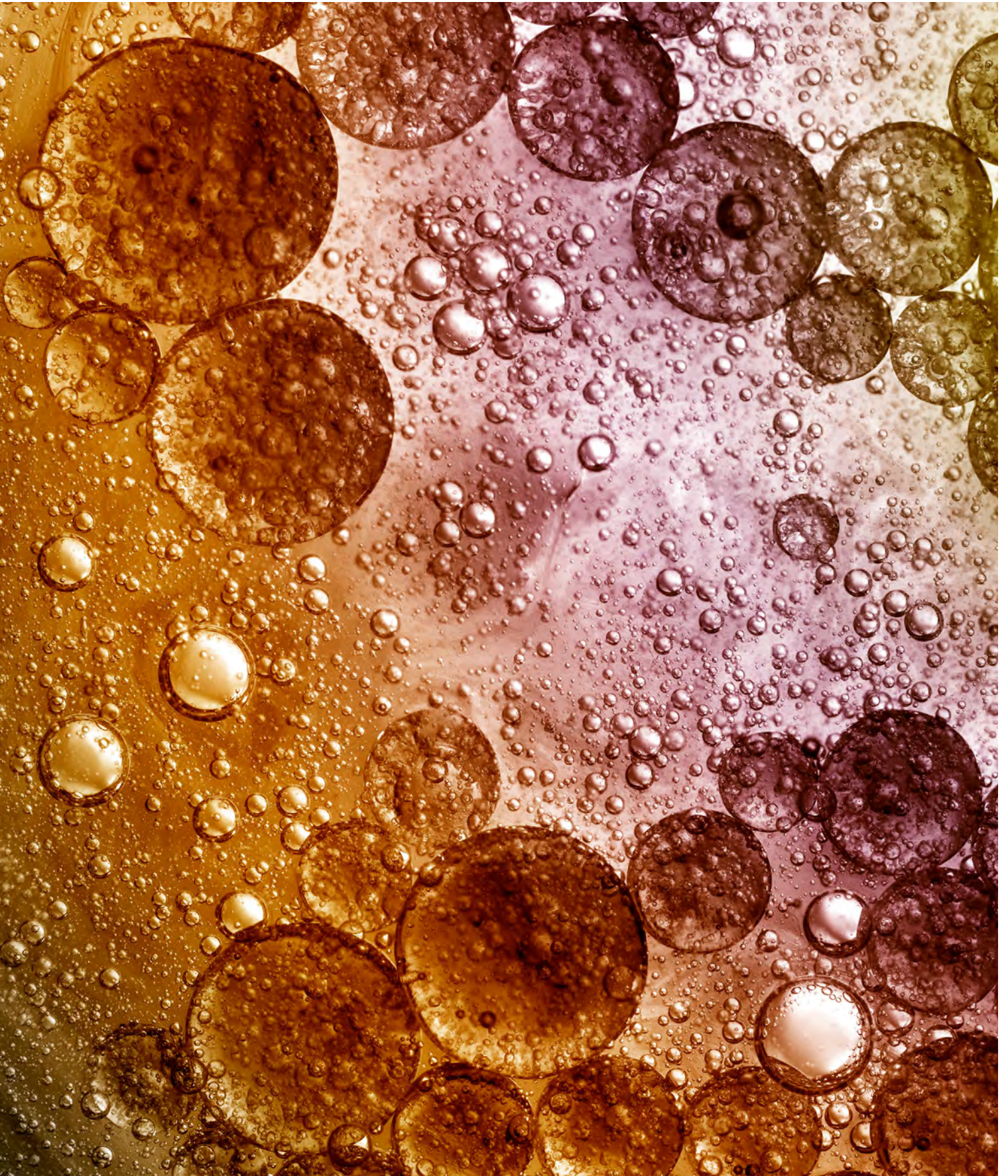
A CSP plant is able to generate solar power through mirrors, known as heliostats, that concentrate large areas of sunlight into a small area called the receiver. Electricity is then generated when this light is converted to solar thermal energy.

