



Oil and Gas Extraction in South Africa and the Paris Agreement

Nqobile Xaba

RESOURCE
INSIGHT

ISSUE NO. 31





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EXECUTIVE SUMMARY

South Africa has a well-established oil and gas industry, and this industry makes a significant contribution to the economy. The country is an importer of both oil and gas, and therefore the upstream oil and gas sector is underdeveloped. The country refines imported crude oil for fuels, and uses natural gas to produce synthetic fuels and for energy production (gas to power).

The oil and gas sector in South Africa is faced with a number of challenges including depleting gas resources from 2025 onwards, and the regulatory uncertainty for both oil and gas in the country. However, there is a growing interest in oil and gas exploration, and further developments in the downstream sector as indicated by a number of emerging projects. These include exploration in the Brulpadda and Luiperd oil and gas finds in the Outeniqua Basin; the oil and gas discoveries in the Orange Basin; and projects to expand downstream capacity such as the Saldanha Bay oil and gas infrastructure development, and the development of the liquefied natural gas (LNG) terminal at the port of Ngqura.

At the same time, South Africa's energy transition is underway as signalled by a number of policy shifts on energy and climate. As a signatory to the Paris Agreement, the country is committed to reducing its carbon emissions as communicated in the nationally determined contributions (NDCs). Reducing carbon emissions across sectors requires the phasing down of fossil fuel use (including coal, oil, and gas). There are debates about whether gas should be used as a transition fuel in the energy transition or not, given that gas releases half the carbon emissions that coal does.

This paper seeks to evaluate whether South Africa should or should not, exploit oil and gas resources to extract, and ultimately produce, oil and gas. The paper finds that although oil and gas contributes to South Africa's economy (downstream sector contributions) and there may be a short-term role for gas in South Africa's energy system, extraction and exploitation of new oil and gas is against South Africa's climate commitments. Extraction of oil and gas risks locking the country's investments into fossil fuel infrastructure, and exploitation of these resources will not benefit South African society. The paper proposes urgent actions to ensure that South Africa is set on a path towards oil and gas phase-out.

The socio-economic impacts of oil and gas

South Africa relies on imported oil and gas, and these imports present specific challenges. The gas in Mozambique is expected to be depleted by 2025 and therefore South Africa must find alternative supplies. Although alternative replacement options include extracting gas in South Africa, the cheapest option is finding alternative supplies from Mozambique or other neighbouring countries. The major challenge with importing oil, is that it is subject to price volatility in international markets, which affects fuel costs, and ultimately food prices. Government should have policies to cushion consumers against rising fuel and food prices.

The oil and gas sector contributes to South Africa's gross domestic product (GDP) and is a source of employment for many people. Despite this positive contribution, oil and gas extraction has a negative impact on the environment and on people. These negative impacts include air and water pollution, biodiversity loss, noise pollution from seismic surveys affecting marine life, and greenhouse gas emissions from oil and gas use that contribute to climate change.

Oil, gas, and the energy transition

Gas is part of South Africa's energy system, and the recent iteration of the Integrated Resource Plan (IRP) includes an increased component for gas. However, electricity planning should be anchored on least-cost pathways due to its importance for development. The least-cost energy model for South Africa, as studies have shown, would be comprised of investment in renewable energy (wind and solar), storage (batteries and pumped hydro), and peaking support (for example gas at low utilisation). The expanded use of gas or high utilisation does not support this least costly option. There is no need for new gas while renewables are cheaper. It is in this context that the role of gas in South Africa's electricity production is contested. The fossil fuel industry is pushing for the development of gas-to-power projects in South Africa, claiming that these are an essential part of a just energy transition. Civil society organisations and other institutions are against oil and gas extraction and gas-to-power processes, due to economic, environmental, and climate change concerns.

Gas could play a transitional role in the decarbonisation of South Africa's economy as a substitute for diesel until the constraints around the full-scale deployment of renewables in South Africa (grid constraints and limited storage) are addressed. South Africa uses both gas and diesel to power the combined-cycle gas turbine (CCGT) and the open cycle gas turbine (OCGT). A complete switch from diesel use to gas is necessary as diesel is costly and releases higher carbon emissions than gas.

South Africa has substantial refining capacity and oil extraction could support the existing refineries. However, the case of TotalEnergies has confirmed that offshore extraction in South Africa is not technically or economically viable. The most economical way remains importing crude oil and refining it in the country. The energy transition threatens the long-term sustainability of the oil industry, due to projected reduction in petrochemicals use, as sectors (including transport) seek to transition to clean energy sources. Focusing on sustainability and decarbonisation could extend the oil industry's licence to operate into the future, reduce their capital costs, and retain customers who are also seeking a shift to low-carbon products. This has been in practice in South Africa with oil and gas companies investing in the emerging hydrogen economy. Oil and gas companies can play a critical role in the energy transition and are well positioned to lead some aspects of the transition, due to their technical capabilities and experience handling offshore projects.

Phasing out oil and gas and the way forward

Phasing out oil and gas in South Africa poses a number of risks. These include socio-economic risks, carbon lock-in and stranded assets, and the burden of a just transition. Phasing out oil and gas in South Africa will have a negative impact on jobs and the GDP, which is undesirable for an already ailing economy with stagnant economic growth. Furthermore, the development of gas infrastructure may result in continued operation beyond the transition period. This type of lock-in can result in the industry persisting even when it is no longer economically viable. Additionally, changes in policy and demand in the oil and gas sector may result in the devaluation or collapse of existing assets, and these assets will become stranded. South Africa does not have a strategy for phasing out oil and gas, without which there will be the need for another just transition further down the line.

Oil and gas phase-out is faced with major challenges in the areas of governance, policy, and finance. The availability of



cheaper, accessible and practical renewable energy technologies will be the key determinant to drive and accelerate oil and gas phase-out. While renewables are cheaper in South Africa than gas or coal, grid constraints and storage capacity limits large-scale deployment. Shifting public finance from investing in fossil fuels towards clean energy technologies can accelerate oil and gas phase-out. A transition away from oil and gas therefore requires reforming the financial system in order to ensure that transition finance is more affordable, including through just energy transition partnerships (JETPs) and other models. A stronger governance framework and new policies are required for oil and gas phase-out to root out corruption and energy rent-seeking.

Human rights defenders, civil society movements (campaigns, alliances) and other institutions have played an important role in protecting the environment and communities from the impacts of oil and gas. Fossil fuel and mineral extraction in South Africa has historically not benefited society but has enriched only a few, as indicated by the country's scandalous inequality levels. Pragmatic solutions are needed to ensure that South Africa is on a path to phasing out oil and gas. These solutions include: aligning energy policy on oil and gas with climate policy; reviewing the role of gas in the energy mix and the country's energy transition plans to avert carbon lock-in; addressing constraints associated with scaling renewable energy; ensuring that oil and gas phase-out is discussed in parallel to the urgent transition from coal.

LIST OF ABBREVIATIONS

B-BBEE	Broad-based black economic empowerment
BEE	Black economic empowerment
BESIPPPP	Battery Energy Storage Independent Power Producer Procurement Programme
BW	Bid window
CALS	Centre for Applied Legal Studies
CER	Centre for Environmental Rights
COP	Conference of Parties of the UNFCCC
CSIR	Council for Scientific and Industrial Research
CTL	Coal to liquid
DFFE	Department of Forestry, Fisheries, and the Environment
DMRE	Department of Mineral Resources and Energy
ENH	Empresa Nacional de Hidrocarbonetos
ERA	Energy Regulation Act
EV	Electric vehicle
GDP	Gross domestic product
GTL	Gas to liquid
GW	Gigawatt (1000 megawatts)
HRD	Human rights defender
HSDA	Historically disadvantaged South Africans

HSRM	Hydrogen Society Roadmap
IDC	Industrial Development Corporation of South Africa
IEA	International Energy Agency
IGUA-SA	Industrial Gas Users Association of Southern Africa
IRP	Integrated Resource Plan
ITAC	International Trade Administration Commission
JETP	Just energy transition partnership
JETIP	Just energy transition investment plan
LNG	Liquefied natural gas
MEC	Minerals and energy complex
MPRDA	Mineral and Petroleum Resources Development Act
MW	Megawatt (1000 kilowatts)
NBI	National Business Initiative
NCOP	National Council of Provinces
NCUD	Northern Cape Ultra Deep
NDC	Nationally determined contribution
NEMA	National Environmental Management Amendment Act
NERSA	National Energy Regulator of South Africa
NHRI	National human rights institution
NDP	National Development Plan
PASA	Petroleum Agency of South Africa
PCC	Presidential Climate Commission
PESA	Political Economy Southern Africa
REIPPPP	Renewable Energy Independent Power Producer Procurement Programme
RMI4P	Risk Mitigation Independent Power Producer Procurement Programme
SAF	Sustainable Aviation Fuel
SAHRC	South African Human Rights Commission
SAPIA	South African Petroleum Industry Association
SLAPP	Strategic Lawsuits Against Public Participation
SLP	Social and Labour Policy
Tcf	Trillion cubic feet
TDP	Transmission Development Plan
UNFCCC	United Nations Framework Convention on Climate Change
UPRD	Upstream Petroleum Resources Development (Bill)



INTRODUCTION

South Africa is a signatory to the Paris Agreement and has a role to play in the global effort to reduce emissions by transitioning away from fossil fuel use to renewable energy sources (DFFE, 2022). Oil and gas are amongst the fossil fuel sources that are part of South Africa's energy mix, including their use for gas-to-liquids processes during the production of chemicals, and for gas-to-power technology. The country is an importer of gas from Mozambique. Potential gas reserves in South Africa exist but are yet to be proven viable (DMRE, 2024a; NBI 2022). The imported gas is distributed across the gas infrastructure within the country to other consumers. South Africa is also an importer of crude oil for fuels and for the industrial production of chemicals.

South Africa's energy policy indicates that the country will continue to rely on gas and oil, and plans to do so for the foreseeable future. The updated Integrated Resource Plan draft 2023 (IRP2023) indicates that the country will pursue gas-to-power technologies to complement renewables and that South Africa must pursue the exploration and assessment of local gas resources (DMRE, 2024a; DMRE, 2024b; NBI, 2022). Gas-to-power technologies are more attractive for South Africa as it uses natural gas as opposed to diesel, resulting in lower operational costs. The country will also co-operate and build partnerships with neighbouring countries for joint exploration and beneficiation of gas resources (DMRE, 2024b).

The continued use of gas and oil, and the exploration of new gas and oil resources, directly contravenes the country's commitment to reduce emissions and phase out fossil fuel use. While gas is sometimes viewed as a transition fuel, there are long-term environmental risks associated with the prolonged use of gas as a fossil fuel, and these have real economic impacts. In addition, the pursuit of these resources often violates human rights and the rights of the communities where these resources are found. Natural gas extraction has detrimental impacts on the environment (air pollution, water contamination, and biodiversity loss) and on people's health. More often than not, gas and oil projects are highly contested by organisations, activists, and communities.

Oil and gas use on the continent is threatening tangible progress towards achieving the goals of the Paris Agreement. In this context, this paper aims to evaluate whether South Africa should or should not extract oil and gas. The paper is arranged in the following manner: Section 2 provides an analysis of the political economy surrounding oil and gas; Section 3 provides an analysis of oil and gas's economic, social and environmental impacts on the country; Section 4 provides an analysis of the government's policies, strategies, and plans related to energy transition; Section 5 maps the risks and potential issues associated with the phasing out of gas and oil from both the government's and rights holders' perspectives; Section 6 evaluates existing mechanisms and initiatives to protect rights defenders and activists pushing for the anti-gas and anti-oil agenda; and Section 7 provides the conclusion and recommendations.

POLITICAL ECONOMY OF OIL AND GAS EXTRACTION

Political and economic systems of development inevitably interact and overlap with each other, and this is the case for South Africa's oil and gas industry, as well as the country's political system (PESA, 2022). The interdependent linkages between economic and political systems constitutes the political economy. The oil and gas industry in South Africa has a rich history, originating from the apartheid era, which has contributed

and shaped what the industry is today. The industry is governed by various legislative acts and regulatory processes administered by different stakeholders, while production is dominated by a few conglomerate companies. Stakeholders will protect their own interest, and these dynamics give rise to the political economy. This political economy analysis provides an overview of the oil and gas industry, the history of South Africa's oil and gas, the various stakeholders and institutions involved, and the policy options available to policy-makers.

Overview of the oil and gas industry in South Africa

South Africa's energy system is comprised of both natural gas and oil for the production of energy, chemicals, heat, and other direct uses. The country produces approximately 3 per cent of its fuel requirements from gas-to-liquid (GTL), 43.8 per cent from coal-to-liquid (CTL), and 53.2 per cent from crude oil (DMRE, 2022a). South Africa refines crude oil into petroleum products, having the second largest refining capacity in Africa (amounting to 718 002 barrels per day). There are six refineries in the country, four of them on the coast and two inland (DMRE, 2022b; SAPIA, 2022). Two of the refineries are synthetic fuels production facilities that produce liquid fuels from coal and gas. These are owned by Sasol and PetroSA, respectively. Sasol uses both CTL and GTL technologies. The Petroleum Oil and Gas Corporation of South Africa (PetroSA) uses GTL technology. The other refineries are SAPREF and Enref in Durban, Chevron in Cape Town, and Natref at Sasolburg.

