



OCEANS

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OIL & GAS



The sea keeps us alive

For many South Africans the sea brings joy, rejuvenation and holidays. Fisherfolks' livelihoods depend on the sea, jobs in the tourism and leisure industry depend on it. The sea is home to millions of marine animals. It gives us food. Many people feel a spiritual and cultural link too. It may bring cleansing or baptism or connect the living with those passed on. Scientists also believe it is the home of our evolutionary ancestors. Our earliest forebear, a *Saccorhytus coronarius*, came into being 540 million years ago, and lived between grains of sand on the seabed. Coelacanths, our celebrated 'fossil fish' - which link us to prehistory, are being discovered in deep canyons off the KZN coast.

The sea is the reason we are alive.

Since the very beginning of life, the sea has governed the earth's climate by absorbing heat in times of excess and giving it back in times of want. Without ocean health, our world would have unthinkable extremes of temperature and many of its inhabitants would die.

But the sea is struggling to do its job

The planet is getting hotter. This is caused by **man-made global warming** from burning fossil fuels (coal, oil and gas), chopping down forests and industrial farming. Fossil fuels release carbon dioxide (CO₂) and pollutants into the atmosphere, trapping heat and causing the Earth to get hotter. Coal is responsible for 46% of global CO₂ emissions, oil for 33% and gas is responsible for over half the increase in global emissions since 2016.

Until recently most of the trapped heat and carbon has been absorbed by the oceans. But because we keep adding to these emissions, the oceans can no longer absorb all the heat. The top of the ocean is warming up 24 times faster than it did a few decades ago, and this is accelerating.



If the ocean absorbs more heat and CO² it will be a disaster

Hotter seas mean animals die: Fish, plankton and coral are very sensitive to temperature changes. Corals bleach and then spit out the algae that live in them. With no algae, there is no food for fish. 40% of coral species have died. This has a knock-on effect all the way up the food chain. When fish die, we have less to eat.

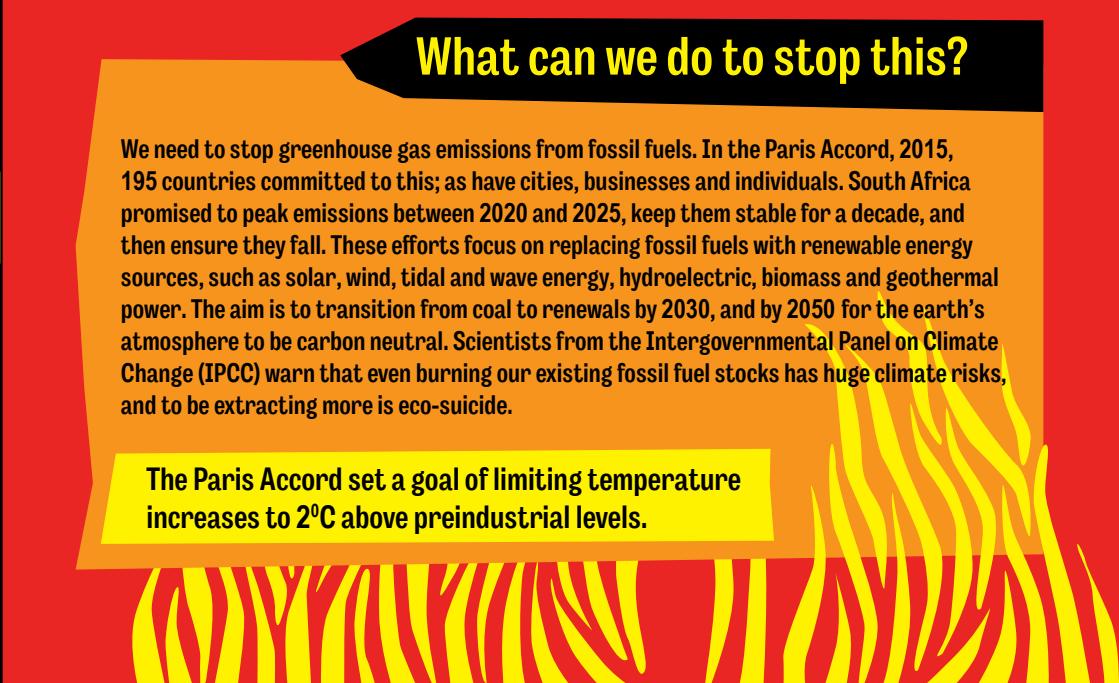
The ocean also absorbs CO². This causes its waters to become more acidic, and corrodes protective animal shells and corals. More CO² affects how sea water circulates, slowing it down. This means there is less oxygen circulating. Without oxygen even more species die.