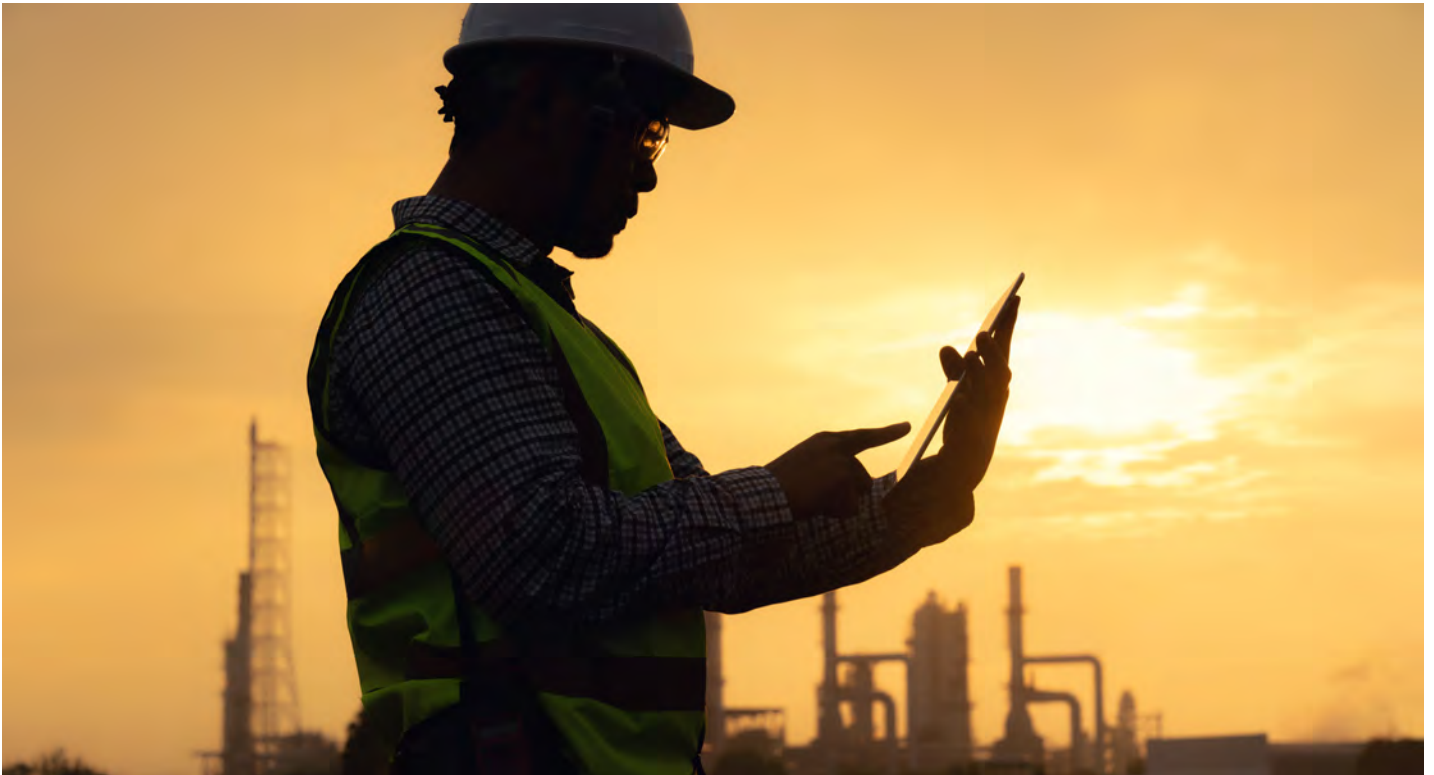
The plant is expected to produce approximately 480 gigawatt-hours of renewable energy on an annual basis. This represents a nominal net generating capacity of approximately 100 MW.

According to Absa, which has been involved in the funding and development of the project, the CSP plant will also have 12 hours of full-load energy storage. This means that it will be capable of delivering stable electricity to over 200 000 local homes during peak periods, even after sunset.

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24 February 2022


SA Government Set to Purchase and Nationalise Sapref

According to KwaZulu-Natal Premier Sihle Zikalala, the province has entered into talks with BP and Shell, as well as national government, for the purchase of South African Petroleum Refineries (Sapref). This comes after BP and Shell indicated operations at Sapref would be halted while a buyer is found.

As part of the State of the Province address held on 24 February 2022, Zikalala indicated that consultations had begun with the Department of Mineral Resources and Energy to move towards taking over the total operations of Sapref, which would then be a state-owned company. Sapref currently provides 35% of South Africa's crude oil refining capacity, making it the country's largest oil refinery, producing 2.7 billion litres of fuel per year.

Zikalala added that retaining refinery operations in the province is important for economic growth and job creation, as well as ensuring that sole reliance on imported refined oil is avoided. He also indicated this would protect jobs, as well as build state capacity.

Sapref had previously been forced to temporarily cease operations during the July 2021 unrest and riots because of a shortage of critical materials being delivered to the refinery. This resulted in fears of a petrol shortage, and the introduction of regulations to limit the sale of petroleum in portable containers.

Both Shell and BP indicated that contingencies and trading arrangements had been implemented, to ensure an ongoing fuel supply to both the country, as well as consumers, despite the halt in Sapref operations. 

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SA COMPANY NEWS

6 March 2022

Reenergen's Cryogenic Pilot Plant Expected to Come into Full Commercial Operation in 2022

According to company sources, Reenergen's cryogenic pilot plant, which will be supplying liquefied natural gas (LNG) and helium, is expected to come into full commercial operation in April this year.

Reenergen CEO Stefano Marani stated that the company has already secured LNG supply agreements with Consol Glass and Italfil. These will be fulfilled through a virtual pipeline, which includes trucked ISO containers that are maintained at $-162\text{ }^{\circ}\text{C}$ – the temperature at which methane gas turns into a liquid.

Marani indicated that the pilot plant has already achieved a daily output of 2 500 GJ (gigajoules) of gas, as well as 350 kg of helium. This is set to be increased after the completion of phase 2 of its construction, after

financial arrangements have been secured and finalised.

Following the completion of phase 2, the plant is expected to reach an estimated yield of more than 400 000 PJ (petajoules) of methane gas. This is significant, as South Africa's current total natural gas consumption is 180 PJ per annum, which is being supplied by the diminishing Pande-Temane gas fields in Mozambique.

Presently, all gas demands in Gauteng, Mpumalanga, and KwaZulu-Natal are supplied from the ROMPCO pipeline, as well as Sasol operations, with the rest of the country having little to no access to LNG. Therefore, Marani stated that the company sees a great market opportunity in terms of expanding access to LNG nationwide.

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21 February 2022

Sasol Approves Development Funds and Signs LNG Term Sheet for its Secunda Complex

In February 2022, the energy and chemicals group, Sasol, approved development funds to improve its Secunda complex's ability to use gas instead of coal to produce fuel and chemicals. It also signed a draft term sheet for the delivery of liquefied natural gas (LNG) to the Mpumalanga complex.