Natural Gas

Sasol imports natural gas via the 865km pipeline from the Temane and Pande gas fields in Mozambique (DMRE, 2022a; DMRE, 2022b; Sasol; 2021; NBI, 2022). The current reserves in Temane and Pande are estimated around 2.6 trillion cubic feet (TCF) with a capacity of 240 million gigajoules (GJ) per annum (DMRE, 2022b). Sasol uses the gas for its GTL and chemicals plant in Secunda. The balance is distributed using a pipeline network to customers across the country for commercial and industrial applications. This national pipeline network is spread more than 3 000km in the Mpumalanga, Free State, Gauteng, Kwa-Zulu Natal and North-West Provinces as shown in figures 1 and 2. South Africa does not feature on any of the published proven natural gas reserve lists, although the country has several opportunities for local natural gas production, either from conventional (onshore/ offshore) or unconventional (shale gas/ coal bed methane) sources as shown in Table 1 (DMRE, 2022b).

The continued use of gas and oil, and the exploration of new gas and oil resources, directly contravenes the country's commitment to reduce emissions and phase out fossil fuel use.



Table 1: South Africa's domestic gas fields and their quantified reserve volumes (in trillion cubic feet).

Domestic gas fields	Quantified reserve volumes
Orange Basin	0.54 tcf (2P)
Bredasdorp Basin	1.39 tcf gas
Outeniqua Basin	1.5 tcf (2P)
Witwatersrand Basin	0.13 tcf (2P)
Durban and Zululand Basins	4 tcf
Shale Gas	13 tcf (2C)
Coal Bed Methane	15.1 tcf
Biogenic Gas	Not quantified

Figure 1: The gas outlook for South Africa (Source: DMRE, 2021)



Crude Oil

South Africa is an importer of crude oil, and has no upstream oil industry (DMRE, 2022a; Sasol, 2021, SAPIA, 2022). The country has an established downstream industry involved in importing, producing and distributing petroleum products for its domestic market and for the region. The oil industry in South Africa has specific functions and these include: import of crude oil for refining in local refineries; production of synthetic fuels from oil and gas; import of refined products; distribution and marketing of products to the wholesale or retail sector; export of products to other countries; the production of chemicals, base oils, fuel oil processing and/ or blending, lubricant blending, bitumen and sulphur sales (SAPIA, 2021).

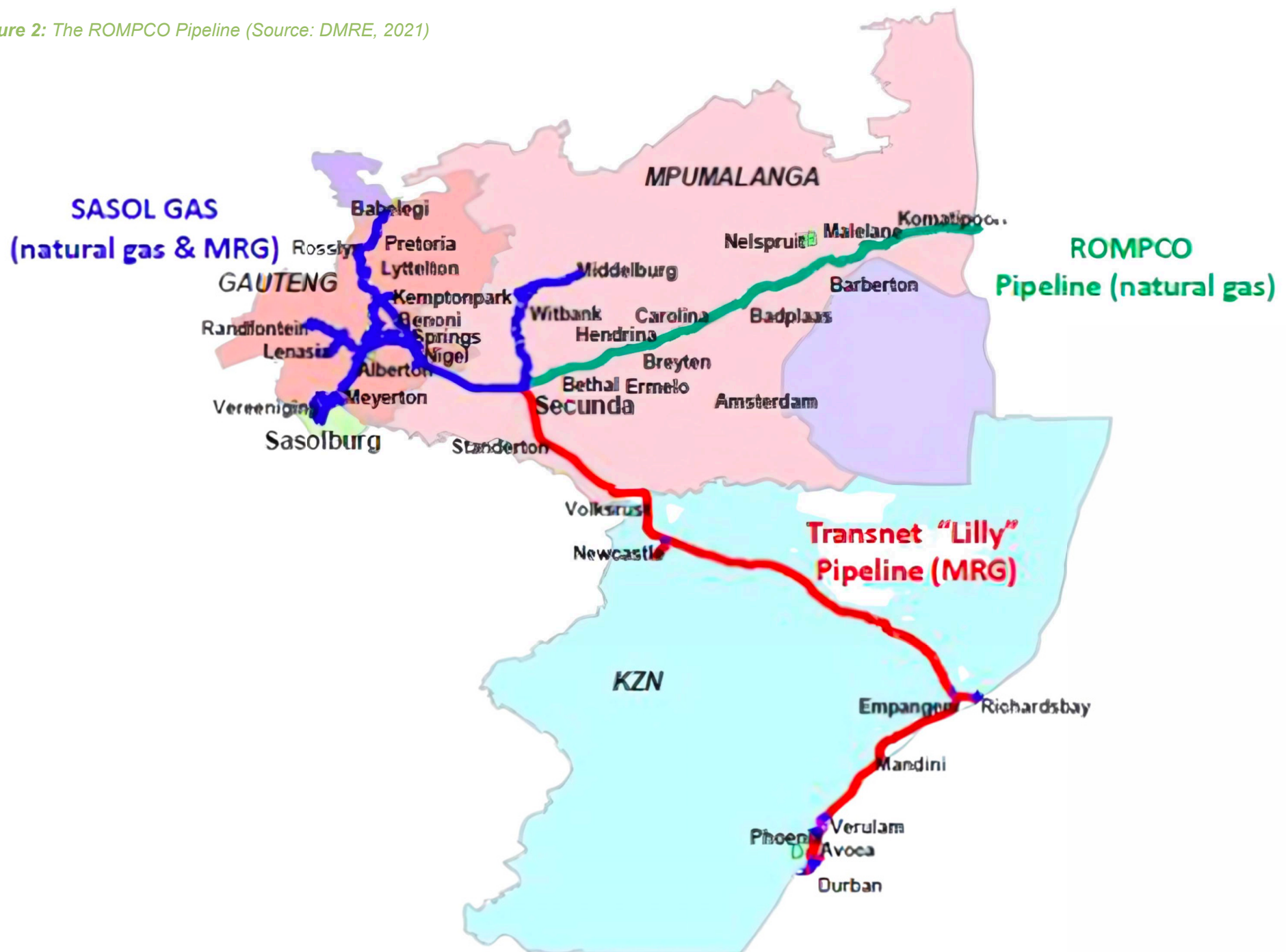
The oil and gas industry encompasses a wide range of public and private sector companies such as refiners and manufacturers, suppliers, wholesalers, transporters, storage companies, traders, retail marketers and speciality marketing companies. A combination of domestic production and global import networks enables the industry to provide South Africa with a secure supply of fuels. Crude oil can be used as a fuel and as a feedstock for products across many sectors in the economy including petrol, diesel, kerosene, paraffin, bitumen, lubricants and fuel oils for ships.

History of oil and gas in South Africa

The history of oil and gas in South Africa is rooted in the minerals and energy complex (MEC), a system of accumulation over much of the last century, characterised by the relationship between the country's mining, minerals beneficiation and electricity sectors (Burton et al, 2022). The MEC was built around the availability of cheap labour secured through racist labour policies, alongside the establishment of state-owned enterprises such as Eskom, Iscor, and Sasol, which played a key role in the country's industrial development. The MEC was enabled by an apartheid state that prioritised mining and mineral beneficiation, along with strong financial institutions. The establishment of Sasol in 1950 was a result of the apartheid governments determination to become self-sufficient by converting coal to oil, in order to resist international pressures against apartheid (Earthlife, 2010). Sasol was privatised in 1979 although the state remained the substantial shareholder. Sasol produces synfuels from coal and natural gas, and is involved in mining, energy and chemicals (Sasol, 2021).

Civil society has raised concerns around the approval of the Bill, and these include the conflict between the country's climate commitments and the fossil fuel exploitation promoted by the Bill; the impact on social and economic welfare; and the lack of environmental alignment (CER, 2023).

Figure 2: The ROMPCO Pipeline (Source: DMRE, 2021)



Despite the transition to democracy, the socio-economic structure of the MEC remained largely intact for the first 15 years of South Africa's democracy, supported by state subsidies, access to cheap energy, infrastructural path dependencies and a generally favourable policy environment. This resulted in Sasol, being the dominant player in the oil and gas sector in South Africa. The relatively stable core of the MEC, which survived the transition to democracy, has begun to be fragmented since 2010 and has become more financialised (Ashman, 2015; Ashman 2024).

Regulatory framework for oil and gas

The principal regulatory bodies overseeing oil and gas extraction in South Africa are the national Department of Mineral Resources and Energy (DMRE, now the Department of Mineral and Petroleum Resources and the Department of Electricity and Energy), the Petroleum Agency of South Africa (PASA) Limited, and the Department of Forestry, Fisheries and the Environment (DFFE) (Embassy of Brazil, 2021; US energy information and administration, 2022; PASA; no date). PASA promotes, facilitates and regulates exploration and sustainable development of oil and gas, contributing to energy security in South Africa. The DFFE regulates environmental matters in respect of oil and gas extraction.

Other important regulator bodies include the National Energy Regulator of South Africa (NERSA), the International Trade Administration Commission (ITAC), and the South African Maritime Safety Authority (SAMSA). NERSA is mandated to regulate and determine tariffs and pricing for the electricity, piped gas and petroleum pipelines industry. ITAC is responsible for the issuing of import and export permits for the import and export of petroleum. SAMSA approves oil spill contingency plans, required to be developed in connection with exploratory

and production drilling. There are various laws in South Africa that regulate the oil and gas industry, and these are discussed below.

Mineral and Petroleum Resources Development Act (MPRDA)

The MPRDA (Act 28 of 2002) is the most important legislation, regulating both the mining sector and upstream petroleum exploration and production in South Africa (PASA, no date; DMRE, 2022b; DMRE, 2024). The MPRDA states that the petroleum resources of the nation are the common heritage of the people of South Africa. The state, duly represented by the minister, is the custodian thereof for the benefit of all South Africans. The MPRDA promotes equitable access to South Africa's mineral and petroleum resources for all of the people in South Africa. It also empowers the Minister of Minerals and Petroleum Resources to grant, refuse, renew, suspend, cancel and allow transfer of reconnaissance permits, technical cooperation permits, exploration rights and production rights.

The National Environmental Management Amendment Act (NEMA)

The National Environmental Management Amendment Act (NEMA) (107/1999) is the overarching regulatory framework in respect of environmental matters related to exploration and production activities (DMRE, 2021; DMRE, 2024). The Act provides the defining principles for decision-making on matters affecting the environment, and mandates companies to make financial provision for the rehabilitation and management of potential negative environmental impacts. It further ensures that exploration and production activities cannot commence without environmental authorisation. The authorisation must be granted



based on an environmental impact assessment, which investigates the potential impact of the proposed activity. Environmental regulation was removed from the scope of the MPRDA and is regulated under the NEMA in order to maintain “One environmental system” under the DFFE.

Upstream Petroleum Resources Development (UPRD) Bill

There have been concerns about minerals and petroleum being regulated by the same act, the MPRDA, and this has resulted in the Draft Upstream Petroleum Resources Development Bill in 2019 (DMRE, 2024; Leon, 2019; Embassy of Brazil, 2021). The Bill aims to ensure that the upstream petroleum sector is regulated not under the MPRDA, but under standalone legislation. The Bill was approved by the National Assembly (23 October 2023) and the National Council of Provinces (25 April 2024), and has been sent to the president to either be signed into law or referred to the constitutional court should there be concerns (Parliament of RSA, 2023). The decoupling of minerals and petroleum is expected to ensure regulatory certainty which should result in more investor confidence.

Civil society has raised concerns around the approval of the Bill, and these include the conflict between the country’s climate commitments and the fossil fuel exploitation promoted by the Bill; the impact on social and economic welfare; and the lack of environmental alignment (CER, 2023).

The UPRD Bill does not include a social and labour policy (SLP) framework, or any mechanism aimed to address the negative socio-economic impacts on local communities who are most affected. The Bill further proposes to legislate on environmental matters that are within the exclusive purview of DFFE as mandated by NEMA and its regulations. These are important challenges and concerns on the development of the Upstream Petroleum Resources Development Bill.

Midstream and downstream policies

There are various policies that regulate midstream and downstream activities for oil and gas, and these include the Gas Act of 2001 and the Gas Amendment Bill of 2020. The Gas Act (No. 48) of 2001, establishes a national regulatory framework for the piped gas industry in South Africa and facilitates investments in the gas industry (SAPIA, no date; DMRE, 2024). The Act’s objectives are aligned with those on the white paper on energy policy. The Gas Amendment Bill of 2020 was approved by parliament in 2021, and seeks to align the gas industry to new transportation technologies of natural and unconventional gases that were not catered for in the Gas Act.

The Gas Act falls under the responsibilities of the National Energy Regulator of South Africa (NERSA), which reports to the Department of Mineral Resources and Energy (DMRE). South Africa’s gas supply from Mozambique (Pande-Temane) is managed under the Petroleum Production Agreement (PPA) (NBI, 2022). In the year 2000, Sasol, Empresa Nacional de Hidrocarbonetos (ENH), Companhia Moçambicana de Hidrocarbonetos (CMH) and the Government of Mozambique signed the PPA. The agreement covers the development and production of gas resources from the Pande-Temane reserves. Additional policies regulating midstream and downstream activities include the Petroleum Pipelines Act, the Petroleum Products Act, and the International Trade Administration Act.

