OCTOBER 2021

THE SKY'S LIMIT AFRICA

THE CASE FOR A JUST ENERGY TRANSITION FROM FOSSIL FUEL PRODUCTION IN AFRICA

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All monetary values in this report are stated in US dollars (USD).

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34 wind turbines produce 51 Mega Watts (MW), Adama, Ethiopia

EXECUTIVE SUMMARY

In May 2021, the International Energy Agency (IEA) released its first global scenario compatible with limiting global warming to 1.5 degrees Celsius (°C) and found that new oil and gas fields and coal mines are incompatible with this urgent climate goal. The IEA's report bolstered existing research from Oil Change International and many others showing a managed phase-out of global fossil fuel production is urgently needed to avoid the worst impacts of climate change.

The climate impacts, human costs, and economic risks of new oil, gas, and coal projects mean that **no new fossil fuel extraction projects should be approved – in Africa or anywhere.** This report makes the case for a gradual, equitable, and managed phase-out of fossil fuel production in Africa alongside a just transition to renewable energy and green economies. Phasing out fossil fuel production does not mean halting the use and production of fossil fuels in Africa overnight. Rather, it means starting widespread planning now to ensure there is time and resources for clean-up and for a just transition for the workers and communities that depend upon production.

The costs of this phase-out should not and cannot be borne equally: **Wealthy countries in the Global North most responsible for historic and current emissions must move first and fastest to phase out their fossil fuel production and pay their fair share for the global energy transition**.

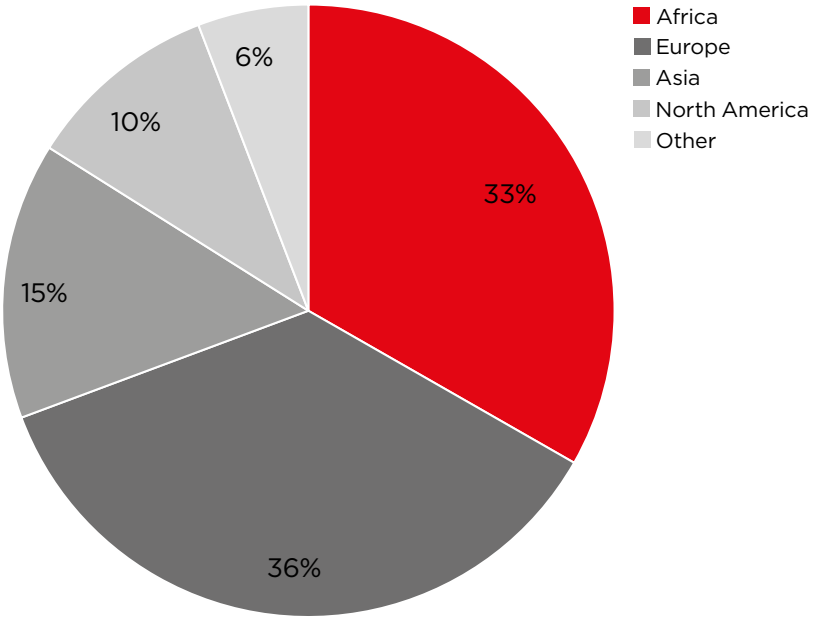
Poor contract terms, industry-friendly subsidy and royalty frameworks, debt traps, corruption, and the outsized ownership of fossil resources by multinational corporations have all meant fossil fuel production in Africa has not historically served as a vehicle for just development, energy access, or resource sovereignty. As the industry faces increasing systemic financial risks, the possibility that it ever could promote just development has faded. Governments choosing to pursue new oil, gas, and coal extraction now risk locking themselves out of a transition to renewable energy and other green sectors.

FOSSIL FUEL EXTRACTION ≠ DEVELOPMENT, JOBS, OR ENERGY ACCESS

We start by reviewing the impacts of fossil fuel production in Africa to date and assessing how increasing threats to the sector are likely to influence these outcomes.

- **Leaving people behind while rewarding international corporations:** Sixty percent of projected production over the next three decades will be owned by multinational corporations. Figure ES-1 shows that new projects will make this worse: when only the production from new projects is considered, 66% is owned by international corporations, with Total, Eni, ExxonMobil, and BP in the lead.