This fuel switch is central to the company's initial commitment – to reduce its greenhouse gas emissions

by 30% by 2030. However, the company further indicated that gas can only be used as a 'transition fuel', if it is to meet its long-term target of being net-zero by 2050.

According to Sasol CEO Fleetwood Grobler, the development funds will be used to prepare the first tranche of gas reforming capacity in Secunda by 2025. This will be made up of approximately 30% of a larger R20 billion to R23 billion initiative, which is aimed at transitioning the facility away from coal.



Moreover, Sasol signed a draft term sheet for the delivery of LNG to the Secunda complex to commence from 2026. However, it was indicated that it would be premature to disclose the identity of the counterparty.

Grobler also said that the LNG for the facility will initially be imported through Maputo, Mozambique, and that discussions are underway regarding a second import terminal at Richards Bay in KwaZulu-Natal.

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18 January 2022

Hive Hydrogen, Built Africa and Linde Green Ammonia Project Receive Significant Interest

Following the announcement of plans to build a green ammonia export plant in Nelson Mandela Bay, partner companies behind the project including Hive Hydrogen, Built Africa and the Afrox subsidiary Linde, have received significant industry interest in this first-of-its-kind project.

The R75-billion project reportedly represents a new area for South Africa, in terms of its commitments to greener solutions for the industry, which have become increasingly critical amid global pressure to meet net-zero targets by 2050.

The proposed 900 000 t/y green ammonia plant, with its own dedicated green power supply at the Coega Special Economic Zone, is also significant in terms of South Africa's response to the world's need for green solutions to limit climate change, as well to deliver on its COP26 commitments.

According to Hive Hydrogen South Africa Chairperson Thulani Gcabashe, the support and interest received for the project so far is substantial. Gcabashe indicated that this support stems largely from Transnet, Eskom, the local government of Nelson Mandela Bay and additional international industry partners.

Gcabashe also said that the project will be catalytic in terms of South Africa's post COVID-19 recovery, will be a huge boost for business confidence and present significant local and international investment opportunities.

The partners' immediate priorities include making the project bankable within 18 months, finding funders and completing the project on time and within budget. **EP**

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MERGERS, ACQUISITIONS & **PARTNERSHIPS**





MERGERS, ACQUISITIONS & PARTNERSHIPS



14 March 2022

Ivanhoe Acquires Stake in SA Helium and LNG Producer, Renergen

In March 2022, it was announced that Canadian mining company Ivanhoe Mines had acquired a 4.35 % stake in the helium and liquefied natural gas (LNG) producer, Renergen, as part of a strategic partnership that could result in Ivanhoe owning over half of the company.

Ivanhoe, the developer of Platreef mine in Limpopo, concluded the acquisition through an initial placement of over 5.63 million shares at R35.625 per share, raising a total of R200 million.

According to Renergen, Ivanhoe will acquire an initial strategic shareholding in the company and, subject to its evaluation of the company and scalability operations, may become a strategic partner and major shareholder.

This paves the way for Ivanhoe to increase its shareholding in Renergen by up to 25%, through a market-related Second Subscription following the completion of a 120-day due diligence period, which has already commenced.

After the completion of the Second Subscription, Ivanhoe has the option to increase its shareholding up to 55% by electing to provide equity funding of up to \$250 million (approximately R3.76 billion), which will be used to further develop and upscale the Virginia Gas Project.

According to Renergen CEO Stefano Marani, this transaction is a landmark deal for the company and one that recognises the strong synergies with Ivanhoe.

[READ MORE](#) 



8 March 2022

Sakhumnotho Power Partners with Keren Energy Investments for POC Project

In March 2022, Sakhumnotho Power, a business unit of Sakhumnotho Group Holdings, partnered with Keren Energy Investments to undertake a proof-of-concept (POC) project that will produce green hydrogen at a site supplied by Namaqua Engineering in the Western Cape.

Keren Energy is a developer involved in several energy projects, and partners with Sakhumnotho on a number of renewable energy programmes. This latest partnership

comes as the electricity crisis in South Africa shines a spotlight on the urgent need for reliable and sustainable alternatives to coal-generated power, which the country currently relies on.

In terms of the project, Keren Energy has also partnered with Cape Stack, a leading hydrogen-fuel, cell-component manufacturing company, as well as Namaqua Engineering, which will supply the engineering experience required for the project.

The site is set to incorporate a 100 kW photovoltaic solar system – the resulting renewable energy will be used as the



1 February 2022

Omnia Holdings Sells its Majority Stake in Umongo Petroleum

In February 2022, JSE-listed diversified chemicals company Omnia Holdings successfully concluded its divestment from petroleum products producer, Umongo Petroleum. This comes as Umongo was identified by Omnia as noncore during its strategic review.

The divestment plans were initially announced in October 2021 after Omnia and minority shareholder Autumn Storm Investments negotiated a deal to sell their majority interests in Umongo.

As a result, this transaction sees the chemicals distributor Orkila, which is a subsidiary of Azelis, becoming the 90% majority shareholder in Umongo. Omnia, together with Autumn Storm, will retain a 10% shareholding, although this remains subject to a two-year option agreement.

In terms of the transaction, Omnia, which acquired 90% of Umongo in 2017 for R637 million, will receive cash proceeds of approximately R1 billion now that the transaction is finalised. The company will also receive additional proceeds of between R86 million and R105 million, if an option on the retained shareholding is exercised.