Black economic empowerment

Black economic empowerment (BEE) policies aimed at addressing inequalities are imperative, particularly in South Africa, the most unequal country in the world. BEE policies also

aim to achieve the goals of the MPRDA and the UPRD Bill, which both affirm that all citizens must benefit from the exploitation of the nation’s petroleum resources (SAPIA, 2024; DMRE, 2024; DMRE, 2022b). The draft Upstream Bill proposes that the state will get a 20 per cent free stake in all projects, which must also have a minimum of 10 percent black ownership.

Petroleum companies across the value chain are subject to the BEE code as set by the Liquid Fuels Charter (2000) (SAPIA, 2024). The Charter sets targets for greater involvement and advancement of historically disadvantaged South Africans (HDSA) in the petroleum industry, with a requirement of least nine per cent HDSA-ownership for upstream petroleum companies. The Liquid Fuels Charter is non-binding and does not have a balanced scorecard, resulting in poor implementation. The concept of balanced scorecards was only developed in line with the 2007 Broad-Based Black Economic Empowerment (B-BBEE). As a result, the charter is in the process of being aligned with the B-BBEE Act, 2003; the B-BBEE Codes of Good Practice; and the B-BBEE Policy Framework to ultimately serve as a sector-specific code of good practice.

Oil and gas projects in South Africa

South Africa has become an interesting region for exploration with a number of significant discoveries. In addition, there are other oil and gas projects across the value chain that could potentially expand the oil and gas sector. Some projects are discussed in this section and others are listed in Table 2.

TotalEnergies Brulpadda and Luiperd:

TotalEnergies made oil and gas discoveries in the Brulpadda field offshore South Africa in the Outeniqua Basin (located 175 kilometres off the shore of Mossel Bay) in February 2019 (Global data, 2024; Tulwa Consulting Group 2021). The discovery was estimated to have a net 1.5 to 3 billion barrels of gas. Brulpadda would be able to tap into a pre-existing local market where the infrastructure and demand is already present, for example supplying PetroSA and Mossgas. TotalEnergies made another significant gas condensate discovery on the Luiperd prospect in addition to the Brulpadda find of 2019. This second discovery is located on Block 11B/12B in the Outeniqua Basin. TotalEnergies2 has a 45 per cent working interest, with partners Qatar Petroleum (25 per cent), CNR international (20 per cent) and Main Street (10 per cent).

Shell Northern Cape Ultra Deep (NCUD) block:

Shell has sought exploration rights for the Northern Cape Ultra Deep (NCUD) block in the Orange Basin, an extension of hydrocarbon reserves from Namibia into South Africa’s offshore zones (CLG, 2024).

Saldanha Bay Oil and Gas Infrastructure Development:

Mid- and downstream oil industry projects include the Saldanha Bay Oil and Gas Infrastructure Development (Energy Capital & Power, 2024). This is a significant step in the development of South Africa’s hydrocarbons industry, and plans to expand to oil blending and storage capacity from 200 000 to 13.2m barrels. This oil and gas hub aims to process oil for international export rather than for domestic consumption.

The oil and gas industry encompasses a wide range of public and private sector companies such as refiners and manufacturers, suppliers, wholesalers, transporters, storage companies, traders, retail marketers and speciality marketing companies. A combination of domestic production and global import networks enables the industry to provide South Africa with a secure supply of fuels.



Table 2: Selected Oil and Gas projects in South Africa (Energy Capital & Power, 2024; Green Building Africa, 2024).

Project	Developer	Description
Ibhubesi Conventional Gas fields	Sunbird energy	The gas field is situated in block 2A in the orange basin. Currently in design phase and commercial production to start in 2025.
E-BK Conventional Gas	Petro-SA	Situated in the Bredasdorp basin off the south coast of South Africa. Currently in design phase and commercial production to start in 2024.
Amersfoort coalbed methane field	Afro Energy	Gas-to-power project in Mpumalanga, the first phase expected to produce 1MW of power and increase to 500% by phase three. Commercial operation expected to start in 2024.
Orange Basin-Block 3B/4B	Africa oil corporation	Offshore oil and gas discoveries amounting to 4 billion barrels of oil and 24 prospective natural gas plays
Port of Ngqura floating LNG project	Transnet, Infrastructure South Africa and Industrial Development Corporation of South Africa (IDC).	Development of LNG terminal at the port and the tender for the environmental impact assessment released in September 2024. Negotiations underway for building and operating an onshore LNG regasification facility.

THE SOCIO-ECONOMIC CONTRIBUTIONS OF OIL AND GAS

Impacts on the economy

The existing oil and gas industry makes a significant contribution to South Africa’s economy (SAPIA, 2021; SAPIA, 2022; NBI, 2022; SAPIA, 2024). The transport sector relies heavily on petroleum products for fuel, and end consumers on petrol and diesel. The energy industry relies on gas and diesel for electricity production, and many industrial processes rely on gas for their functions.

According to the South African Petroleum Industry Association (SAPIA) (2021; 2024), the oil industry contributed 3.2 per cent (163 million rands) to South Africa’s GDP in direct and indirect impacts. Direct impacts are the economic contribution supported by the oil industry’s own activities and their immediate suppliers, while indirect impacts stem from the economic contribution supported by liquid fuels and its supply chain linkages to other industries. The industry spent R94 billion in capital expenditure and with every R1 million of capital investment, R1.5 million is added to the GDP (SAPIA, 2024a; SAPIA, 2024b). The contribution is across the value chain and includes feedstock and imports, refining and manufacturing, distribution and storage, retail and wholesale.

Table 3: Refining capacity of South Africa’s refineries (bbl/d).

Refineries	2018	2019	2020	2021	2022
SAPREF	180 000	180 000	180 000	180 000	
Enref	135 000	135 000	135 000		
Astron Energy	100 000	100 000	100 000	100 000	100 000
Natref	108 000	108 000	108 000	108 000	108 000
Sasol	150 000	150 000	150 000	150 000	150 000
PetroSA	45 000	45 000	45 000		
Total	718 000	718 000	718 000	538 000	358 000

The refining and manufacturing segment, and the wholesaler segment contributed 70 per cent to the GDP. South Africa’s refining capacity is shown in Table 3 across the existing refineries. The industry also contributed through taxes, including the fuel levy, direct and indirect taxes, and nine per cent of total government tax income was from the oil industry for the 2019/20 tax year.

The oil and gas sector also has wider economic impacts such as the effect on food prices, food affordability and the cost of living (SAPIA, 2024). Petrol price inflation has consistently, and significantly, exceeded both headline and food price inflation. This trend is linked to the increase in the global oil price, the depreciating value of the Rand, as well as the Russia-Ukraine war affecting crude oil prices. The Rand has slowly depreciated over time to R19.20/\$ at the beginning of March 2024, exacerbating the impact of the international rise in crude oil prices in South Africa. The weaker Rand amplifies the impact of higher commodity prices on import costs due to supply chain pressures. The Russia-Ukraine conflict has had a significant economic impact globally through the drastic increase in the global price of crude oil. Higher commodity prices result in increased fuel prices, which affects many industries. While there are other factors that have contributed to the economic performance of South Africa (such as the Covid-19 pandemic, load-shedding, and civil unrest), the impact of the crude oil price remains significant. Oil prices have a negative effect on consumption and investment and, in turn, on employment. An increase in oil prices leads to higher interest rates, reduces both investment and consumption, and ultimately causes a rise in unemployment.



Impacts on employment

The oil and gas industry in South Africa is a source of employment for many people. The petroleum industry supported 247 772 jobs in 2019, and these include direct, indirect and induced jobs (SAPIA, 2021; SAPIA, 2022). An estimated 171 358 jobs were directly supported by the industry, which amounted to 1.1 per cent of South Africa's total employment. The remainder of the jobs were indirectly supported by the industry through suppliers including retail, mining, financial and business services, transport, and agriculture (SAPIA, 2022). The petroleum industry is also a job multiplier; for every 1 job in the industry, a further 1.52 jobs are supported. Highly skilled and skilled workers account for an estimated 59 per cent of the workers, while semi-skilled workers account for 24 per cent, and informal workers account for the remaining 17 per cent.

The expansion of the oil and gas industry is expected to create a demand for employment both in the short and long run, although shifts in the number of jobs can be expected. Particularly those industries producing capital equipment for oil and gas will experience marginal wage increases. In the long run, there will be a shift to skilled rather than unskilled labour due to the changing nature of work (SAPIA, 2021; The Green Connection, 2021).

South Africa plans to expand its oil and gas industry as evidenced by a number of ongoing initiatives such as Operation Phakisa (box 1) (DPME, 2014),

Phakisa has been a failure in terms of delivering the promised jobs. There has been a decline in the number of jobs and investments over the years (box 1). The failure to deliver the anticipated jobs is due to a mismatch between skills available and skills required, especially in the offshore oil and gas sector which requires highly specialised skills. The lack of a supportive regulatory environment for the gas sector to enable the development and expansion of oil and gas in South Africa contributes to the challenges faced by the project. Currently, oil and gas extraction is regulated under the MPRDA, which regulates (i) minerals extraction and (ii) oil and gas extraction. The Upstream Petroleum Development Bill is in the process of being signed into an Act, allowing the upstream oil and gas sector to be regulated entirely separately from the more established mining sector, and ensuring regulatory certainty for the oil and gas sector (Tulwa Consulting Group, 2021; CLG, 2024).

The misalignment in climate policy and fossil fuel (oil and gas) investments has an impact on attracting investments. As a signatory to the Paris Agreement, South Africa has an obligation to reduce its greenhouse gas emissions³ in the global effort to curb the impact of climate change. Expanding the use of gas and oil is in direct contradiction of this commitment. Gas and oil are both fossil fuels and release greenhouse gases. The International Energy Agency cautions that there must be no new investment in fossil fuels except for projects already underway, in order to achieve net zero by 2050 (IEA, 2021). The report specifically mentions that there is no need for new oil and gas projects. In South Africa's case, the pursuit of oil and gas is motivated by the perceived economic benefits of developing the upstream sector to support the existing downstream industry for the oil and gas sector. The gas reserves from Mozambique are being depleted, and therefore South Africa's gas industry will need options for a new supplier or domestic resources. Oil imports are susceptible to volatile international market prices, making domestic resources attractive.

The contradiction between the country's climate policy and fossil fuel extraction needs urgent attention. South Africa's historical development has been linked to cheap fossil fuel

resources through the MEC. However, climate policy and development should be anchored on renewable energy production. The country has vast renewable energy resources including solar and wind, so renewable energies have become competitive in terms of costs. Development anchored in renewable energy offers an opportunity to create a new green model for development which is aligned with the country's climate commitments as well as creating jobs, and promoting economic growth.

Operation Phakisa

The South African government launched Operation Phakisa in 2014 as a 'fast results delivery programme' designed to boost economic growth and create jobs within the context of the government's National Development Plan (NDP). Operation Phakisa aims to fully exploit South Africa's oceans economy and focuses on marine transport and manufacturing, offshore oil and gas, aquaculture, marine protection services and oceans governance. The oceans economy was estimated to potentially contribute up to R177 billion to South Africa's GDP, as well as create approximately one million jobs by 2033 (DPME, 2014).

Progress with the oceans economy has been slow. It has been reported that the government unlocked oceans economy investments amounting to approximately R29.4 billion between 2014 and 2019, while 7 093 direct jobs were created (DFFE, 2019). There have been 18 projects identified since 2019, where six were only 70 per cent on target, one was approximately 60 per cent on target, while the remaining 11 were less than 50 per cent on target. By the year 2020, the oceans economy investments were R40.8 billion which had created 7 385 direct jobs. In 2021, R5 billion in investment was attracted and about 7 330 direct jobs created. In 2022, investments attracted amounted to R2.04 billion, which is 18 per cent lower than the R2.5 billion of same period with 2 306 jobs created (DPME, 2023).

The oceans economy masterplan development began in 2019, but was halted by Covid-19 (DFFE, 2022; DFFE, 2023). The oceans economy masterplan aims to advance stabilisation, revival and growth of the sub-sectors within the oceans economy to aid job creation, GDP, economic recovery and potential growth. The review of the masterplan by stakeholders was to take place in May 2023, and the finalisation and submission for consideration to cabinet to be completed by June 2023. These initial dates were later revised.

Progress has been made towards the offshore oil and gas despite the slow progress. The progress to date includes: the continued exploration and drilling of wells; a strategic environmental assessment (SEA) was being conducted for the phased gas pipeline; Coega liquefied natural gas (LNG) terminal and phased gas pipeline network concept study had also been completed (DFFE, 2019); The DMRE was fast tracking the Upstream Petroleum Development Bill.

The overall impact of Operation Phakisa has not been realised due to inadequate due diligence taking place within the programme, threatening already fragile marine ecosystems with overexploitation. Additionally, the government's economic agenda has overruled scientific opinion and environmental justice in relation to the oceans. In particular, the contradiction is clear between the country's climate policy and international commitments with the attempt to stimulate economic growth through increased fossil fuel extraction (oil and gas stream).