Sea levels rise due to melting ice and expanding water, so storms get bigger and warm oceans make **hurricanes** and **cyclones** more intense. Once rare, extreme events are now likely to

occur in Southern Africa every year. In 2019 there were two cyclones. Over 1000 people were killed and over 2.5 million needed humanitarian assistance.

Due to global warming, the climate has changed. South Africa is getting hotter at twice the global average. We experience this as heatwaves, huge rainfall variability – water shortage and drought, and then flooding. This causes problems in the moisture levels of the soil and land loss. Agriculture becomes difficult, which leads to crop failure and food insecurity. Food prices go up and people face either leaving their homes, or starving.

Climate change will increase inequality and poverty. The fight for survival deepens social tension and unrest. It leads to conflict and wars.



What can we do to stop this?

We need to stop greenhouse gas emissions from fossil fuels. In the Paris Accord, 2015, 195 countries committed to this; as have cities, businesses and individuals. South Africa promised to peak emissions between 2020 and 2025, keep them stable for a decade, and then ensure they fall. These efforts focus on replacing fossil fuels with renewable energy sources, such as solar, wind, tidal and wave energy, hydroelectric, biomass and geothermal power. The aim is to transition from coal to renewables by 2030, and by 2050 for the earth's atmosphere to be carbon neutral. Scientists from the Intergovernmental Panel on Climate Change (IPCC) warn that even burning our existing fossil fuel stocks has huge climate risks, and to be extracting more is eco-suicide.

The Paris Accord set a goal of limiting temperature increases to 2^oC above preindustrial levels.

How is South Africa doing?

Are we keeping our climate change promises?

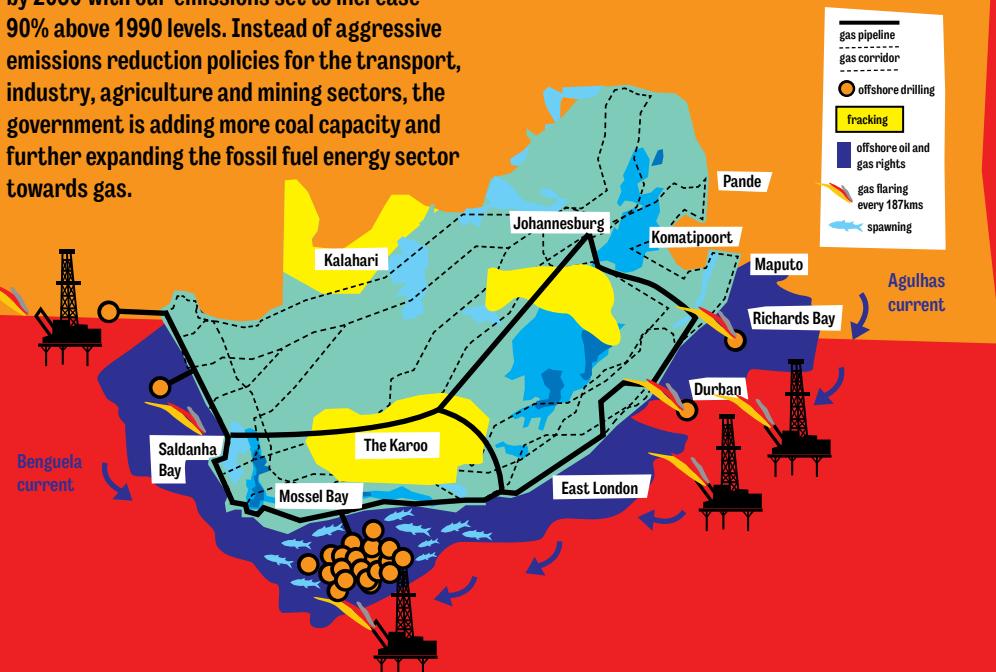
Apart from the climate change crisis, South Africa has other problems:

- **An economic crisis:** Our economy is one of the most energy-intensive in the world. It is built on cheap, heavily subsidised coal, cheap electricity and cheap labour. Because of this we are the world's 13th largest emitter of greenhouse gases.
- **An energy crisis:** Our national power supplier (Eskom) has major financial problems and shortages have meant 'load shedding'.
- **An unemployment crisis:** We are one of the most unequal countries in the world with one of the highest unemployment rates. While a transition away from coal is promised, the government lacks credible plans for a Just Transition to reskill coal workers.

South Africa is set to exceed its carbon budget by 2030 with our emissions set to increase 90% above 1990 levels. Instead of aggressive emissions reduction policies for the transport, industry, agriculture and mining sectors, the government is adding more coal capacity and further expanding the fossil fuel energy sector towards gas.

Neither energy efficiency, public health costs, the latest climate science nor our international commitments to act on climate change have been fully considered. The government is promoting gas-to-electricity as a means to reduce poverty and inequality. It has increased the licensing exploration mining for oil and gas, with intentions to drill 30 deep-sea oil wells by 2030 and to frack the land in the Karoo, Kalahari, Free State and central KwaZulu-Natal.

There is currently a gas pipeline running from Pande (Mozambique) crossing the border at Komatipoort to Secunda in South Africa. There are plans to extend this into a national gas infrastructure: 3500 kms of gas-pipeline networks along the coast, port facilities and liquefied natural gas (LNG) power plants. Gas will be flared every 187kms along the pipeline.



The problem with South Africa's plan

- Extracting the intended nine billion barrels of oil and eleven billion barrels of gas from our offshore wells would **heat the atmosphere so much** it would melt over a hundred square kilometres of Arctic ice, raising sea levels further. We would emit an extra 3.9 billion tonnes of CO₂ into the atmosphere. This will mean **we will fail to honour our Paris Accord obligation** of limiting global warming to 2°C.
- Fossil fuel air pollution **kills over eight million people** a year (18% of our global population).
- **Oil spills** happen often and can take many years to clean up. There has never been a successful clean-up operation of an offshore leak.
- Raw gas is composed primarily of **methane**. When methane leaks it increases global warming.
- It takes a **large amount of energy** to pull gas out of the ocean and then cool and compress it enough to convert it into liquid so it can be transported and then burnt to create energy.
- There has been neither a Cost Benefit Analysis nor a Strategic Environmental Assessment conducted for the offshore oil and gas sector, despite the fact that oil projects come with **substantial social and environmental risks**.
- The government says gas is a 'transitional' short-term solution, but in reality, the legacy of pipeline infrastructure is massive – about **40 to 50 years of environmental and socioeconomic impacts**. These developments will take more than a decade to build and will not be profitable until after 2040. Moreover, the years building infrastructure and producing gas are **years lost** in transitioning to renewables instead.
- Gas development keeps **power and wealth in the hands of the few** – corporations and SOEs. History has shown that foreign oil agencies benefit from disempowerment of the local people and the consequences of conflict. Oil, corruption and violence are old friends. We can see this being played out with displaced families, lost land, missing journalists and foreign mercenaries and insurgency at Mozambique's LNG Project (Total) in Cabo Delgado province.
- The head of the oil and gas stream of Operation Phakisa who has the strategic objective to grow offshore gas and oil-based development in South Africa is also the Minister for Environment, Forestry and Fisheries.



The problem with South Africa's promises

The government has promised its strategy is 'sustainable development' which will benefit the country by reducing dependence on foreign oil and gas, solve our energy problems with 'clean gas', and help end poverty, unemployment and inequality. Is this true?

Will a move to gas create jobs?