According to Omnia CEO Seelan Gobalsamy, the successful conclusion of this transaction is a further step in the execution of its group strategy to establish a solid financial and operational foundation. 

primary energy to produce green hydrogen. The hydrogen generated is then planned for use in fuel cell vehicles, making it an innovative undertaking that promises to be among the first of its kind in South Africa.

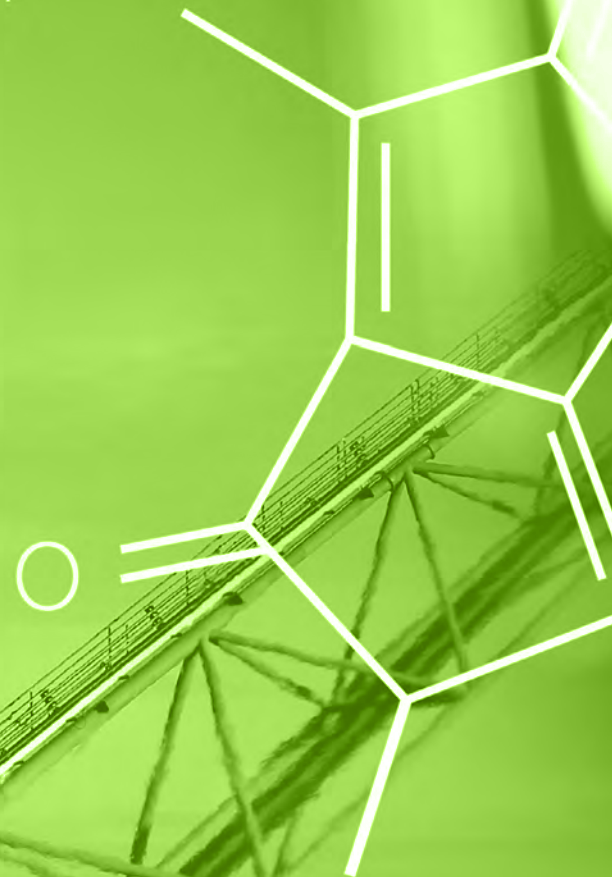
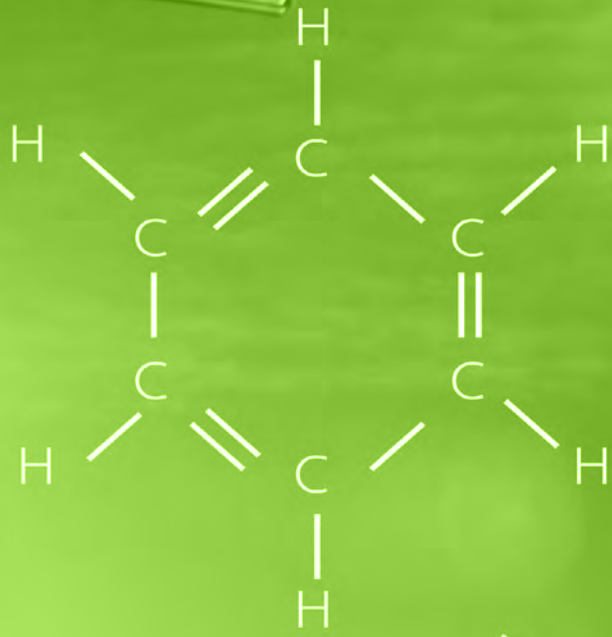
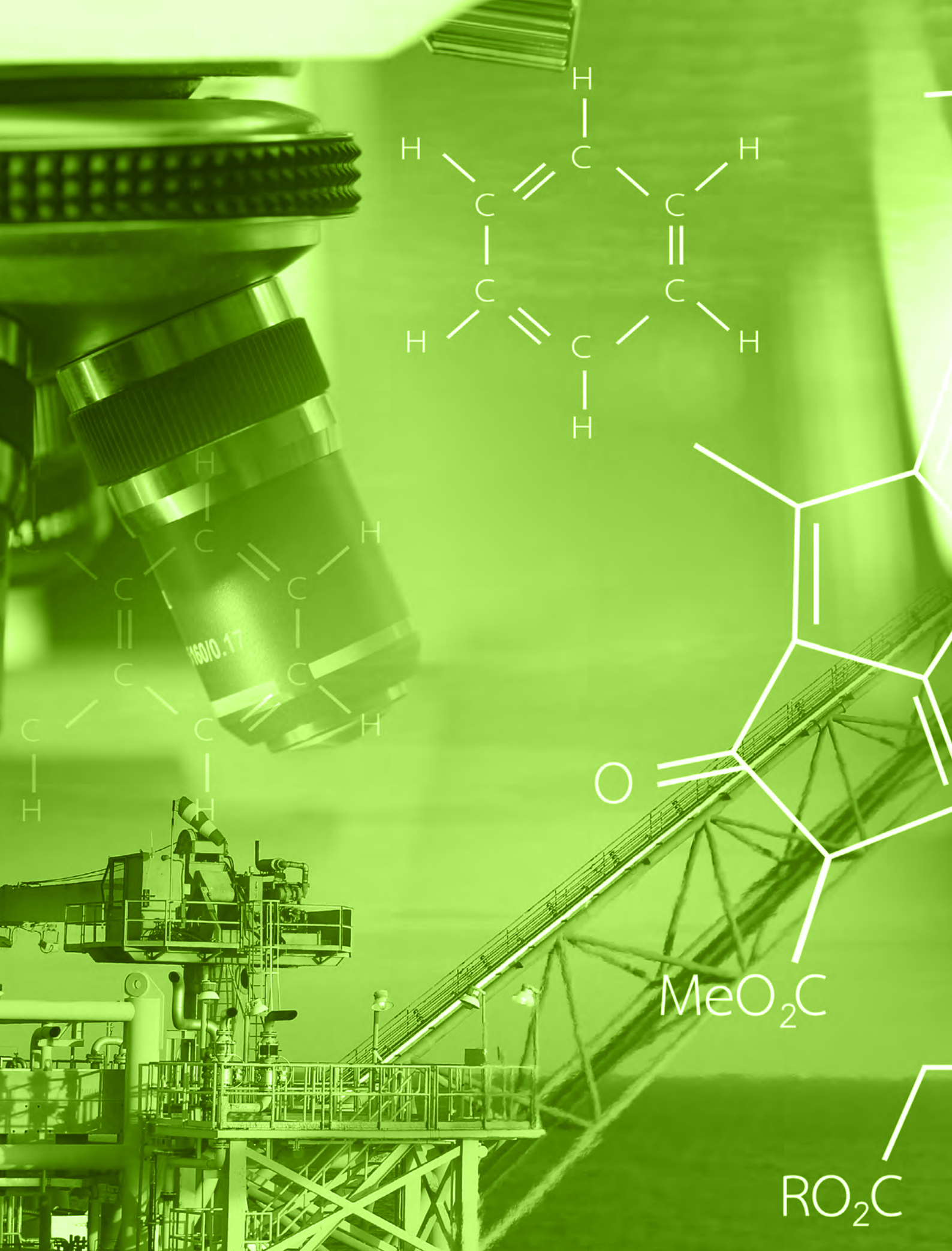
According to Keren Energy's George van Rensburg, through its partnership with Sakhumnotho and Cape Stacks, the company believes it can successfully execute the green hydrogen POC.