Impacts on the environment

Seismic surveys cause noise pollution

Oil and gas exploration and drilling results in noise pollution that affects marine life (Cordes, 2016). Whales and other marine mammals use sound to navigate, find mates, and find food in the ocean. Oil and gas companies use seismic surveys to explore for oil offshore, the noise can be deafening for marine species. Excessive ocean noise from oil and gas exploration and drilling could cause injury, confusion, and even death. There is convincing evidence that anthropogenic noise impacts marine mammals, fishes and invertebrates, marine birds, and reptiles.

Air and water pollution

Petroleum refineries are a major source of hazardous and toxic air pollutants such as BTEX compounds (benzene, toluene, ethylbenzene, and xylene), particulate matter (PM), nitrogen oxides (NOx), carbon monoxide (CO), hydrogen sulfide (H₂S), and sulfur dioxide (SO₂) (Adeola, 2022). Refineries also release toxic hydrocarbons such as natural gas (methane) and other light volatile fuels and oils. These chemicals are carcinogenic and affect respiratory and reproductive systems. Exposure to these chemicals is detrimental to both humans and animals. The release of some of these hydrocarbon gases into the atmosphere results in ozone layer formation, and the ozone layer traps heat in the atmosphere and results in global warming.

Refineries are also contributing to the contamination of ground and surface water (Adeola, 2022; Cordes, 2016). Some refineries use deep-injection wells to dispose of wastewater generated inside the plants, and some of these wastes end up in aquifers and groundwater. Wastewater in refineries may be highly contaminated given the number of sources it can come into contact with during the refinery process. The wastes discharged into surface waters are subject to state discharge regulations, however, there is a potential for significant contamination from past discharges that may remain in surface water bodies.

Biodiversity loss

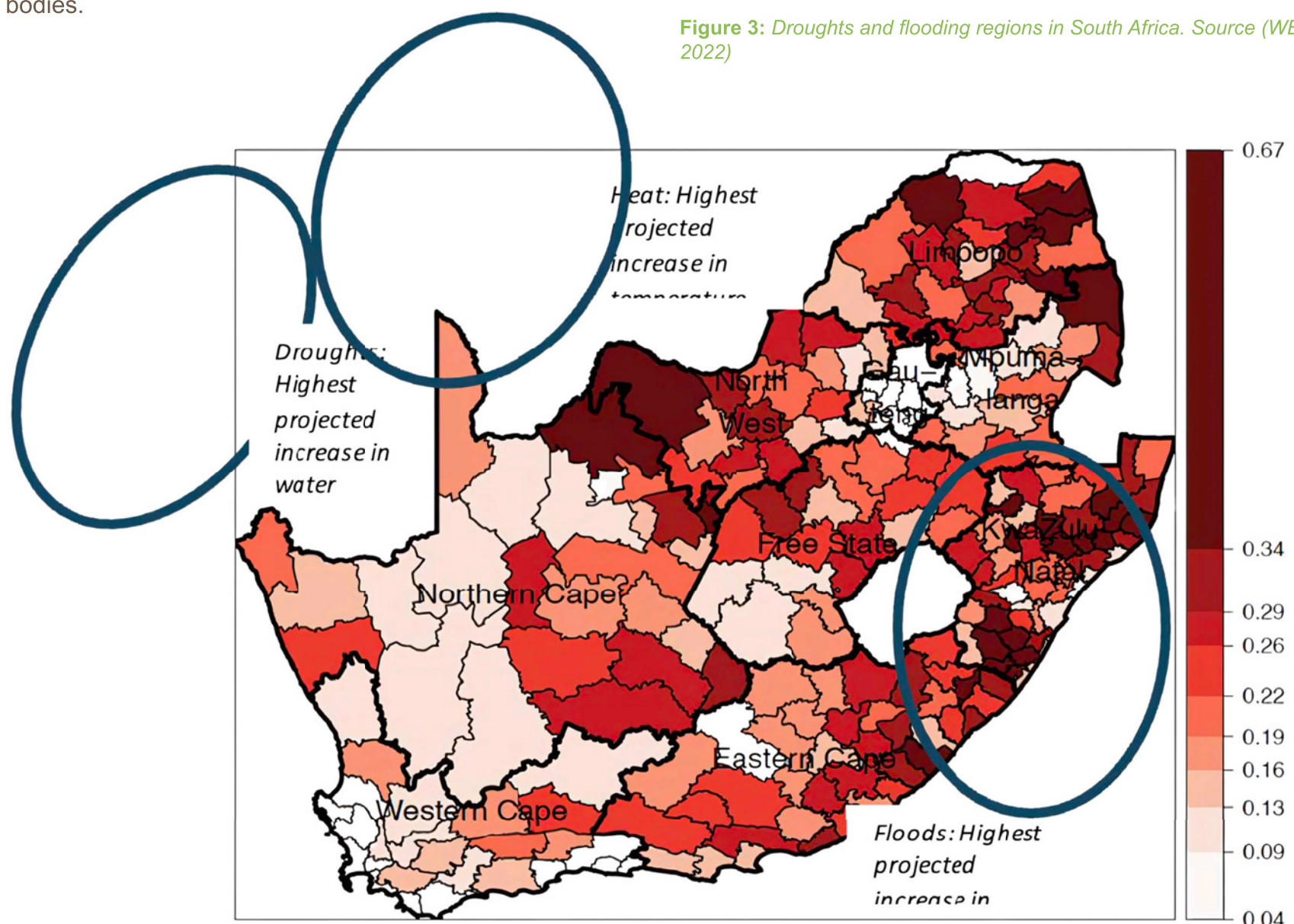
Oil and gas exploration and development causes disruption of migratory pathways, and degradation of important animal habitats. Oil spills can be devastating to animals and humans (Green Economy Journal, 2022). The exploration and extraction of new onshore and offshore gas fields is disastrous for wildlife and the environment (Cordes, 2016). Exploration involves the land disturbance of drilling wells and building pipelines and roads which fragment and destroy critical wildlife habitats, crucial for breeding and migration. As a result, there has been strong opposition to shale gas exploration in the Karoo basin, which contains rare wildlife. Offshore gas exploration can cause the accidental release of gas or blowouts, which release toxic chemicals into the water and air. This both pollutes the ocean habitat and damages the livelihoods of humans.

Greenhouse gas emissions and climate change

Oil and gas are fossil fuels, and fossil fuels have been shown to release harmful gases into the atmosphere, which ultimately result in ongoing climate change globally. Petroleum oil products used in various applications release harmful carbon-intensive greenhouse gases that cause climate change.

Climate change is seen in extreme weather events, including droughts and flooding. South Africa is already experiencing variable weather with regions in the western parts of the country experiencing droughts and the eastern part of the country experiencing flooding as shown in Figure 3 below (WBG, 2022). These extreme weather events are expected to continue increasing in this century. Most models point to the likelihood of severe annual droughts increasing by 39 per cent by the 2050s, as well as greater probability of extreme storms and other climate-related hazards near the Indian Ocean. Several climate catastrophes in recent years have affected the country, including a water emergency in Cape Town and unprecedented flooding in Durban. These unpredictable weather events have a direct impact on the economy, infrastructure, and livelihoods.

Figure 3: Droughts and flooding regions in South Africa. Source (WBG, 2022)



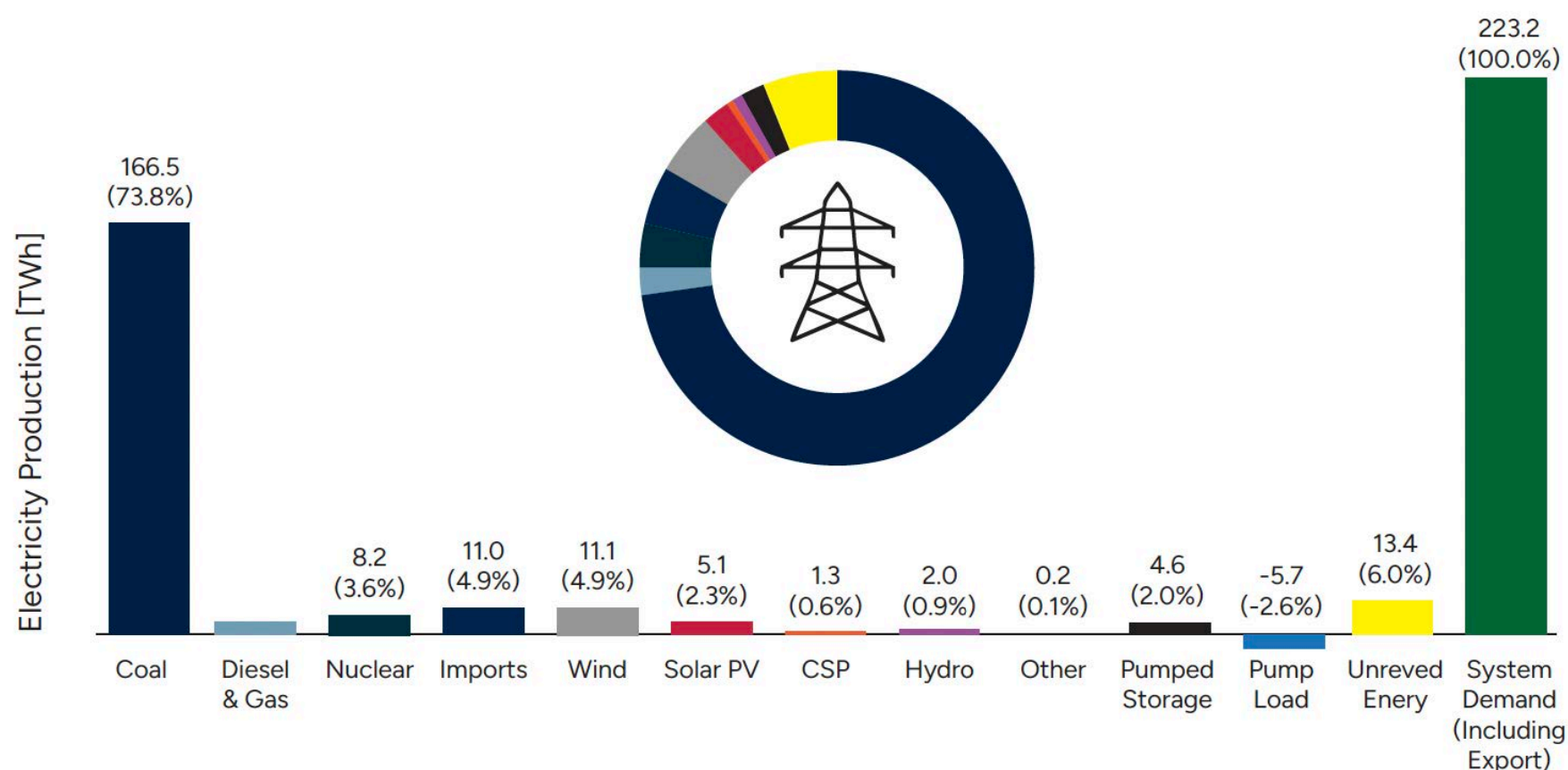


Figure 4: South Africa Annual energy mix for the first quarter of 2024 (Source: CRSES, 2024).

The Centre for Renewable and Sustainable Energy Studies (CRSES) | Stellenbosh University

Source: Eskom 2024. Note: Wind includes Eskom's Sere wind farm (100 MW). 2024 Q1 (quarter 1) is up to April 2024. Unserved Energy = Manual Load Reduction (MLR) (load shedding) + Interruptible Load Supply (ILS) + Interruption of Supply (IOS).

Figure 4: South Africa Annual energy mix for the first quarter of 2024 (Source: CRSES, 2024).

THE ROLE OF OIL AND GAS IN THE ENERGY TRANSITION

Oil and gas contribute about 2.4 per cent in South Africa's energy mix, which is a relatively minor component in comparison to other sources such as coal, as shown in figure 5 (CRSES, 2024). South Africa currently consumes ~180 PJ of gas per annum and this stems from the petrochemicals and chemicals sector and (to a lesser extent) by the industrial sector for industrial heating, and a negligible amount for household consumption (NBI, 2022; IGUA, 2022). The oil and gas value chain has a significant socio-economic impact, as a source for employment and as a contribution to the country's GDP. However, oil and gas contribute to South Africa's emissions and phasing out oil and gas will contribute to the country's emissions reduction drive. The IEA proposes that gas can be used as a transition fuel and further advises that no new investments should be made in gas and oil, in a scenario that hits global net zero emissions by 2050 (IEA, 2021). There is a projected steep decline in demand for oil and gas, with no new oil and gas projects required and existing ones would need to be shut down. Therefore, both oil and gas are reduced but do not completely disappear. South Africa's energy policy and planning is committed to the inclusion of gas as part of the country's energy transition plans (Figure 4).

Strategies related to oil, gas, and the energy transition

South Africa has various policies, strategies and plans in place for its energy transition, but not many speak directly to the role of oil and gas. Oil and gas have long been part of South Africa's policy planning since the inception of the National Development Plan (NDP) (NPC, 2013). The NDP is a plan for the country to eliminate poverty and reduce inequality by 2030. The NDP is a blueprint for the country's policy planning; all strategies and plans are informed by the NDP and aim to achieve the goals set by the NDP. It is in this context that, the Integrated Resource Plan (IRP) and the gas masterplan were drafted in line with the goals of the NDP. The power procurement programme is

another strategy aiming to address energy security and the role of gas.