- Production will not begin until around 2027 so job possibilities are years away.
- The jobs available will mostly be for specialist and highly skilled workers, many of whom are already employed or will be filled by people from other countries.
- There will be few employment opportunities for women.
- Offshore oil and gas development could harm industries that depend on a healthy coast and ocean, and that provide more jobs and income to local economies. Seismic surveys, oil rig construction, spills, and drilling muds may disrupt fishing industries and displace fisherfolk. The fishing industry is another pillar in our economy that we cannot afford to jeopardize.
- In the event of a spill, the tourism, fisheries and recreation industry is likely to experience severe economic damage, threatening the health and livelihood of coastal populations, and due to the nation's reliance on coastal areas, the South African economy as a whole.
- If the fossil fuel industry does get phased out in the next 10 to 20 years, transitioning skills from natural gas to solar and wind power will be difficult for workers.

Is gas clean?

- Gas burns roughly 50% cleaner than coal but it still contains nitrogen oxides (NOx) and pollutants.
- Only at leakage rates lower than 1 to 3% (depending on usage) is gas cleaner than coal. But methane leaks at rates between 2 and 12%, and its climate impact – or global warming potential (GWP) – is 86 times that of CO₂ over 20 years.
- Harmful health impacts associated with gas infrastructure include foetal abnormalities, respiratory illnesses, endocrine disruption and cancers.
- Gas that displaces new renewable energy will lead to an increase in carbon emissions.



Is drilling for oil and gas on land or in the sea sustainable?

- Oil and gas extraction is never sustainable and comes at increasing environmental, energetic and economic cost to society.
- Natural gas is a fossil fuel and extracting it causes large scale release of methane. The unabated use of natural gas is incompatible with achieving the climate-neutrality objective by 2050. Gas production and consumption must drop by 40% over the next 10 years to keep warming below 1.5 degrees.
- Oil spills are an unavoidable part of normal operations in offshore oil drilling.
- Drilling for oil on land may use 'fracking' (hydraulic fracturing), which involves pumping water and toxic chemicals into the ground at extremely high pressures to fracture the rock formations which hold natural gas. This has the potential to contaminate ground water and leave land valueless.
- Taxes paid by oil, gas and mining companies are an important potential source of government revenue, which can be used to reduce poverty, boost development and provide basic social services such as health care and education. But tax avoidance or evasion schemes, offshore secrecy and government tax breaks to attract investment all divert potential revenues, undermining people's rights to services and livelihoods.

Will we have reduced fuel costs?



- South African gas will be sold at the prevailing price on global markets and there is a single market-clearing price for gas of a given quality, significantly influenced by crude oil pricing.
- We will still import foreign oil and gas for the next two decades minimum.

Is it worth the risks?



There is a particular lack of risk assessment and precaution by oil and gas companies in Africa:

- Since 1956 over 10 million barrels of oil have spilled in Nigeria. Many people in the Niger Delta have lost basic human rights such as health, access to food and clean water.
- In 2004 ENI's Cairo rig caught fire and in 2013 its Angola rig sank.
- In 2020 ENI and Shell were embroiled in a corruption case involving \$1.1bn in bribes in Nigeria.
- In 2020 Sasol overspent by \$1.1bn at the Lake Charles chemical complex, Louisiana.
- Sasol emits more greenhouse gases annually than many developed countries:
Sasol = 67 632 kilotons; Denmark = 49 000 kilotons.

The impact of oil and gas extraction on the sea

- Traumatic sound pollution and pressure from seismic airguns used to find the oil and gas reserves in the sea bed can harm or kill many marine animals. Without the ability to hear, fish and marine mammals struggle to communicate, navigate, avoid predators, and locate prey. These disturbances can also disrupt important migratory patterns, forcing marine life away from suitable areas meant for finding food and mating.
- Offshore wells put our nation's coastal communities, beaches, surf breaks and marine ecosystems at risk of oil spills. Drilling into the seabed increases the frequency of oil spills about 10 times. Drilling offshore of KwaZulu-Natal will be at record global depths of up to 5km down, in the Agulhas current – the third fastest current in the world. Along with severe weather, these harsh deep-water environments pose extra challenges for the safe functioning of equipment and rigs. In deeper waters the likelihood of a blowout increases, which would lead to oil pollution that could ruin the entire east coast of South Africa.
- To keep the drilling running smoothly, lubricants and hydrocarbons are used in the pipes. The resulting drill muds are very toxic and include benzene, arsenic, zinc, heavy metals and radioactive materials. Once the drill muds have done their work they are discarded overboard. They pollute the sea and smother what is living on the sea floor.
- Oil production also requires massive onshore infrastructure for transportation, storage, processing, and delivery and these cause onshore environmental problems for local communities. To transport gas to processing plants, pipelines and roads are often built through coastal wetlands and beaches, causing loss of habitat functionality and land. This results in loss of 'ecosystem services', such as protecting the land from the shore break and sea level rise, water purification, shoreline stabilization. A healthy coastline with abundant marine wildlife is crucial for industries reliant on tourism, fisheries and recreation.