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SUSTAINABILITY **TRENDS**





11 March 2022

Sustainable Waste-to-Energy Power Purchase Agreement Signed Between SAB and Bio2Watt

A sustainable power-purchase agreement has been signed between South African Breweries (SAB) and the Black-woman-owned, industrial-scale biogas waste-to-energy company, Bio2Watt. This will involve the supply of renewable energy from the Cape Dairy Biogas Plant when its commercial operation begins.

The Cape Dairy Biogas Project is located at one of South Africa's biggest dairy farms, Vvylei Dairy Farm, owned by Morester, which primarily supplies milk to Clover from approximately 7 000 cows on the farm.

The plant, which is still under construction, will make use of slurry manure collected from the cows together with a mix of other wastes from the surrounding region, to produce renewable energy for SAB's operations.

The location of the plant provides it with proximity to key fuel supplies, as well as grid access and a sufficient amount of water from water collection dams, boreholes and small streams in the area.

According to SAB Vice President of Procurement and Sustainability in Africa Conor Ruff, the company will achieve 23% contracted renewable electricity through the power-purchase agreement.

Ruff added that all of the company's breweries in South Africa currently make use of solar power, which is being expanded. SAB also makes use of an existing biogas facility, which is located at its Alrode brewery in Johannesburg.

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10 March 2022

Sawea Indicates Power Generation from Renewable Energy Should be Accelerated

The South African Wind Energy Association (Sawea) has indicated that power generation from renewable energy sources in the country should be accelerated. This comes as South Africa's energy availability factor (EAF) dropped below the 60% mark and load shedding continued to pose a significant challenge.

With the call for accelerated use of renewable energy, Sawea is referring to the opportunity to construct private generation plants by independent power producers in Mpumalanga.

According to the CEO of Sawea, Niveshen Govender, towards the end of 2021 Eskom had announced its intention to initiate an auction process to make land alongside existing power stations available to private investors for renewable power plants. This would increase South Africa's EAF at a faster rate.

The deployment of renewable power in Mpumalanga would also facilitate faster power distribution, as well as assist in South Africa's energy transition. Additionally, this would make the area a priority for green investment and increase the country's clean energy portfolio.

Moreover, it is suggested that the exploration and implementation of renewable energy options are critical in addressing challenges, such as load shedding, because of their contribution to increased clean power generation. Renewable energy Independent Power Producers (IPPs) will be able to quickly add green electrons to the grid, with each project being capped at 100 MW, thereby negating the need for additional licensing.

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21 February 2022

Shortage of Gas Threatens SA's Plans to Decarbonise

Although gas is expected to play a significant role in South Africa's strategy of achieving net-zero emissions, shortages are threatening this. In particular, Pande-Temane, South Africa's major gas supplier, is predicted to face constraints from 2025 because of declining reserves.

According to a report released by the National Business Initiative, Business Unity South Africa and the Boston Consulting Group, gas has the potential to play a role as a

transition energy source in South Africa's net-zero objectives, if it is cost-effectively sourced.

It is envisioned that gas could replace coal and diesel as a fuel source, which would significantly reduce emissions. Gas would then be phased out by 2050, when it would be replaced by green energy alternatives, such as hydrogen.

However, the majority of local gas is sourced from the Pande-Temane fields in Mozambique, through the Republic of Mozambique Pipeline Company, which supplies about 160 petajoules to Gauteng, KwaZulu-Natal and Mpumalanga. Pande-Temane's reserves are declining and are expected to become constrained from 2025, which poses a risk to key sectors relying on gas as a transition fuel, or as low-carbon feedstock.