Oil and gas policy

National Development Plan (NDP)

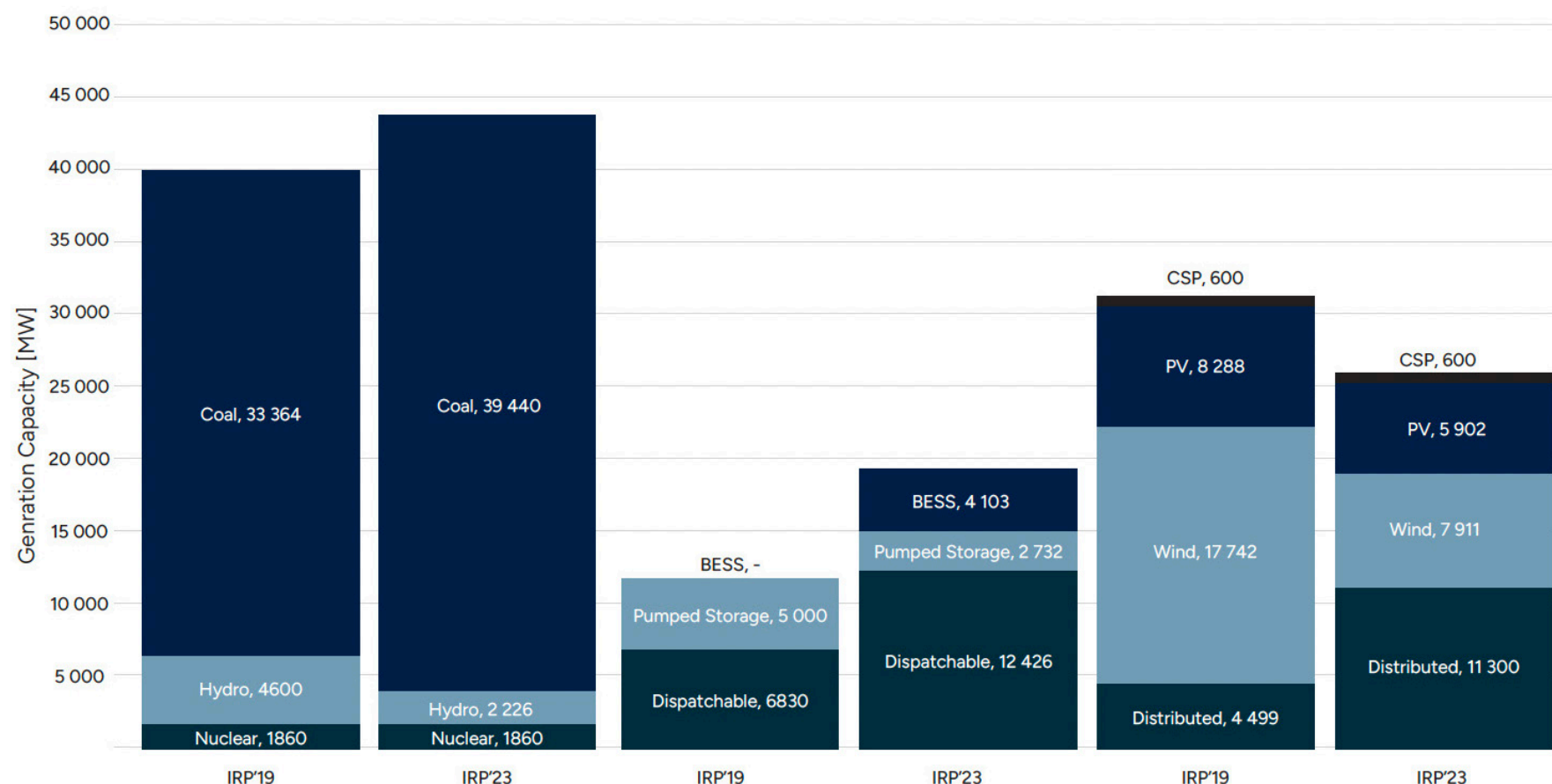
The NDP recognises that the country must exploit all possible energy sources for energy security and reducing emissions (NPC, 2013). South Africa prioritises the need for energy infrastructure to be robust, extensive, and affordable to the meet the needs of industry, the commercial sector as well as households, as a response to the energy crisis (NPC, 2013; PESA, 2022). The NDP recognises the need for 'gas as an alternative to coal for energy production', and the incorporation of a greater share of gas in the energy mix. It recognises the need for the construction of infrastructure to import liquefied natural gas and increasing exploration to find domestic gas feedstock to diversify the energy mix and reduce carbon emissions. The NDP further recognises the importance of the country's petroleum refining infrastructure and the need to address the declining refining capacity. The NDP then proposes the upgrading of existing refineries and building new oil-to-liquids refineries amongst other resolutions to reduce reliance on imports. Oil and gas is therefore embedded in South Africa's policy planning and the future policy outlook.

Integrated Resource Plan (IRP)

The IRP sets out an indication of the country's electricity demands, how this demand is to be addressed, and its costs (DMRE, 2019). This is important and provides policy direction, particularly regarding the capacity share for gas in the electricity system. The IRP 2019 provides for an additional 3 000 MW of installed capacity for gas and diesel. The IRP 2019 has been recently updated and the IRP2023 draft published for public comments (DMRE, 2024). In the IRP 2023 draft, natural gas has emerged as a critical part of South Africa's future energy mix (Figure 5). The emerging plan from horizon one (2024-2030) analysis indicates additional gas (3 000 MW) from Eskom and



Figure 5: Comparison of IRP 2019 and the IRP draft 2023 for the proposed energy mix for the year 2030 (engp, 2024).



additional gas (4 220 MW) from the IPP programme, resulting in a total of 7 220 MW of new gas by 2030. The gas component makes up 89 per cent of dispatchable power as shown in figure below. It is therefore clear that gas will continue to play an important role in South Africa's energy system up to 2030 and beyond. However, given the diminishing gas supply, finding a sustainable solution that addresses both the gas-to-power needs, and the wider application of gas is critical.

REIPPP

South Africa's Renewable Energy Independent Power Producer Programme (REIPPP) was established as per IRP 2010 to facilitate the uptake of renewable energy in South Africa (Green Cape, 2024; Kruger, 2023). Since its operation in 2013, the REIPPP has had seven bid windows and an additional Risk Mitigation Independent Power Producer Procurement Programme (RMI4P) and Battery Energy Storage Independent Power Producer Procurement Programme (BESIPPPP). The programme has the capacity of 15 730MW that includes announced, under construction and operational projects. Therefore, an estimated capacity of 15GW of renewable energy will come online by 2030. There has been a surge in private sector capacity since the amendment of Schedule 2 of the Energy Regulation Act, Act 4 of 2006 (ERA). This revision removed the cap on private power generation from 10MW to 100MW, and has resulted in the growth in private generation.

REIPPP for gas

The Risk Mitigation Independent Power Producer Procurement Programme (RMI4P) is one of the strategies that aimed to address the energy crisis in South Africa by bringing new generation capacity online as fast as possible to reduce the short-term supply gap and reduce the occurrence of loadshedding (IISD, 2022; DRME, 2024). Under the RMI4P, the gas IPP procurement programme (GI PPPP) determination was gazetted by the DMRE on 25 September 2020 to procure 2 000MW of new generation capacity from gas technologies. The remaining 1 000MW has been reserved for a separate procurement process which will be undertaken for the establishment of new generation capacity by one or more facilities to be located in the Coega Special Economic Zone.

The first gas-to-power projects in South Africa totalling 1 418MW will account for 71 per cent of the total preferred bidder capacity (1 995 MW). The gas IPP programme has experienced setbacks and has dropped from 11 bidders to 4 viable projects; projects amounting to 1 400MW are at risk of being cancelled. Amongst these projects is the controversial Karpowership project (1 220MW) which has been subject to multiple court cases. The Karpowership projects consist of gas plants on ships situated at three harbours and supplied by imported natural gas. The project failed to meet the financial deadline, and Eskom could no longer reserve the transmission line as per rules. This outcome was supported by civil society organisations and many activists due to the issues associated with the power ships.

Most concerning was the fact that the 20-year power purchase agreements for the RMI4P were constructed as a type of take-or-pay, where Eskom would need to pay for a minimum of 50 per cent of the net available capacity each year (DMRE, 2020). This take-or-pay structure would effectively lock South Africa into paying more for gas power even when better and cheaper alternatives were available. Ultimately, Eskom would have paid ZAR42 billion over the contract period and this cost would be transferred to consumers. This represents a conservative estimate; higher LNG prices would mean that the cost would also be higher for Eskom. The Karpowership project was also associated with environmental pollution.

The Gas masterplan

The gas masterplan is one of the emerging policy instruments that cites the role of natural gas as a 'transition fuel' to support South Africa's ambitions for emission reduction. The gas masterplan is a policy instrument that provides a roadmap for strategic, political and institutional decisions, and ultimately it will guide gas industry investment and co-ordinated implementation (DMRE, 2024). The draft masterplan was published by the DMRE in 2024 for public comment. The scope of the masterplan is limited to upstream production and associated activities, and midstream transmission networks. It excludes exploration (upstream) and reticulation (downstream).

The masterplan includes four scenarios, with a base scenario showing that gas demand will far exceed supply in the short term, creating a 'gas cliff' that is expected to worsen as demand grows (DMRE, 2024). The anticipated demand growth in



gas-to-power generation stems from the public procurement programme under way, and Eskom also pursuing its own large-scale greenfield and diesel-to-gas conversion initiatives. The gas industry faces two further main challenges that inhibit the mass adoption of gas, and these are the cost of gas and the lack of infrastructure (IGUA, 2022; PESA 2022; IISD, 2022). The gas masterplan and its implementation is intended to address these challenges by providing a conducive policy and regulatory environment to support investment for gas energy infrastructure (IGUA, 2022). However, stakeholders have raised concerns that the masterplan does not contain any concrete plans or timelines for meeting South Africa's gas energy requirement (IGUA, 2022).

Climate policy

Nationally Determined Contributions (NDCs)

South Africa's climate ambitions are set and communicated on the nationally determined contributions (NDCs). As a party to the Paris Agreement, South Africa's intended nationally determined contribution (INDC) was submitted on 25 September 2015 prior to COP21, and became the first NDC (RSA 2016) on 1 November 2016, following the ratification of the Paris Agreement. The INDC and the first NDC are identical. South Africa then communicated an updated NDC, lodged with the United Nations Framework Convention on Climate Change (UNFCCC) prior to its 26th Conference of the Parties (COP26) in Glasgow in November 2021 (DFFE, 2021). The updated NDCs set a higher ambition to meet both the 1.5-degree and 2-degree temperature goal.

The NDC addresses the country's climate change ambitions on mitigation, adaptation, and a just transition. The NDC commits the country to reducing its emissions to within a range of 420-350 megatons carbon dioxide equivalent (MtCO₂-eq) by 2030. This target is consistent with a fair contribution by South Africa to the Paris Agreement's long-term temperature goal contained in its Article 2.1(a). The target of 420 Mt in 2030 is consistent with a fair contribution to a 2-degree temperature goal, while a target of 350 Mt in 2030 is consistent with a 1.5-degree temperature goal. The targets have been set on the assumption that support will be provided to South Africa as a developing country as set out in the Paris Agreement's Articles 9, 10, 11 and 13. This includes implementation support such as finance, technology and capacity building support, to be provided by developed countries, to enable developing countries to meet the mitigation ambitions. The South African government indicated that its ability to meet the bottom range of the NDC would depend on the level of financial investment available to support its transition to lower-carbon technologies (The Presidency, 2022).

Climate Change Act

South Africa's Climate Change Act was assented to by the President of South Africa in July 2023. The Act aims to 'enable the development of an effective climate change response and a long-term, just transition to a low-carbon and climate-resilient economy and society for South Africa in the context of sustainable development' (The Presidency, 2024;2). The Climate Change Act sets out a national climate change response, including mitigation and adaptation actions, which also constitutes South Africa's fair contribution to the global climate change response. The Act makes provisions for mainstreaming of climate change in all government policies, laws, measures, programmes and decisions. The integration of climate change in planning and decision-making ensures that climate change is not a standalone issue and is addressed in developmental planning and budgeting processes. The Act

further sets out the necessary institutional arrangements for different ministries and tiers of government, broader involvement of all stakeholders (business, academia, civil society, labour, youth) in strengthening the capabilities of responding to climate change. The Act mandates the implementation of a carbon budgeting system and for the establishment of sector emissions targets across the economy. As a result, South Africa has published its sectoral emissions targets (SETs) for public comment (DFFE, 2024). SETs are part of the mitigation system, which is the key mechanism for achieving the NDCs.