Figure ES-1: Who profits? Ownership of projected production volume from new, not-yet-approved oil and gas projects in Africa 2020-2050 by company headquarter location.



Source: Oil Change International analysis based on data from Rystad UCube.[1]

- **Failing to deliver on promised development dividends of jobs and energy access.** Per dollar invested, renewable energy creates 2 to 5 times more jobs than fossil fuels, and other green economy investments like conservation agriculture, climate adaptation, public transit and energy-efficient building retrofits provide 5 to 25 times more jobs.[2] Africa's extractive sectors as a whole employ less than 1% of Africa's workforce, with few permanent and high-paying jobs going to local populations. African countries also export almost all the oil, gas, and coal they extract. Both current and planned pipeline and port infrastructure have been designed to supply overseas markets rather than addressing energy poverty on the continent.

- **Endangering the health, jobs, and environments of frontline communities.** Communities near extraction have faced displacement, job losses as farmland, fisheries, or tourism prospects are damaged, serious health conditions, environmental degradation, human rights abuses, and increased violent conflict and militarization.

- **Compounding Africa's heightened climate vulnerability.** Africa has only contributed 2% of cumulative global emissions from 1890 to the present. Yet relative to other continents, it is projected to be hardest and fastest hit by climate change and to have the least resources to manage its consequences.

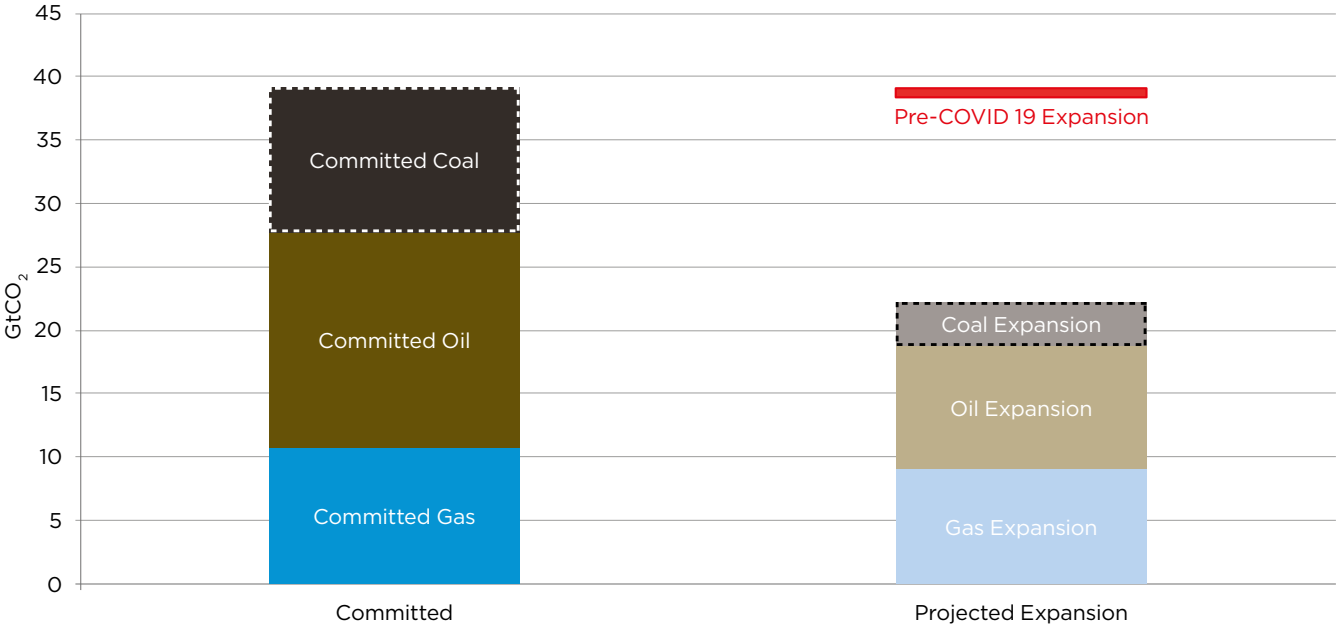
- **Locking in risky raw material exports while locking out renewable energy and other green sectors.** Africa holds 39% of the world's total renewable energy potential.[3] Continuing fossil fuel development as the industry faces unprecedented global headwinds is undermining Africa's prospects for unlocking these unparalleled solar and wind energy resources.