Potential alternative sources of gas that have been identified include, liquefied natural gas (LNG) from floating storage regasification units or gas-carrying ships, as well as maximising supply from Pande-Temane through 'technical work' on the reserves. LNG from Rovuma and other Mozambican fields, or local exploration efforts, are also potential alternatives. **EP**

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INNOVATION & TECHNOLOGY **TRENDS**



INNOVATION & TECHNOLOGY **TRENDS**





28 February 2022

JET Results Show Nuclear Fusion Energy is Almost a Reality

Results from the Joint European Torus (JET) facility in the United Kingdom indicate that real-world nuclear fusion power could be coming closer to fruition. This technology has proven challenging, in terms of transitioning from laboratory experiments to sustained power production.

The aim of nuclear fusion is the merging of atomic nuclei in order to create a heavier nucleus – a process which results in the release of energy. To achieve this, the magnetic confinement technique is deployed using the 'tokamak' design, which involves using fusion fuel contained in the form of hot plasma and confined by strong magnetic fields.

The recent experiment at the JET facility produced 59 million joules of energy in five seconds, resulting in average fusion power of about 11 million watts. Although only sufficient to power around 60 kettles, this is 2.5 times the record set in 1997, during which 22 million joules of energy was produced.

These results represent a significant step in overcoming the challenge of achieving notable power outputs from nuclear fusion and being able to sustain them over longer periods of time. The next milestone will be the scaling up of the current achievements in future fusion systems and the deployment in demonstration power plants by 2050.

This is important, as fusion produces more energy per gram of fuel than any other process, while no carbon dioxide or greenhouse gases are produced. Raw materials for the process include deuterium, found in seawater, and lithium, which is abundant in salt flats.

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10 February 2022

Scatec to Develop Innovative Hybrid Solar and Battery Plants in Northern Cape

Scatec, a Norwegian renewable energy company, has indicated that it is on track to develop hybrid solar and battery plants in the Northern Cape. These plants are set to add 150 MW of contracted energy capacity to the local grid.

According to the Scatec General Manager for sub-Saharan Africa, Jan Fourie, the group is set to construct one million individual solar photovoltaic (PV) panels across a 1 100-hectare area, costing about \$1 billion. This makes it one of the most ambitious energy projects of its kind in the world.

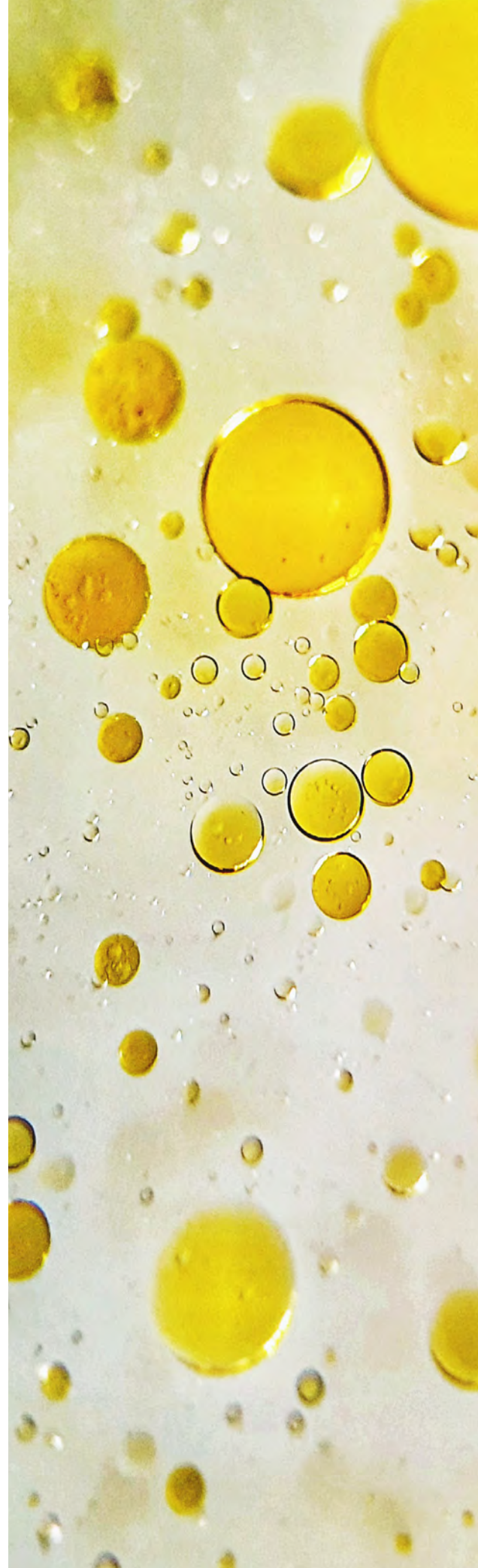
Fourie added that the integration of lithium-ion battery units, with solar panels, enables previously unprecedented levels of both output control and 'dispatchability'. Moreover, innovations in terms of battery technology now allow renewable energy plants to produce stable, consistent and dispatchable energy.