Just Energy Transition Investment Plan (JETIP)

South Africa was the first country in the world to receive the Just Energy Transition Partnership (JETP) deal worth US\$8.5 billion (ZAR128 billion). The deal aims to support South Africa's decarbonisation efforts (The Presidency, 2022; The Presidency, 2023). The JETP is operationalised through the political declaration made at COP26, which states that the International Partners Group (IPG) will mobilise an initial US\$8.5 billion between 2023 and 2027. The founding IPG members include the United States, the European Union, France, United Kingdom, and Germany. In 2023 Denmark and the Netherlands became members of the IPG. The JETP supports South Africa in achieving the most ambitious emissions reduction range of 420-350 megatons of carbon dioxide equivalent (MtCO₂-eq) by 2030, as stated in the country's updated NDC, making the JETP a mechanism to fulfil South Africa's Paris Agreement obligation. A central feature of the JETP is the commitment of the partners to enable a 'just transition', which acknowledges the impact of the energy transition on livelihoods, workers, and communities. The JETP provides access to finance for phasing down fossil fuels as well as enabling a 'just transition' as two central features (The Presidency, 2022; Kramer, 2022).

The 'just transition' acknowledges and prepares for the impact of the energy transition on livelihoods, workers, and communities. A just energy transition is particularly important for South Africa due to the fact that the country grapples with poverty, unemployment and inequality. The JETP is country-led, thereby allowing the country's context and needs to guide investment planning. For example, South Africa's JETIP estimated the country's just energy transition to be worth ZAR1.5 trillion for the 2023-2025 period. The funds would be invested in five key areas including the electricity sector, new energy vehicles sector, green hydrogen sector, municipal capacity and skills development.

The multibillion-Rand Karpowerships project faced a series of legal, environmental, regulatory and procedural battles to gain authorisation. Recent developments have resulted in ESKOM revoking the decision to reserve the transmission capacity set aside for the Karpowerships deal due to the failure to meet a 31 December deadline to complete their financial arrangements (Sguazzin, 2024). This project is unlikely to ever take off without it securing transmission capacity, and the South African government has indicated that it will not be creating a special dispensation for Karpowerships.

Gas and the energy transition

The inclusion of gas-to-power in South Africa's energy system is contested by various stakeholders. The fossil fuel industry has been pushing for the development of gas-to-power projects in South Africa, claiming that it is an essential part of a just energy transition (NBI, 2022). Government (DMRE and ESKOM) is also in support of gas-to-power, as evidenced by the recent policy developments in the IRP 2023 to increase the gas component and emergency gas procurement as part of the risk mitigation programme (RMI4P).



Civil society organisations and institutions are against oil and gas extraction and gas-to-power, based on economic, environmental, and climate change concerns. For example, the Green Connection and Natural Justice filed a petition against the environmental and social impact assessments (ESIA) and submitted a memorandum to TotalEnergies to cease the oil and gas exploration project on South Africa's coast (The Green Connection, 2024). TotalEnergies has abandoned the project on the basis that it is not economically viable for the company. The company is exiting the Brulpadda and Luiperd gas fields, but continues with exploration in South Africa's Orange River Basin (TotalEnergies, 2024).

Similarly, the exploration for oil and gas off South Africa's eastern coast by Shell has been opposed by communities and civil society organisations, and exploration rights were revoked by South African courts even after the oil company appealed. In September 2022, the Amadiba, Cwebe, Hobeni, Port St Johns and Kei Mouth communities, Sustaining the Wild Coast, Natural Justice and Greenpeace Africa secured this victory when the court ruled that Shell's authorisation for exploration was unlawful (GroundUp, 2024). Civil society organisations and communities opposed the oil and gas exploration due to inadequate consultation with the communities, the environmental harm that seismic surveys would have inflicted on South Africa's oceans and wildlife, and the overall contribution of oil towards the climate crisis. Civil society and communities are against oil and gas extraction because there are cheaper energy sources that do not exacerbate the climate crisis.

The Presidential Climate Commission (PCC) advises that electricity planning should be anchored on least-cost pathways due to its importance for development. The least-cost energy model would be comprised of investment in variable renewable energy (wind and solar), storage (batteries and pumped hydro) and peaking support (for example gas at low utilisation) (PCC, 2023a). The PCC further emphasises that there shall be no need for new gas, but that gas, at low utilisation, can be used for peaking support. Research institutions and think-tanks have made similar recommendations for the future role of gas in South Africa for peaking support (Meridian Economics, 2022; CSIR, 2017).

The Karpowerships gas-to-power project

The Karpowerships gas project was a proposed gas-to-power powership initiative situated at three ports: Saldanha Bay, Richards Bay, and Ngqura (PESA, 2022; Dayson, 2021). This project was proposed under the Risk Mitigation Independent Power Producer Procurement Programme (RMI4P) to fill the gap for short-term electricity supply, ease the current electricity supply constraints, and reduce the reliance on diesel generators for peaking support by using alternative energy technologies. Karpowership SA is a joint venture between Karpowership and Powergroup registered in October 2019 (CER, 2024). Karpowership owns 51% of the shares in Karpowership SA, and Powergroup owns the remaining 49%.

The early onset of South Africa's energy crisis necessitated a shift in the country's energy planning. In this regard, the integrated Resource Plan (IRP) was developed, and numerous independent power producer (IPP) procurement programmes launched. There have been seven bid windows to date under the IPPP programme (I4P) (GreenCape, 2023). In addition, there was the recent Risk Mitigation Independent Power Producer Procurement Programme (RMI4P) and the Battery Energy Storage I4P (BESI4P). The I4P aimed to procure additional generation capacity through renewable energy, coal fired power, and generation capacity from a range of dispatchable energy technologies. The Risk Mitigation

Independent Power Producer Procurement Programme (RMI4P) was one of the ways to procure power from dispatchable technologies including gas. Karpowership submitted a bid under the RMI4P in December 2020, in response to the DMRE's request for proposals. On 18 March 2021, Karpowership was subsequently awarded preferred bidder status for 1 220MW of the total 2 000MW for the RMI4P for a 20-year contractual term. This 1 220MW would be located at Coega (450MW), Richards Bay (450MW) and Saldanha Bay (320MW).

The Karpowership projects entail the generation of electricity from mobile floating power plants (powerships) moored in the three ports (PESA, 2022; Dayson, 2021; CER, 2024). The powerships would be fuelled with natural gas supplied from a floating storage and regasification unit (FSRU). A liquefied natural gas carrier (LNGC) would bring in liquefied natural gas (LNG) to the FSRU, which stores the LNG onboard and turns the liquid form into gaseous form (natural gas) upon demand from the powership through regasification. Natural gas would be transferred from the FSRU to the powership via a gas pipeline. The power generated is evacuated via a powerline which connects the powership to the national grid.

The Karpowership project was challenged based on three main points: Firstly, the projects were not in line with the least-cost energy system for South Africa. Secondly, the 218 billion rands contract would result in electricity being more expensive for South Africans as tariffs would be subjected to the import price of gas. Thirdly, the lengthy 20-year contract would tie South Africa into long-term fossil fuel infrastructure which is not in line with the country's climate obligations. Additionally, there were questionable procedures and allegations that the tender was rigged in favour of the Karpowership project (Amabhungane, 2021)

The Karpowership project was not in line with a least-cost pathway which involves rapidly building large amounts of wind and solar generation in the near term, with a small amount of gas generation possibly added to the grid for flexibility (Dyson et al, 2021; PCC, 2023; CSIR, 2017; Meridian Economics, 2022). This scenario also includes battery and pumped hydro storage being built to provide flexibility during hours when there is low renewable generation. Karpowerships' 20-year lifespan risks them becoming a burden to South African electricity customers, and is inconsistent with a least-cost investment plan for the nation. The least-cost pathway avoids building expensive gas infrastructure unless and until the need arises and is economically justified, avoiding premature locking-in of long-term fuel cost commitments.

Positioning the gas sector in the energy transition

Transition fuels such as gas have been proposed as strategies to a phased decarbonisation in recognition that the complete switch to renewables takes time. It has been argued that using gas as a transition fuel represents the quickest route to emissions reductions in the short term (IEA, 2019). The IEA makes a case for switching from coal to gas only when there is the possibility to use existing infrastructure to provide the same energy services but with lower emissions. However, the IEA advises that no new investments should be made in gas or oil, in a scenario that hits global net zero emissions by 2050 (IEA, 2023). There is a projected steep decline in demand for oil and gas, with no new oil and gas projects required, and existing ones would need to be shut down. Both oil and gas are reduced but do not disappear. Approximately 920 billion cubic metres of natural gas, roughly half of which is used today for hydrogen production, remains in the 1.5-degree scenario. This amount of gas is a fraction of what is used today by the whole sector (IEA, 2023)



South Africa currently considers gas as a critical component in its energy transition plans. Gas could play a transitional role in the decarbonisation of South Africa's economy as a substitute for diesel and coal until alternative green technologies become economically viable, provided that the supply risks are addressed (NBI, 2022). South Africa uses both gas and diesel as part of the energy mix, predominantly used for peaking support. Gas offers a less carbon intensive option as opposed to diesel. South Africa's decarbonisation strategy includes increasing the share of gas-to-power, and renewables, while decreasing coal use. However, there are challenges with gas supply not matching the demand. The reserves of gas at Pande-Temane (Mozambique) are declining and supply is anticipated to be constrained from around 2025 onwards (IGUA, 2022; Sasol, 2021; NBI, 2022; DMRE, 2024). This poses a security of supply risk and threatens the decarbonisation ambitions of key sectors in the South African economy, which could rely on gas as a transition fuel.

The use of gas as transition fuel is challenged by the falling costs of renewable energy (NBI, 2022; PESA, 2022; IISD, 2022), but there are constraints in South Africa with regards to the full-scale deployment of renewables. These constraints include grid capacity and limited storage, and will need to be addressed to increase the renewable energy share. In South Africa a holistic approach needs to be taken to the role of gas in comparison to renewables. The current narrative does not reference the assumptions about the storage capacity and the climate conditions necessary to produce the optimal amount of electricity from renewables (PESA, 2022).

Gas has been shown to be the most economical fuel for dispatchable generation globally (NBI, 2022). Regions with major natural gas networks such as Europe and North America use gas to meet dispatchable generation. South Africa has no local gas production and a limited gas infrastructure, resulting in the gas supply not meeting the demand (IGUA, 2022). As a result, projects such as the Karpowerships have been considered to support regional gas development and increase the country's competitiveness in the gas sector (DMRE, 2022b; PESA, 2022). The energy demand for South Africa will be variable in the future, but what is certain is that the country will require dispatchable generation in the times where the variable sources do not provide the required energy. Dispatchable technologies play a critical role in ensuring security of supply. Dispatchable technologies include sources such as gas, coal, nuclear, oil and hydropower.

There is a case to be made for the significant role of gas-to-power to address immediate energy needs, create jobs and expand the tax base in South Africa. There are proven opportunities for gas use in the power sector, in industry, transport, as well as household use (NBI, 2022). These sectors will drive the future gas demand due to these sectors possessing proven use cases for gas as a transition fuel or lower emissions feedstock (NBI, 2022; PESA, 2022):

- **Power:** Use gas in gas-to-power plants to enable a high penetration of renewable energy in the power system by providing the flexible capacity to manage the long duration intermittency, which battery storage cannot currently address.
- **Synfuels:** Introduce additional gas to enable the phase-out of significantly more carbon-intensive coal feedstock in the production of liquid fuels.
- **Industry:** Phase out higher emitting coal, and to a lesser extent diesel, with additional gas as an energy source for industrial heat generation and other processes.
- **Transport:** Use gas as an alternative to diesel, albeit at a small scale, for heavyduty (predominantly >15 tonne) commercial road transport in the short to midterm while alternative greener technologies mature and become economically viable.

- **Households:** Using gas for heat and cooking in households reduces overreliance on the electricity grid for power, and reduces reliance on carbon-intensive coal-generated power.

Oil and the energy transition

The IEA has reported that oil and gas production is vastly reduced in net zero transitions but does not disappear. The 1.5 degree scenario confirms that some 24 million barrels per day of oil is produced in 2050, and three-quarters is used in sectors where the oil is not combusted, such as in petrochemicals (IEA, 2023). South Africa uses crude oil in the production of synthetic chemicals including jet fuel, liquid fuels and other black products (Sasol, 2021).

South Africa currently imports huge quantities of oil, with 15 per cent of all total imports being oil. If the country can produce more of its own liquefied natural gas (LNG) to replace oil, this would have a significant economic impact (Tutwa Consulting Group, 2021; SAPIA, 2024). For example, the Brulpadda find is estimated to be in the region of 1 billion barrels of oil equivalent. This amount is enough to run all South Africa's refineries (cumulative volume of 700 000 barrels per day) for just under four years. South Africa has significant oil refining capacity, although some refineries are no longer in operation (e.g. the Engen refinery). The Brulpadda find could have been a gamechanger in the South African oil and gas sector, including refining oil and other downstream activities.

However, the extraction of resources in South Africa historically, has not been a source of net wealth although it is the leading producer and holds the largest reserves of various minerals such as platinum, manganese, chrome, gold etc. The argument that failure to extract resources involves a potential economic loss to South Africa can no longer hold when there is continued uneven wealth distribution. The country has a history of inadequate compensation for surrender of its raw materials (Bond, 2024), which has contributed to the country being the most unequal in the world (WBG, 2022). This is a result of 'society's wealthiest individuals working closely with multinational corporations to draw these natural resources from the ground, monetise them, and then ultimately remove most of the resulting financial assets from South Africa'. For example, the Brulpadda/ Luiperd conventional gas find is owned by foreign multinational corporations including Africa Energy, Canadian Natural Resources, Qatar Energy, TotalEnergies, and others (Global data, 2024). If history teaches us anything, it is that the extraction of oil will follow the familiar resource extractive agenda, with little consideration for South African society or the environment.