FOSSIL FUEL INDUSTRY PLANS ARE VOLATILE AND CARRY SYSTEMIC ECONOMIC AND CLIMATE RISKS FOR AFRICA

Next, we map overall projected fossil fuel production as well as production from new projects in Africa between 2020 and 2050, using a model from the industry consultancy Rystad Energy. We highlight that:

- **If the fossil fuel industry extracts the oil, gas, and coal projected for production in Africa in the next three decades, this will emit 62 billion tons of CO_2.** This is equivalent to 13% of the remaining carbon budget associated with a 50% chance of staying within a 1.5°C level of warming.

Figure ES-2: Projected emissions from oil, gas, and coal production in all African countries, by reserve category, 2020–2050, billion tons of CO_2



Source: Oil Change International analysis based on data from Rystad UCube.[4]

- **Instead of growing 32% by 2050 as expected prior to 2020, oil and gas production in Africa is now expected to decline by 24%.** This shrink in expected production was much greater than seen in other regions in the wake of the shocks of 2020, and much of the remaining production is at high risk of becoming stranded assets going forward. And while before coal production was relatively consistent to 2050, it is now expected to drop by at least 14%. 68% of projected oil and gas production from not-yet-committed projects 2020 to 2050 is for relatively costly deep-water, fracking, or extra heavy production at high risk of future stranding.

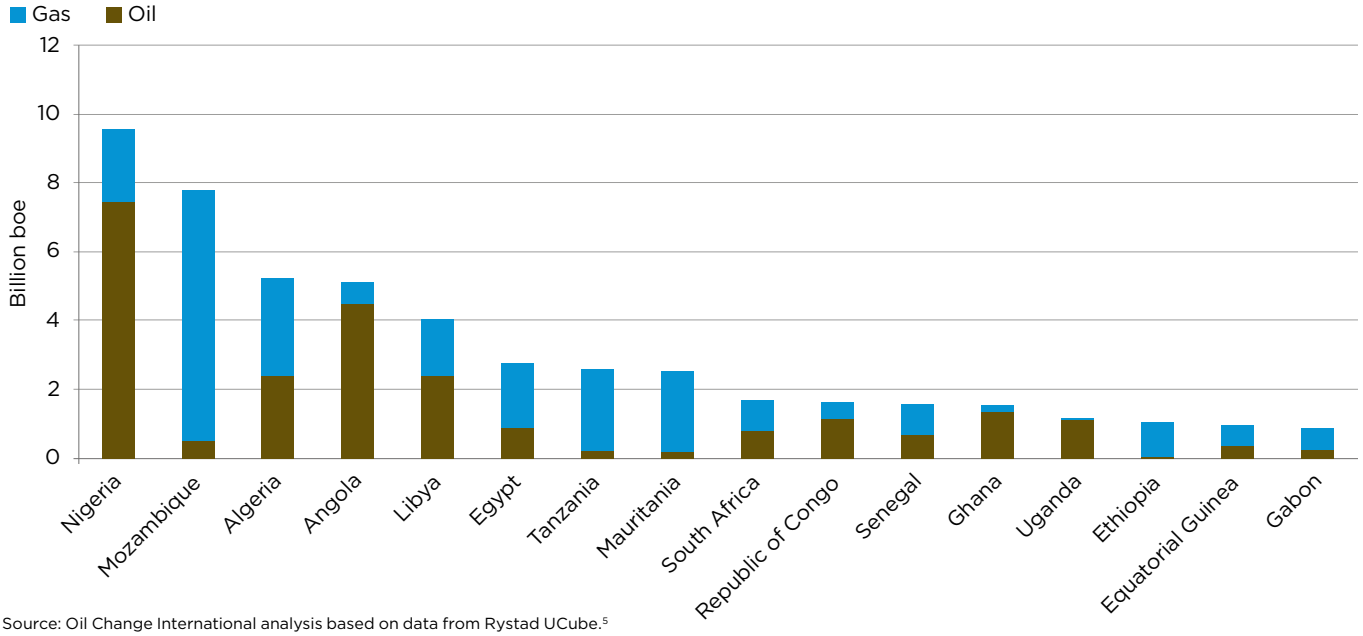
- **31% of production is in 7 "new entrant" countries with little or no existing oil and gas extraction.** Seven of the countries expected to be top 16 oil and gas producers in Africa from now through 2050 are newcomers to the sector (Mozambique, Tanzania, Mauritania, South Africa, Senegal, Uganda, and Ethiopia). Planned projects in these countries come with added costs of building new infrastructure and regulatory systems for extraction.