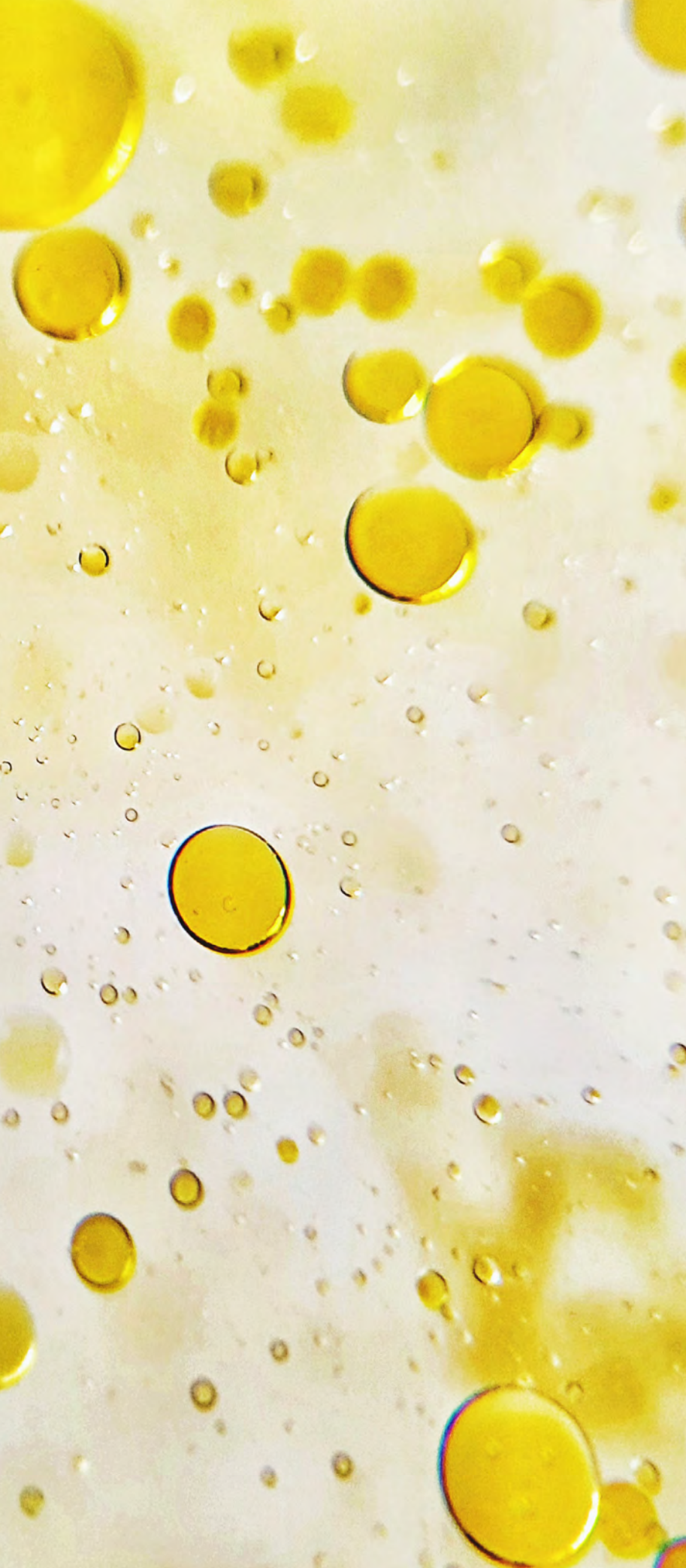
The hybrid solution deployed by Scatec enables the provision of power during the day or at night, providing power on demand should the grid be under strain.

This is achieved by over-installing PV capacity – the excess energy stored up during sunlight hours is kept in the battery packs and released when most needed, such as in the early mornings or evenings. These battery storage units also protect against extended periods of overcast weather and seasonal changes.

Fourie further stated that renewable energy, in the form of dispatchable power, is a preferable alternative to liquefied natural gas and the key to future-proofing the local energy sector.

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23 January 2022


Largest Global Single Train Petroleum Refinery Under Construction in Nigeria

The Dangote oil refinery and petrochemical complex, currently under construction in Nigeria, will be the world's largest single train petroleum refinery. Once completed, it will be able to process 650 000 barrels of crude oil per day. The project is expected to be commissioned by the end of 2022.

The oil refinery and petrochemical complex is located in the Lekki Free Trade Zone in Nigeria and covers an area of about 2 635 hectares. This new refinery is expected to be able to meet 100% of Nigeria's requirements in terms of refined products, as well as producing a surplus for export.

Following its completion, it is also anticipated that by 2023 Nigeria will not be required to import any petroleum oil products. The country currently imports \$50 billion in oil products on an annual basis.

It is expected that the refinery will also include a 440-million-litre water treatment tank farm, as well as an on-site housing estate for 50 000 staff and their families.

According to the President of the African Development Bank, Dr Akinwumi A. Adesina, the Dangote oil refinery and petrochemical plant is a game-changing initiative, which is set to boost Africa's development, as well as deepen regional integration. 

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18 March 2022 UCT Commits to Divest from Fossil Fuels

The University of Cape Town (UCT) Council has recently agreed, in principle, to divest from fossil fuels, as well as formally divest its endowment from the fossil fuel industry. This decision forms part of its commitment to long-term sustainability, as well as being part of its Vision 2030 strategy.

Divestment will be executed in a responsible and transitional manner, through the immediate divestment from internationally exposed fossil fuel investments, as well as the immediate investment in renewable energy and/or green economy. Additionally, UCT will work towards achieving the goal of being net-positive in the local economy by 2030.

According to the Council, this approach will put more back into society, the environment and the global economy than is being taken out. Moreover, by divesting from fossil fuels, the university is able to further amplify its position and signal to policy makers to act immediately on climate change.

According to UCT's Finance Executive Director Vincent Motholo, this decision exemplifies the university's commitment to promoting the development and use of clean, sustainable and renewable energy. This also forms part of how the university makes long-term investment decisions that support its teaching and research mandate.

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8 March 2022

SA's Energy Minister Backs Offshore Oil and Gas Exploration Despite Opposition

South Africa's Minister of Mineral Resources and Energy, Gwede Mantashe, has indicated that South Africa should go ahead with the proposed offshore oil and gas exploration. The call comes despite several recent legal setbacks that have halted the exploration.