Gas-to-Power powerships

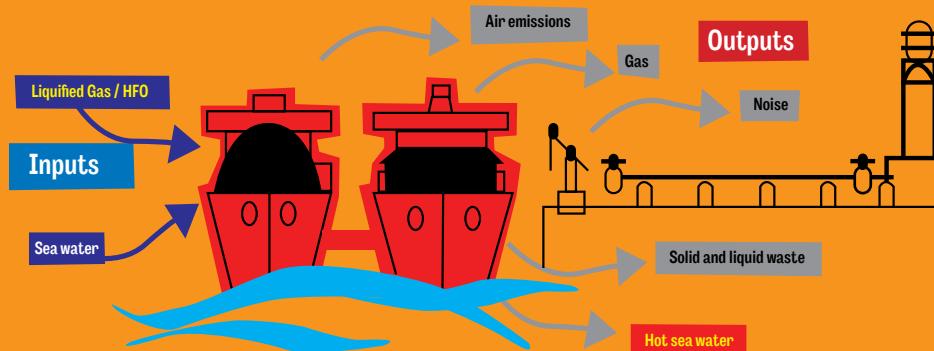
Powerships are ocean-going, electricity generators that could berth in our ports and supply the national power grid. They are driven by imported gas (Liquid Natural Gas – LNG) or Heavy Fuel Oil (HFO). Floating Storage Regasification boats heat onboard liquid gas supplies into a gaseous form before being pumped to the powerships for burning. These boats come with a number of risks – they heat sea water; heavy fuel oil has high levels of sulphur and vanadium and its nitrous oxide and carbon emissions pollute air and can cause respiratory disease.

Pipelines disturb ecosystems and properties and there is potential for gas leaks and explosions. Emissions in Richards Bay alone would generate about 19.5 million tons of sulphur dioxide emissions (per year) of carbon dioxide equivalent emissions over the next two decades, along with local emissions of about 1,354 tons of nitrogen oxides per year, 270 tons of PM10 particulate dust pollution and 54 tons of sulphur dioxide emissions (per year).

The impact on the land

- In 2004 Sasol built a pipeline from Pande in Mozambique to Secunda and began importing gas. The government plans to add over 2500kms to create a national pipeline. Every 187km gas will be flared out to take pressure off the system. Flaring pollutes the air, releasing nitrogen oxides and volatile organic compounds which directly harm human health and contaminate water. So far during the planning phase only seven towns on the route have been consulted.
- Fracking for the land to extract gas increases the risk of earth tremors and is a risk to water resources. Fracking uses large volumes of water and therefore contributes to water scarcity. Each well needs about 15 million litres of fluid. The fluid comprises water, sand and a small quantity of potentially harmful chemicals. The greatest risk is that the fracking fluid leaks or spills into the surface water used by people, livestock and the ecosystem. If this happens to the water table in the Karoo or the greater Zululand region it would have grave consequences for the region's ecosystems and the tens of thousands of people who rely on them.
- The pipeline route would pass through diverse ecosystems and human settlements as it winds its way down the coastline and then inland. This land is critical to the livelihoods of farming communities. People depend on their land for water, farming, grazing, and fishing. The pipeline would cross and interfere with agricultural and fishing areas that have supported people for hundreds of years.
- Local communities are often excluded from decision-making processes and land compensation. Conflict and consequent violence, especially against women is associated with extraction and pipeline projects.