- **36% of Africa's future fossil fuel emissions are not yet locked in.** From 2020 to 2050, 46% of gas production, 36% of oil production, and 23% of coal production are projected to come from new projects that are neither in production nor under development currently. This means there are little or no costs to cancel them.

- **Industry is risking $230 billion in the next decade on new oil and gas projects that could become stranded assets, and $1.4 trillion by 2050.** These are the amounts that the fossil fuel industry anticipates investing in exploration and development of new, not-yet-approved oil and gas projects in the next 10 and 30 years. If decarbonization and rapid uptake of renewable energy continue, much of this investment could become "stranded," creating the need – but not the funds – for cleaning up environmental damages, overnight job losses, and shortfalls of government revenues.

The industry is being propped up in part by public finance from rich, polluting governments that are poised to fade. Between 2016 and 2019, Oil Change International data shows G20 countries provided $47 billion in public finance for fossil fuels in Africa, 3.7 times the amount provided to renewables. However, these trends are starting to shift. As the EU, UK, and US among other major economies move to phase out this international public finance, the economic prospects of oil, gas, and coal in Africa are poised to fall further behind other sectors — including already cost-competitive renewable energy alternatives.

Figure ES-3: Top 16 African countries for oil and gas production from new, not-yet-approved projects (2020–2050)



Source: Oil Change International analysis based on data from Rystad UCube.[5]

In this report, we also profile some of the impacts of fossil fuel development in specific countries and the people-powered movements fighting to stop them:

- **Senegal**'s Petro-Tim scandal, an example of resource rents ending up in private pockets and offshore accounts rather than public coffers and local projects (4.1, p. 41).
- **Ghana**'s take-or-pay clauses in oil and gas contracts that have caused debt to pile up and crowded out renewable energy (4.2, p. 41).
- The resistance to human rights abuses including the deadly repression of civil society as well as local environmental and health impacts in **Nigeria** (4.3, p. 41).
- Total's plans for the largest LNG development in Africa in **Mozambique.** This LNG development is combining with growing wealth disparity, climate impacts, and local environmental damages to fuel violent conflict (4.4, p. 42)
- The movement for a just transition from coal in **South Africa** (4.5, p. 43).
- The struggle against the economically and environmentally risky **Uganda-Tanzania** East African Crude Oil Pipeline (EACOP) (4.6, p. 44).

RECOMMENDATIONS

The year 2020 provided a snapshot of what an unmanaged decline could look like in the oil and gas sector globally. This process has hit the most vulnerable countries and communities hardest, including many of those heavily dependent on oil and gas exports in Africa. As environmental justice and other social movements in Africa have long contended, moving past fossil fuels provides an opportunity to build an energy system and wider economy that is local, equitable, and democratic instead.

Transitioning in a fair way will require local decision-making and consultation to allow communities to determine how the energy transition should look in their regions. However, we put forward some broad principles for what transitioning our communities to a renewable, fair, and regenerative economy must include: a phase out of fossil fuels, strong social movements and trade unions, just transition plans for and led by fossil fuel workers and impacted communities, economic diversification with people and planet in mind, renewable energy for all, fostering local ownership and democratic control of resources, food sovereignty, rejecting false solutions and green extractivism, fostering deeper regional cooperation, and ensuring polluters pay for the damages they have caused.