South Africa does not have significant oil reserves in comparison to other major oil economies. The South African Oil and Gas Alliance (SAOGA) reported that the country has 15 million barrels of proven oil reserves, approximately 0.001 per cent of the world share (SAOGA, 2024). TotalEnergies have exited gas and oil exploration due to the fact that it is not economically and technically viable to extract oil in South Africa as the costs of extraction are too high with low returns. The most economical way remains importing and refining in the country, and the energy transition threatens the long-term sustainability of the oil industry, due to projected reduction in petrochemicals use. Focusing on sustainability and decarbonisation could extend the oil industry's licence to operate into the future, reducing their capital costs, and retaining customers who are also seeking for a shift to low-carbon products (Kienzler, 2023).

The phasing out of oil and gas depends on how fast the global scaling of renewables is, and the technologies (electrolysers and batteries) required to decarbonise hard-to-abate sectors such as chemicals, shipping, agriculture, aviation etc. There need to be viable options that can replace oil use, without which



oil refining remains the only option. For example, electric vehicles are facing major challenges with regards to manufacturing, sales and uptake (IRENA, 2024). These challenges will need to be addressed before a major shift in the phasing out of fossil fuel-based combustion engines in favour of electric vehicles (EVs) or hybrid vehicles in the transport sector. The global stock of passenger EVs stood at about 44 million in 2023, while reaching the 1.5°C Scenario requires significant growth to 359 million by 2030 (IRENA, 2024). Similarly, improvements in the efficiency of electrolyser technologies are required to scale up the production of green hydrogen.

Oil companies in South Africa are already partners in a large share of planned projects that aim to decarbonise various sectors through green hydrogen. For example, Sasol is piloting the production of sustainable aviation fuel (SAF) as one of the key projects for developing South Africa's hydrogen economy (DSI, 2022). Sasol has partnered with Linde PLC, ENERTRAG AG and Navitas Holdings (Pty) Ltd to form the LEN Consortium that is exploring SAF production at the Secunda Synfuels plant in Mpumalanga. Sasol is also involved with green hydrogen and green ammonia projects (Sasol, 2024a), and has completed a pre-feasibility study into the Boegoebaai6 green hydrogen/ammonia export project. This study has confirmed that it has the potential to be technically and economically viable. Additionally, SASOL in partnership with BMX and Anglo American are piloting hydrogen fuel cell electric vehicles in South Africa (Sasol, 2024b).

The future of oil companies in the energy transition

Oil companies have a critical role to play in the energy transition and are well positioned to lead some aspects of the transition. This is due to their unique capabilities in handling offshore projects and technical capabilities for hydrogen and sustainable-fuel production and transport (Kienzler et al, 2023). These companies have an appetite for risky investments, have access to cash for funding projects, and are trusted by consumers and other industry players. Scaling up of technologies for net-zero requires a concerted effort and the oil and gas industry can play a critical role in this area (IEA, 202). Oil companies can diversify their business towards decarbonisation solutions including hydrogen and hydrogen-based fuels; carbon capture, utilisation and storage (CCUS); offshore wind; liquid biofuels; biomethane; and geothermal energy. Investments in these solutions will assist companies to reduce their greenhouse gas emissions. The shift of oil companies into clean power is also necessary as markets are placing higher value on firms that are structurally aligned with the energy transition across sectors such as liquid fuels, power, and equipment manufacturers (Kienzler et al, 2023). There are additional opportunities in hydrogen transportation and infrastructure development, and electric vehicles charging infrastructure.

The South African government is committed to developing the hydrogen economy, which has the potential to decarbonise the petrochemicals sector and reduce oil use. A number of strategies and plans have been developed with implementation underway. The hydrogen society roadmap (HSRM) was developed with stakeholders and identifies catalytic projects in South Africa to kickstart the hydrogen economy (DSI, 2022). The hydrogen commercialisation strategy builds on the HSRM to identify the commercial opportunity and development approach for a viable green hydrogen industrial sector that will both service export and stimulate domestic demand, and to enable South Africa to meet sectoral decarbonisation targets (DTIC, 2023). Additionally, South Africa's just energy transition investment plan (JETIP) indicates that the country will invest ZAR319 billion (US\$21.2 billion), roughly 20 per cent of the JETIP funding requirements, to develop the green hydrogen

sector (The Presidency, 2022). Government and business are in support of developing the hydrogen economy and green hydrogen. Civil society organisations and labour have raised concerns related to green hydrogen around the focus on export, the financial risk, and the technology risks (PCC, 2023; Life After Coal, 2023). An export-oriented green hydrogen sector does not contribute to South Africa's decarbonisation and diverts resources away from local investments. There is a huge financial risk with investing in green hydrogen as the market is still unclear (supply and demand), and there are no offtake agreements from potential customers. The production of green hydrogen relies on electrolyser technology, which is still under development and is located in specific regions and producers.

RISKS AND CHALLENGES WITH THE PHASING OUT OF OIL AND GAS

The oil and gas industries contribute to the economy and livelihoods in South Africa. Therefore, phasing out of oil and gas presents real economic risks and challenges outlined in this section. The risks include economic risks, carbon budget, carbon lock-in and stranded assets, and the burden of a just transition. The major challenges hindering oil and gas phase-out include governance, policy, finance.

The risks associated with phasing out oil and gas

Socio-economic risks

Phasing out oil and gas in South Africa will have a negative impact on jobs and the GDP, which is undesirable for an already ailing economy with stagnant economic growth. The oil and gas industry employs many people directly and across many related sectors that will be affected. Gas assets in South Africa are situated in very specific regions and these are central to the economic activity of those regions, and there is a potential risk of stranded economies. For example, Mossel Bay is already heavily reliant on the gas-to-liquid (GTL) facility, the future of the entire municipality is uncertain due to the unavailability of alternative feedstock to replace the depleted gas reserves. Similarly in Mpumalanga, Secunda is reliant on Sasol for jobs, as well as other community services that the company provides.

Carbon budget, carbon lock-in and stranded assets

The continued addition of more fossil fuels to the electricity sector uses up the carbon budget, making it harder for South Africa to meet the commitment made in the nationally determined contributions (NDCs). The development of gas infrastructure may result in continued operation beyond the transition period, even when cheaper, superior alternatives are available because the capital is already sunk. This type of lock-in can result in the industry persisting even when it is no longer economically viable. Government may also be pressured to protect the industry through subsidies and other means, to prevent socio-economic fallout and social unrest.

The changes in policy and demand in the oil and gas sector may result in the devaluation or collapse of existing assets, and these assets will become stranded. Stranded assets represent an additional financial risk from decreasing oil and gas use. These assets include infrastructure, human capital and secondary industries where the latter two are usually not included when calculating stranded assets.



Creation of additional just transition burden

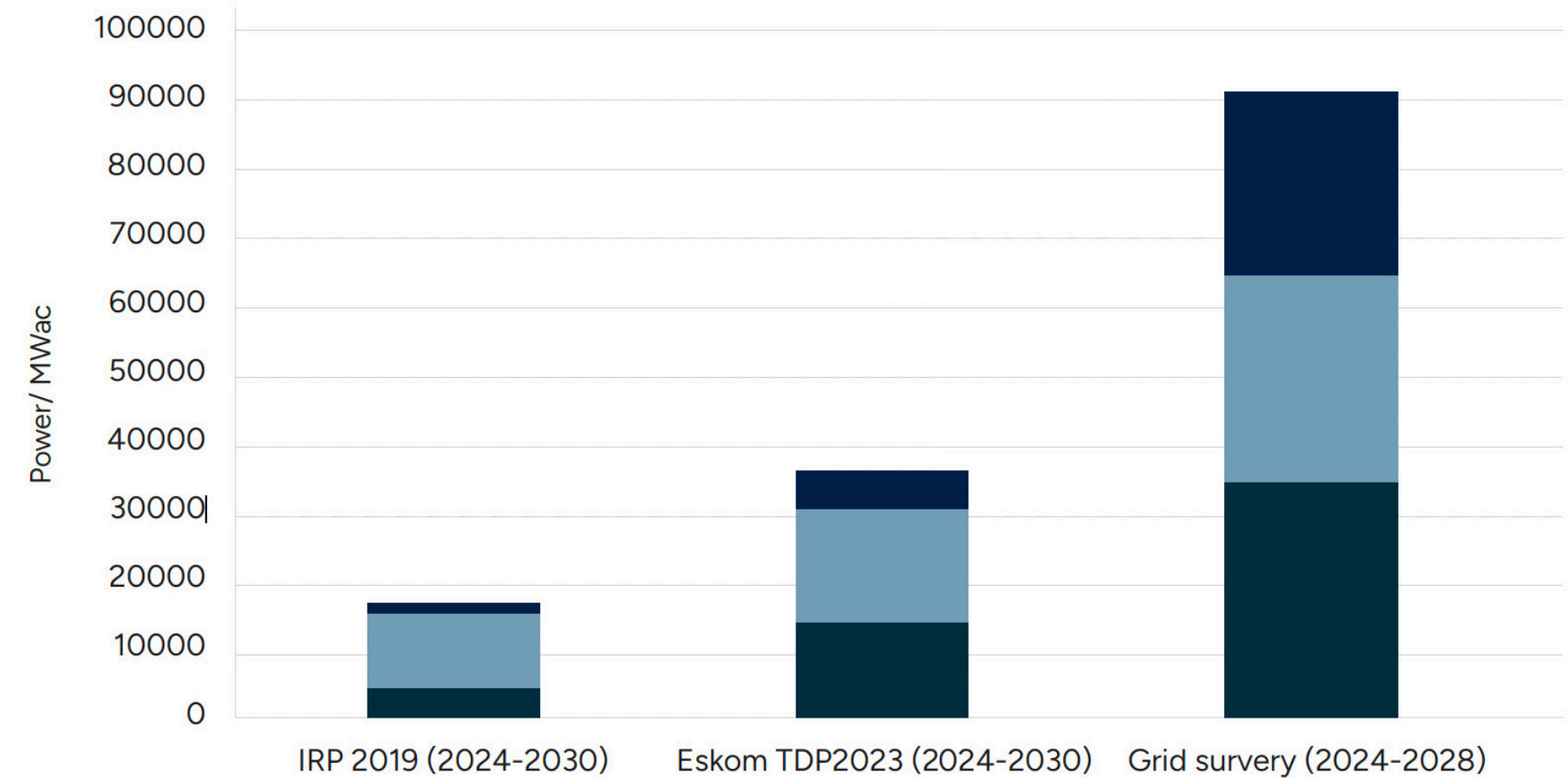
Phasing out oil and gas would be similar to phasing out coal but roughly double the scale globally. The oil and gas sector accounts for twice the share of global energy supply compared with coal (54.1 per cent versus 26.2 per cent in 2019), and double the number of direct jobs (11.9 million compared with 6.3 million) (IEA, 2022). Regardless of South Africa being an importer of oil and gas, the country will need to undergo a government-led just transition process. The conversation on oil and gas is still largely limited to the environmental impacts associated with the sector rather than phasing out.

The just energy transition narrative in South Africa has so far largely focussed on coal, and how to manage coal phase-out so that all social partners agree on what constitutes a just transition (IISD, 2022). This process is highly complex due to South Africa’s unique conditions including the socio-economic burden of coal phase-out. While there is progress with regards to South Africa’s energy transition, the implementation of the just transition is slow, faces many challenges, and consensus amongst the stakeholders has not been reached regarding the pace and scale. The just transition from coal clearly requires concerted policy action and commitment of resources from all partners. In this regard, South Africa does not need another subsequent transition from gas in the power sector. Long-term investments in gas-to-power could cause the next generation of gas workers and communities to face a repeat of the transition hardships faced now by the coal sector. Gas-to-power should remain no more than an option for peaking power support.

Table 4: Average cost of renewable energy in South Africa (Source: Green Cape, 2024; Kruger, 2023)

Bid window (BW)	Solar PV: Average awarded price (ZARc/kWh)	Onshore Wind: Average awarded price (ZARc/kWh)	No. of projects	Total Capacity (MW)
BW1	114	276	28	1415
BW2	90	165	19	1033
BW3	99	74	18	1611
BW4	82	67	26	2205
BW5	42,9	49,5	25	2583

Figure 6: Renewable energy capacity projection as per IRP 2019, Eskom and the grid survey 2023. (Source: Green Cape, 2024)



Challenges of phasing out oil and gas

Adoption of alternative technologies

The availability of cheaper, more accessible and practical renewable energy technologies will be the key determinant to drive and accelerate oil and gas phase-out. For example, the high costs of electrolyzers and their low efficiencies are delaying the advance of green hydrogen production, and its use; The decreasing costs, incentives and infrastructure development for electric vehicles is increasing their competitiveness; The decreasing costs of renewables such as solar and wind has made renewables more accessible and practical to increase their share in South Africa’s energy mix.