- Air pollution
- Biodiversity loss (wildlife, agro-diversity)
- Food insecurity (crop damage)
- Global warming, Loss of landscape/aesthetic degradation
- Noise pollution
- Soil contamination
- Soil erosion
- Waste overflow
- Deforestation and loss of vegetation cover
- Surface water pollution
- Decreasing water (physico-chemical, biological) quality
- Groundwater pollution or depletion, Large-scale disturbance of hydro and geological systems



Grassroots resistance to oil and gas

Throughout Southern Africa there is growing grassroots resistance to oil and gas developments. Many different types of people are mobilising against oil and gas projects. This includes traditional communities, farmers, fisherfolk, local environmental justice organisations (EJOS), international EJOS, local scientists and professionals, recreational users, religious groups and concerned businesses and citizens are all mobilising against oil and gas projects.

So far, by lobbying the government, anti-fracking activists, farmers and environmentalists have managed to stall land-based fracking. In 2020, 47 appellants appealed against ENI and Sasol's application for exploratory digging offshore of Richard's Bay and Scottburgh. Some of these appellants are taking the case on review.

Join organisations making a difference!

Many of the companies interested in oil and gas mining in South Africa are international and do not have a history of caring about the Earth, or what happens to Africa.

Companies involved in offshore drilling include: ENI (Italy), Sasol, PetroSA, Shell (Netherlands), OK Energy (UK), Impact Africa (UK), Silver Wave Energy (Singapore), Exxon Mobile (USA), Cairn (India), Total (France); Tosaco (Australia), Anadarko (USA), Sunbird Energy (Australia), Rift Energy (Canada), New Age (UK), Sungu Sungu, Sezlyn, Sungu Sungu and Ricocure (United Arab Emirates).

Those which want to frack in the Karoo are Sasol, Shell, Falcon Oil and Gas (UK), Bundu Gas and Oil (Australia), Anglo American (UK), Statoil (Norway) and Chesapeake Energy (USA). In the North West, Central KZN and Free State are Rhino Oil and Gas (British Virgin Islands) and Renergen.

The eight proposed powerships for the ports of Richards Bay, Ngqura, Coega and Saldanha belong to Karpowership (Turkey).

iGas and Transnet are involved in the national pipeline project.



How can you get involved?

Take part in Public Participation Processes

Every South African has the right to be informed about projects affecting where they live before the project begins. Affected communities can refuse to give consent to proposed projects, and this right must be respected. So we can all:

- Ask questions about how our environment will be impacted.
- Ensure we are informed: Free, prior, informed consent (FPIC) must be obtained before any extractive operations can take place on our community's land.
- Ensure our rights to access communal lands and natural resources are respected.
- Ensure all participation processes are conducted in a language we can all understand. Insist on an objective translator.
- Call for companies to disclose the climate-related risks, or to use financial modelling to help inform decisions about whether fossil fuel extraction should take place.
- Watch tender processes carefully.
- If we have given consent, we must hold the companies, and their subcontractors, accountable to their promises.
- Call on government to tighten energy efficiency standards

Your voice counts

It's your future too

- We must reduce coal, oil and gas demand.
- We must integrate the true costs of extracting and processing raw materials into decision-making.
- We must place strict limits on where and how mining occurs.
- We must mine deposits at a slower pace to minimize environmental and socio-economic disruption and maximize benefit.
- We must be able to identify ecologically and culturally sensitive areas as 'no-go' zones. Peoples must be able to exercise free, prior and informed consent, and mining must be subject to participatory and democratic decision-making.
- We must place a real value on our precious geological resources, leaving them in the ground until they are truly needed and then extracting them with great care and respect.

Hope for the future

The disadvantages of fossil fuels will keep increasing and solving the challenge of climate change needs collective action. The alternative is renewable energy systems: such as using the sun, the wind and the waves to generate power.

Renewable energy systems, like solar and wind, have more benefits than drawbacks:

- Renewable energy projects create more jobs for local people and communities.
- Renewable energy won't run out.
- Renewable energy projects have lower operating and maintenance costs.
- Expanding renewables brings cheaper prices for consumers, saving money.
- Using renewable energy has health and environmental benefits.
- Using renewable energy increases our energy security and decreases our reliance on foreign energy or fossil fuels.
- As industries in the renewable energy sector prosper, so will local economies.



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