Building off the Communiqué of the 2020 Africa Energy Leaders' Summit and a framework for a globally equitable phase out of fossil fuels from Muttitt and Kartha (2020),[6] we make the following core recommendations to African governments:

- Where fossil fuel production is already an established industry:
    - Develop plans for a gradual and managed phase-out of existing fossil fuel extraction projects by 2050 at the latest, alongside a just transition for workers and communities.
    - Prioritize the phase-out of projects where human rights are most at risk, and where marginalized communities bear the most adverse impacts of fossil fuel production.
    - Implement industrial and social policies towards economic diversification through participatory planning, with an emphasis on low-carbon sectors that also build more resilient and equitable communities.
- In all countries, including where fossil fuel production is planned but not already established:
    - Rapidly scale up the installation of renewable energy – especially distributed renewable energy in off-grid areas – to achieve universal energy access.
    - Stop licensing and approvals for new fossil fuel projects.
    - Pursue rapid development of Africa's unparalleled solar and wind energy resources to achieve universal energy access before 2030.

Throughout this report, we emphasize that wealthy country governments must do their fair share as well. We provide recommendations that would ensure they (a) move first and fastest in phasing out fossil fuel production, (b) cease fossil fuel finance and other actions hindering the just transition of countries in Africa, and (c) pay to support just transitions from fossil fuels throughout Africa and across the Global South countries in line with their historic and ongoing responsibility for the climate crisis.

GLOSSARY

Frontline communities: Communities closest to or most negatively affected by fossil fuel extraction. In Africa and around the world, these are disproportionately Indigenous and marginalized populations.

Just Transition: A shift from an extractive, fossil fuel-based economy to a renewable, regenerative economy. This shift must employ an inclusive and transparent planning process, address existing economic and social inequalities, and ensure workers, communities, and the climate are protected.

Equitable and managed phase-out: A systematic approach to wind down fossil fuel production in a just manner. Generally, this will mean governments stop approving and licensing new fossil fuel projects, existing fields and mines are depleted or retired over time, and economy-wide planning for a just transition for workers and communities is pursued.

Committed production: Production associated with oil, gas, or coal projects that are already operating or under development. Projects "under development" have received a final investment decision and all government approvals, meaning there are considerable legal, economic, and political barriers to stopping them.

New production: Production associated with oil, gas, or coal projects that are projected by industry but not yet approved. This includes projects that are already discovered and seeking a final investment decision and/or government approval, as well as production associated with projects still in discovery or projected by industry.

Climate vulnerable: Based on physical, social, economic, and environmental factors, a community or vulnerable population that is susceptible to the adverse effects of climate change, including climate variability and extreme conditions

New entrant producers: Countries with little to no existing fossil fuel production where industry and/or government is planning to start large-scale development.

Established producers: Countries with existing fossil fuel production.

Stranded assets: Stranded assets are any assets (for example, a fossil fuel investment, a piece of equipment, an oil license) that at some time prior to the end of its expected economic life are no longer able to earn a profit due to changes in the market, industry, or regulatory environment. Stranded assets can also come with **stranded or "unfunded" liabilities**, wherein the company abandons its obligations to cover the costs of decommissioning and clean-up of a fossil fuel project, leaving governments and taxpayers to pick up any shortfalls.

Carbon budget: The amount of carbon dioxide countries can release into the atmosphere before the average global temperature is expected, according to climate models, to warm beyond 1.5°C compared to pre-industrial levels – the increase set by the goals of the Paris Agreement.

ABBREVIATIONS AND ACRONYMS

°C	degree(s) Celsius
CCS	carbon capture and storage
EACOP	East African Crude Oil Pipeline
ESIA	Environmental and Social Impact Assessment
GDP	gross domestic product
$GtCO_2$	gigatons of carbon dioxide
GW	gigawatt
IEA	International Energy Agency
IMF	International Monetary Fund
IPCC	Intergovernmental Panel on Climate Change
IRENA	International Renewable Energy Agency
Kboe/d	thousands of barrels of oil equivalent
cf	ubic feet
LNG	liquified natural gas
LPG	liquefied petroleum gas
MTce	metric tons of coal equivalent
OPEC	Organization of the Petroleum Exporting Countries
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNEP	United Nations Environment Programme
UNESCO	United Nations Education, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change