Large-scale solar photovoltaic (PV) and onshore wind energy systems offer lower energy costs compared to other utility-scale solutions when comparing levelised cost of energy (LCOE). This is due to decreasing capital costs, improving technologies and increased competition. The average mean LCOE for solar PV and onshore wind in 2023 was US\$50/MWh (Green Cape, 2024). The solar PV was R502/MWh (US\$27/MWh) for bid window 6 (BW6) in 2022, whereas the RMIPPPP (gas) approved projects for renewable energy and battery storage were priced between R1 550/MWh to R1 884/MWh. The tariff for Eskom’s large power users increases above inflation each year, with an 18.65 per cent increase for the 2023/24 financial year. Renewable energy has become affordable and appealing to large-scale consumers, while the decreasing costs of battery technology have made it competitive. The cost of renewable energy (solar PV and wind) that South Africa has procured over the years in five bid windows shows a decrease in renewable energy costs as they become more competitive as shown in table 4 (Kruger, 2023; Green Cape, 2024).



South Africa has an enormous capacity for renewable energy production. The country has much better solar and wind resources than European countries where renewables are competitive (CSIR, 2016). South Africa has approximately twice the solar capacity of Germany, and inland areas in South Africa have similar wind speeds to the coastal regions in Germany with best wind sites. The IRP provides a more conservative capacity estimation for government's renewable energy production and storage (DMRE, 2019), while the Eskom Transmission Development Plan (TDP) 2023 also provides estimated capacity for long-term grid planning that considers the existing grid constraints (Eskom, 2023). The national grid survey was conducted in 2023 and provides insights on large-scale renewable energy projects, including projects that may not materialise (Eskom, the SAPIA, and SAWEA), 2023). A well-rounded picture of the potential for renewable energy in South Africa is provided in Figure 6 as per IRP, Eskom TDP and the national grid survey.

South Africa's existing capacity to locally manufacture renewable energy components has a potential to lower the costs even further while also supporting job creation and industrialisation (TIPS, 2023). However, the industry faces competition from cheap manufacturers abroad, and policies are needed to promote the use of locally manufactured components. In addition, grid capacity constraints have limited the scaling up of renewables and battery energy storage is required. South Africa's procurement for battery storage is currently underway, and there are opportunities to develop local battery manufacturing through a regional battery manufacturing hub. This could be a consortium between South Africa and other African countries that produce battery minerals including copper (DRC, Zambia), cobalt (DRC, Madagascar, South Africa), graphite (Mozambique, Tanzania, Madagascar), iron ore (South Africa), lithium (Zimbabwe), manganese (South Africa, Gabon), nickel (South Africa, Zimbabwe, Botswana) (TIPS, 2021). This regional integration approach can promote beneficiation of minerals on the continent, reducing the cost of production and easing trade of minerals while addressing the renewable energy storage challenge.

Finance

Shifting public finance from investing in fossil fuels towards clean energy technologies can accelerate oil and gas phase-out. Public finance is an important signal of government priorities and can lead to shifts in investments in the wider private market. Public finance is often provided at below-market rates with government-backed credit ratings, making finance more accessible and less risky for investors. While multilateral government agreements are making transition finance accessible, there are issues around the conditions attached to these financial schemes, including affordability for underdeveloped and developing economies. Therefore, a transition away from fossil fuels requires reforming the financial system in order to ensure that transition finance is more affordable.

One of the emerging financing mechanisms through multilateral government agreements is the Just Energy Transition Partnerships (JETP). South Africa is the first recipient of a JETP deal worth US\$8.5 billion (ZAR128 billion) announced at COP26. In response, South Africa drafted the country's investment plan and implementation plan for the 2023-2027 period (JETIP) (The Presidency, 2022; The Presidency, 2023). The unique feature of JETPs is that they are centered on decarbonisation as per NDC requirements and prioritise a just transition. The JETP finance has begun to flow into the country, but the emerging challenge around the JETP financing is that the larger component of the funding is concessional and commercial loans and guarantee instruments, while grants make up less than five per cent of the total funds (US\$329.7

million out of US\$8.5 billion) (PCC, 2022; The Presidency, 2022). This raises questions around how affordable this financing is. Grant funding is likely to be used for the just transition requirements as these tend to be projects that can't be funded in open markets. Therefore, the nature of the funding is already skewed in favour of energy transition and risks leaving just transition imperatives underfunded and not implemented. Overall, there have been challenges around transparency of the loans (lack of disclosures on loan conditions and interest rates), the scope and the allocation of funding, with the JETIP process in South Africa, as raised by civil society (PCC, 2023). However, JETPs are a new approach to financing that will evolve over time, as countries learn by doing. The challenge now is how South Africa leverages the JETP to unlock long-term finance to support a just energy transition.

Governance

A stronger governance framework and policies are required for oil and gas phaseout. Large capital investments in oil and gas need decades of production to recoup costs and meet different financial commitments of both private investors and government, especially when they involve major infrastructure development, as is the case with piped gas. Mega-projects in gas are usually associated with corruption vulnerabilities associated with the allocation of energy rents. South Africa currently does not have a strategy or plan that speaks directly to oil and gas phase-out. Future energy planning should include such a strategy to ensure that the country is not locked into long-term investments in gas and oil infrastructure, which will become stranded as the energy transition unfolds.

MECHANISMS AND INITIATIVES FOR PROTECTING HUMAN RIGHTS

In South Africa, there are various campaigns, activists' groups, civil society, and human rights defenders that seek to protect people's right to reject oil and gas extraction. Often these defenders are subjected to violence, prejudice, exclusion, and repudiation (SAHRC, 2018). There has been a growing number of oil and gas exploration projects in South Africa, in an attempt to secure gas and oil resources and reduce import reliance, and to exploit South Africa's natural resources for economic development. However, these projects often have detrimental impacts on the environment, and negative impacts on the communities occupying land. Extractive industries have a tendency to violate human rights. It is in this context that human rights defenders oppose these projects through protests, campaigns, and court cases.

There are differing concepts of 'development' and what 'development' actually means to people (The connection, 2021). The assumption that all South Africans want the economically determinist development that resource extraction promises to bring is often confronted by the reality on the ground, where society has the right to reject resource extraction. This assumption comes as a result of the lack of thorough community and broader stakeholder engagements early in the planning for any resource extraction process. For example, communities in the Wild Coast rejected the seismic surveys by Shell and the Supreme Court dismissed an appeal by Shell, Impact Africa and the DMRE, to overturn a High Court ruling that halted the seismic survey. Another example is that of the Xolobeni community opposing the attempts by an Australian company to mine their traditional lands. These are two of the prominent court cases that highlight the importance of the work done by human rights defenders. Defenders must be protected due to their significant role in ensuring humans rights.



The role of the state in protecting defenders

South Africa's constitutional democracy is built on the principles of transparency, accountability, and public participation (CALS, 2023). The state is obligated to promote and protect human rights as recognised in the constitution. These rights include the right to dignity, freedom, and security of persons; freedom of expression; the right to freely assemble and demonstrate; freedom of association; and the right to access information. Under international law, South Africa is also obligated to protect and promote civil and political rights including public participation, freedom of expression and an open and free civic space. International law includes the International Covenant on Civil and Political Rights and the African Charter on Human and Peoples' Rights. There are various cases that have been brought before the state by rights defenders, and the South African courts have upheld their integrity and reviewed the cases based on the rule of the laws stated above to protect human rights. This is evidenced by the Constitutional Court of South Africa recognising the rise in strategic litigation against public participation (SLAPP) suits in South Africa and globally.

In November 2022, the Constitutional Court handed down a landmark judgment, ruling that the law recognises a special defence to strategic litigation against public participation (CALS, 2022; Constitutional Court of South Africa, 2022). SLAPP cases are an abuse of court process brought against activists to intimidate and silence them. SLAPP cases also aim to threaten and deter other members of the public from speaking out (CASA, 2023). This landmark judgment confirmed that South African law recognises a special defence against SLAPP suits and ensures the protection of activists, recognising the serious consequences of SLAPP for those seeking to exercise their rights to freedom of expression and access to court, and upholding integrity by guarding over the use of their processes. The Constitutional Court of South Africa through this judgment protected activists, lawyers and journalists threatened for speaking out about matters of public concern.

South African Human Rights commission (SAHRC)

The SAHRC is a national human rights institution (NHRI), a constitutionally mandated independent state institution supporting constitutional democracy (SAHRC, 2018). It is mandated by section 184 of the Constitution of the Republic of South Africa, 1996, to have the following functions: to promote respect for human rights and a culture of human rights; promote the protection, development and attainment of human rights; and monitor and assess the observance of human rights in the republic. The SAHRC is additionally guided by the Principles Relating to the Status of National Institutions (the Paris Principles) as adopted by the UN General Assembly through Resolution 48/134 in 1993.

The SAHRC is obligated to monitor both the attainment of human rights towards their full realisation in South Africa and the government's duty to adhere to its regional and international obligations in the protection of human rights. Additionally, the SAHRC understands that women and children's activists are more vulnerable to certain forms of violence, prejudice, exclusion and repudiation. The SAHRC is authorised to convene experts in academia, civil society organisations and partners, activists, special rapporteurs, and other NHRIs. This is done to create a platform to engage on matters relating to the protection of human rights defenders (HRDs) in the course of its ongoing work. The engagements aim to respond to systemic issues encountered by HRDs, as well as broader issues in law enforcement impacting HRDs.

The protection mandate allows the SAHRC to intervene when HRD's rights are threatened or violated, the defender may lodge

a complaint with the SAHRC through any of its nine provincial offices. Legal proceedings on behalf of the HRD, facilitating alternative dispute resolution processes for resolution of a complaint, or instituting litigation in respect of the violation in the name of the SAHRC are some of the relief options once the protection mandate has been invoked.

Institutional support

Institutions that provide legal and research support to rights defenders play a crucial role in ensuring that defenders are protected. These institutions support defenders through litigation, advocacy and activist support and training. Some of the well-known institutions in South Africa include the Centre for Applied Legal Studies (CALS), the Centre for Environmental Rights (CER), Lawyers for Human Rights amongst others. The CER, for example, is comprised of activist lawyers who defend the right of communities and civil society organisations to an environment not harmful to health or wellbeing for present and future generations (CER, 2024). CER is committed to defending the defenders through spotlighting the risks faced by human rights defenders, activists and whistle-blowers and holding the government accountable. This has been done through the 'defend the defenders' campaign that aims to hold the state accountable to the promises to protect HRDs, made during the Universal Periodic Review (UPR) of the United Nations' Human Rights Council (Groundwork, Centre for Environmental Rights, Human Rights Watch, Earthjustice, 2019)

Alliances and coalitions

There are various alliances that exist in South Africa to defend the rights of society against fossil fuel extraction and use. These alliances are crafted based on a common cause to pool resources for effective campaigning and strengthening court cases. Alliances also protect defenders by campaigning in groups to avoid a distinct group or organisation being targeted. For example, the Life After Coal (Impilo Ngaphandle Kwamalahle) is a joint campaign by Earthlife Africa, Groundwork, and the CER (Life after coal, no date). The joint campaign aims to discourage the development of fossil fuel initiatives; to reduce emissions from existing coal infrastructure and encourage a coal phase-out; and to enable a just transition from fossil fuels. There is also the Coalition Against SLAPPs in Africa (CASA) established by Southern Africa Resource Watch and partners.

CONCLUSION AND RECOMMENDATIONS

South Africa is committed to reducing the impact of climate change by reducing its emissions as evidenced by various shifts in energy and climate policy. Concurrently, the country's energy policy is clear on the continued use of gas and oil, despite the current global efforts to limit global warming to under two degrees Celsius and the goal of reaching net zero. The scenarios in line with achieving net zero by 2050 have shown that natural gas imports will fall by 60 per cent between 2020 and 2050. The scaling up of fossil fuel (gas and oil) use directly contravenes the goals of the Paris Agreement. The risks of prolonged fossil fuel use has negative economic impacts in the long run, and immediate negative environmental and social impacts. While human rights defenders, civil society movements and other institutions have played an important role in protecting the environment and communities from the impacts of oil and gas, pragmatic solutions are needed to further ensure that South Africa is on a path of phasing out oil and gas. South Africa is already experiencing a transition from coal, which is proving to be complex, the country does not need a second transition from oil and gas.



Recommendations:

- South Africa's energy policy on gas and oil contradicts its long-term climate commitments, so energy policy must be reviewed and aligned with the country's climate policy.
- While there are proven cases of the role of gas use in the energy transition, cases need to be carefully examined against the country's NDC targets, and the evolving renewable energy technology landscape, to ensure that South Africa does not exceed the carbon budget and experience carbon lock-in.
- South Africa must develop a clear policy on the phasing out of oil and gas, which stipulates targets and timeframes for phasing out these fossil fuels.
- South Africa's draft gas masterplan must be reviewed and revised to incorporate clear phasing out of gas and oil, and repurposing options for gas infrastructure.
- Addressing challenges with renewable energy must be prioritised in order to fast track bringing renewable energy capacity online.
- Phasing out gas and oil must be included in the current discussions on the transition away from coal.

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This report is published by the
Southern Africa Resource Watch (SARW)

41 Holt Street, Parkmore, Johannesburg,
South Africa, 2196
www.sarwatch.co.za

Editorial Team:

Dr Claude Kabemba and Davie Malungisa

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Write to info@sarwatch.org

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