A range of environmental and community organisations have initiated legal action against companies involved in proposed seismic exploration, such as Shell. And temporary interdicts have been granted resulting in the halt of seismic surveys. The organisations have argued that seismic surveys are harmful to marine life, and have criticised the process used to consult those who potentially could be affected by the work.

However, the Minister has stated that offshore oil and gas exploration must continue and that legal action was deterring investment.

Interestingly, this pro-fossil-fuel stance runs counter to that of other top government officials, many of whom are advocating for a faster move towards cleaner sources of energy.

According to Mantashe, oil discoveries over the maritime border shared with Namibia, as well as the exploration work planned in nearby South African waters, are both important for fostering development in South Africa and giving the country a competitive edge on the continent.

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8 March 2022**Studies Show that Women are Keen to Participate in Energy Efficient Projects**

According to the Department of Mineral Resources and Energy (DMRE) Gender Mainstreaming and Transformation National Co-ordinator, Winnie Mamatsharaga, research shows that women

are seeking to participate in the energy sector and, in particular, the energy efficiency sector. Both sectors currently have poor female representation.

This was highlighted during a webinar, hosted by DMRE, focused on business opportunities for women in the energy efficiency sector. During the event, Mamatsharaga said that women are unable to compete equally with men in the energy sector because of several factors.

These include the fact that women do not have information about opportunities available in the energy sectors and lack the knowledge required to develop bankable business plans in the sector. She indicated that women are disadvantaged in terms of building strategic partnerships, which is an essential part of growing new sector businesses.

She also pointed out that women are disadvantaged because they have poor access to the market and don't have the capacity to provide education to stakeholders regarding services and technologies.

As such, Mamatsharaga proposed several measures to address these issues, including the creation of policies for the advancement of gender equality, as well as targeted funding for the energy sector aimed at increasing gender equality. ^{EP}

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14 March 2022

Nersa Publishes Consultation Paper for Maximum Piped-Gas Prices

In light of the recent hike in international gas prices and ahead of the anticipated increase in July, the National Energy Regulator of South Africa (Nersa) published a consultation paper in March 2022 on an interim methodology, as well as launched a review of the prevailing methodology (currently being challenged in the courts), for a cap on piped-gas prices.

According to Nersa, the regulator plans to decide on the interim methodology by the end of April 2022 and has called for written comments to be submitted by April 11, ahead of virtual public hearings. The regulator aims to finalise the permanent methodology by August.

This proposed new methodology has been welcomed by the Industrial Gas Users Association of Southern Africa (IGUA-SA). According to IGUA-SA Executive Officer Jaco Human, the time frame outlined by Nersa considers the urgency of the matter at hand.

This is due to the fact that under the prevailing methodology, IGUA-SA calculates that piped-gas prices will rise from R68/GJ to R252/GJ in July 2022.

Human also indicated that a failure to secure a legally enforceable solution to what Sasol Gas is allowed to charge from July onwards, will have serious consequences for consumers, as well as traders and manufacturers in the industrial gas industry.

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23 February 2022

Government Slows Carbon Tax Rollout But Hefty 2026 Carbon Taxes are Expected

According to the latest budget review presented by Finance Minister Enoch Godongwana, South Africa will extend the first phase of its carbon tax plan by three years, which could delay an increase in rates for companies, such as Eskom. However, the National Budget indicated that increases in carbon taxes will become more substantial from 2026.

Eskom estimated an annual carbon tax bill of approximately R11.5 billion when exemptions run out at what was proposed to be the start of the programme's planned second phase in 2023. The initial period will now be extended to the end of 2025.

According to National Treasury, the transitional support measures that were provided to companies in the first phase, such as significant tax-free allowances, will continue. This delay in



implementing higher charges may lead to a reduction in Eskom's proposed price increases, which could curb inflation. However, this will impact the country's lower carbon emission target, which aims to reach net-zero status by 2050.

According to the Budget Review, the carbon tax increased from R134 to R144 per ton of carbon, effective from 1 January 2022. During the first phase, the rate will be increased progressively at approximately

R15 every year, to eventually reach R300 per ton by 2026.

From 2026, the second phase will be implemented and the rate will increase with larger annual hikes, to reach R450 per ton by 2030. Thereafter, carbon tax hikes will be even higher, reaching R1 800 per ton beyond 2050.

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17 February 2022

Shell and Energy Minister Lose Court Bid Challenging Wild Coast Seismic Survey Interdict


In February 2022, the Makhanda High Court dismissed Shell and Mineral Resources and Energy Minister Gwede Mantashe's application for leave to appeal a ruling that temporarily halted a Wild Coast seismic survey. This means that the interim interdict on the seismic survey remains in place.

Wild Coast communities launched the main application in 2021, seeking to have Shell's exploration right to conduct the exploration reviewed and set aside. Following this, Judge Gerald Bloem granted the interdict in December 2021.

Subsequently, Shell and the Minister applied for leave to appeal Bloem's December ruling. This was pending a hearing, which is set to take place on 30 May 2022, that will challenge Shell's environmental authorisation.

According to Bloem, refusing leave to appeal would not have an effect on Shell's plans, given that the company's environmental management programme indicated that the window to conduct the survey is between 1 December and 31 May every year, until 10 August 2023.

The court was also informed that Shell would not undertake the survey before 31 May 2022, if it is allowed to do so, and that the company would carry out the survey between December 2022 to May 2023.

Therefore, the survey would not have been conducted before November 2022. This means that the refusal of the application for leave to appeal will not have any effect on Shell until the end of November 2022. 

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