1. INTRODUCTION

A growing chorus of African leaders, activists, advocates, policymakers, organizers, scholars, and citizens are demanding that governments phase out fossil fuel production in Africa and commit to supporting just development and an equitable transition to a clean energy future. This report builds upon the 2020 Africa Energy Leaders' Summit, whose Communiqué from 27 organizations, including Oil Change International, called on African governments **"to put an end to fossil fuel development; to manage the decline of existing production of oil, gas, and coal; and to rapidly initiate a transition to clean and safe renewable sources of energy that fully supports access to energy for those who currently lack it."**[7]

To make the case for African fossil fuel producers to cease new fossil fuel project approvals and pursue a just transition to renewable energy, we have structured this report into the following chapters:

This introduction, **Chapter 1**, provides background on climate impacts and the "production gap" – the discrepancy between planned expansion of oil, gas, and coal production and allowable global emissions if the planet is to remain under 1.5°C of warming above pre-industrial levels. It provides context on the economic risks of building new fossil fuel projects and demonstrates how these risks have intensified under the oil price crash and the coronavirus (COVID-19) pandemic. Finally, it establishes the imperative for a globally equitable approach to phasing out fossil fuels.

Chapter 2 identifies four ways in which fossil fuel extraction in Africa has failed local populations, economies, and the environment by: (i) failing to deliver the promised development dividends of shared revenues, decent jobs, and energy access; (ii) leaving people behind while rewarding corporations and foreign financiers; (iii) exacerbating the environmental destruction and human rights abuses suffered by frontline communities; and (iv) compounding the region's heightened climate vulnerability, unleashing emissions and eroding resilience. The market volatility and systemic economic threats to the sector (detailed in Chapter X) only exacerbate these impacts.

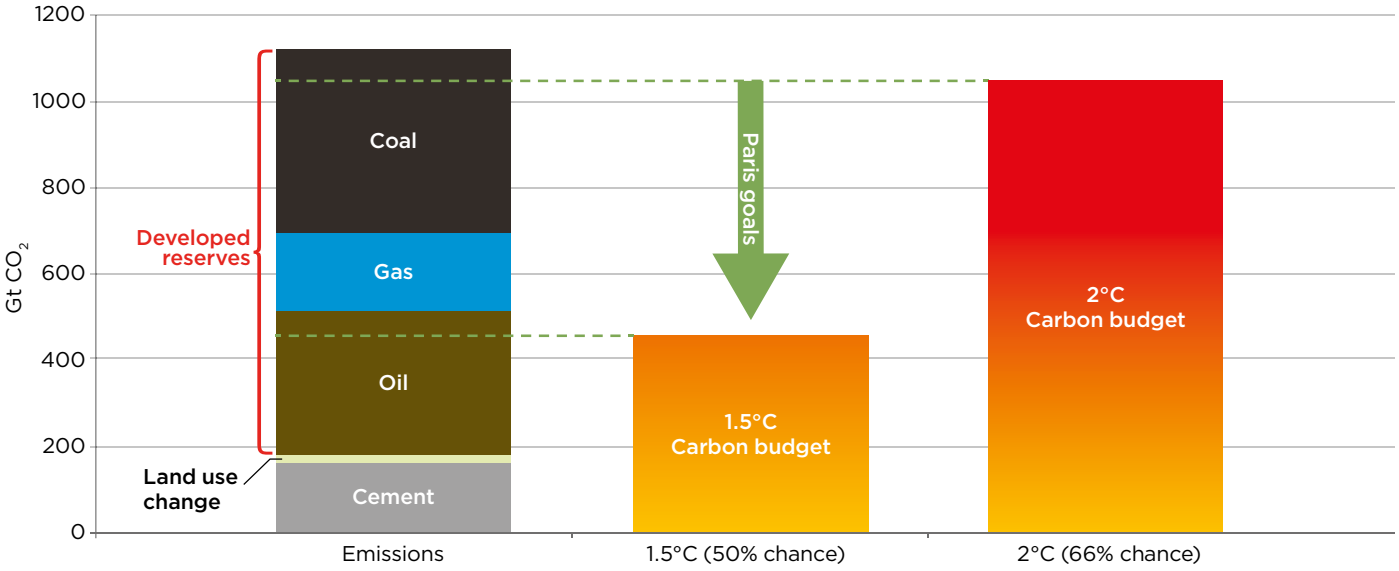
Chapter 3 provides an overview of plans for oil, gas, and coal extraction in Africa from 2020 to 2050. We use industry projections to map overall expected fossil fuel production as well as expansion from new projects. We focus on the 16 countries projected to have the most overall production and the most production from new oil, gas and coal developments in this period, grouping them into small and large-scale established producers as well as "new entrants" to the industry. We also detail the volatility of these projections in the wake of the market shocks of 2020, and the risks of stranded assets and unmanaged decline going forward.

Chapter 4 covers six examples from major existing or prospective producers in Africa that illustrate the risks, impacts, and resistance to continuing to approve new fossil fuel projects in the coming decades.

Chapter 5 collects research from African civil society activists and scholars to imagine the way forward, making recommendations for governments in Africa and internationally. It lays out a framework for an equitable approach to a managed phase-out of fossil fuels, a just transition for fossil fuel-dependent workers and communities, and a rights-respecting path to the development of accessible, clean energy in Africa.

An oil spill in Mauritius, 2020 © International Maritime Organization (CC BY 2.0)

Figure 1: Carbon dioxide (CO_2) emissions from already-developed global fossil fuel reserves, compared to carbon budgets within range of the Paris Agreement goals



Source: Oil Change International analysis based on data from Rystad Energy, IEA, the World Energy Council, and the IPCC.[8]

TOO MUCH OIL, GAS, AND COAL ALREADY IN PRODUCTION

The last decade was the hottest on record and the world is warming faster than predicted.[9] Worse, there is nothing fair about the distribution of these impacts. Africa has only contributed two percent of cumulative global emissions from 1890 to the present.[10] Yet relative to other continents, Africa is poised to be the hardest and fastest hit by climate change, even as it possesses the fewest resources to manage the impacts.[11]

As summarized in the Intergovernmental Panel on Climate Change (IPCC) Special Report on Global Warming of 1.5°C, the "impacts of [even] 1.5°C of warming would disproportionately affect disadvantaged and vulnerable populations" with the worst impacts hitting "agricultural and coastal dependent livelihoods, Indigenous people, children and the elderly, poor laborers, [and] poor urban dwellers in African cities."[12] These consequences are neither hypothetical nor far-off. In 2019, Mozambique, Malawi, and Zimbabwe, Seychelles, Comoros, Mayotte, Madagascar, and Tanzania were hit by cyclones Idai and Kenneth. These storms of unprecedented force caused extensive death and destruction.[13] Climate change is increasing the intensity of such storms, as well as droughts, ecosystem collapse, insect infestations, and many other natural disasters.[14] Unless emissions are curbed, such catastrophic events will become commonplace, and wider ecological collapse could be triggered. Section 2.4 further summarizes the scope and scale of climate impacts expected and already underway on the continent.

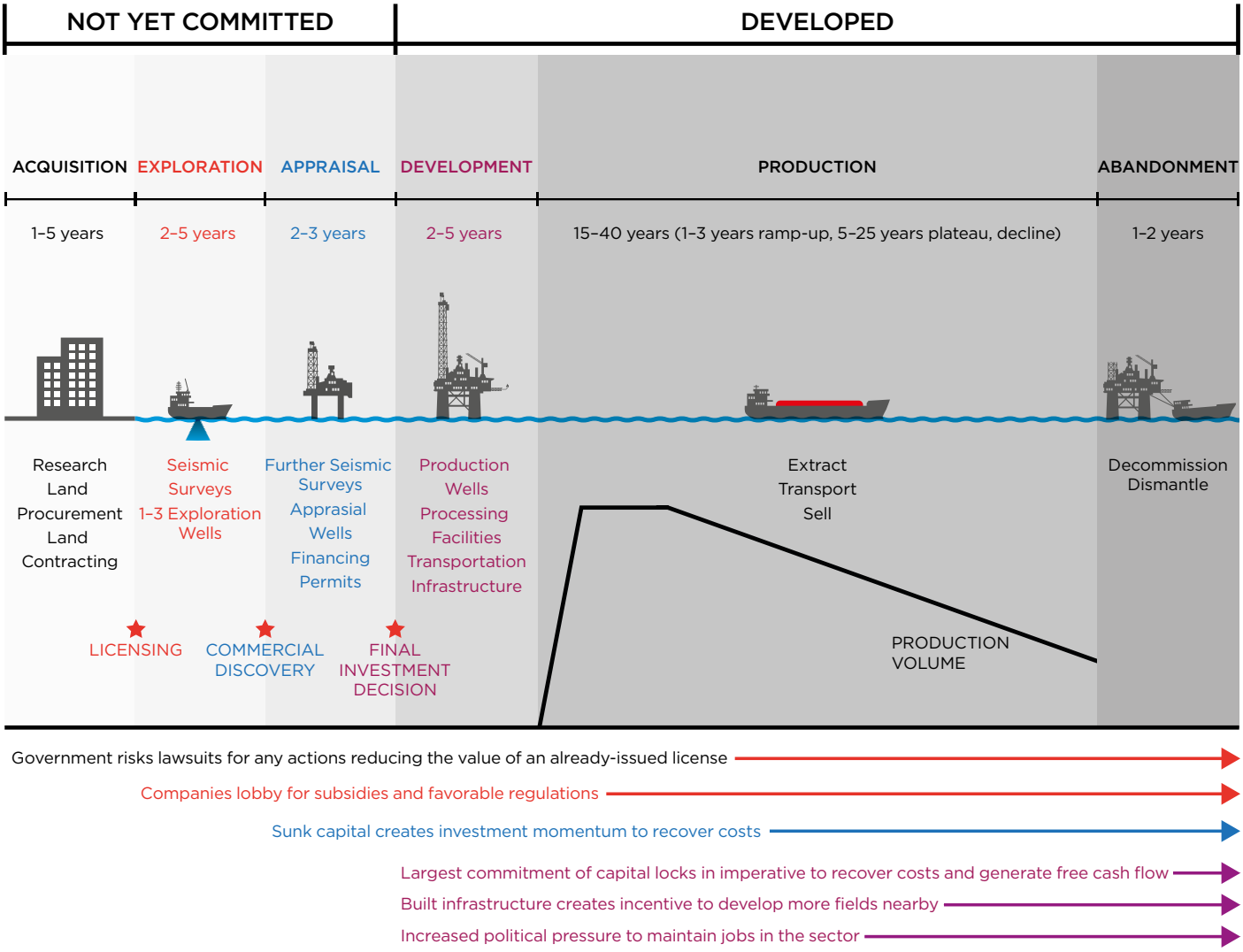
Continued fossil fuel extraction to supply the consumption of a relatively small number of wealthy people in mostly Global North countries has created a planetary imbalance that jeopardizes the health and welfare of most people on Earth. Meanwhile, fossil fuels have mostly enriched those countries and companies that were firstcomers to the fossil fuel industry, placing the greatest economic and political power to mitigate climate change and address its adverse impacts in the hands of those actors most responsible for – and most heavily invested in – its causes. The disconnect between responsibility for global warming and vulnerability to its impacts is at the heart of the injustice of the climate crisis and must be at the center of climate solutions.

Using data from the IPCC and the energy consultancy Rystad Energy, previous research by Oil Change International has found that the carbon dioxide emissions from burning the oil, gas, and coal in already-operating fields and mines globally would push the world beyond 1.5°C of warming and would exhaust even a 2°C carbon budget (see Figure 1).[15] Even if coal were phased out overnight, emissions from oil and gas fields already under development would push the world beyond 1.5°C, into catastrophic climate change. The implication is clear: we cannot afford further fossil fuel expansion, and we must rapidly decommission some existing projects early to achieve a 1.5°C trajectory.

The need to wind down fossil fuel production has been further underscored by the IEA's first 1.5°C-aligned scenario, which was released in May 2021. Past IEA models have been a shield for governments, banks, and industry to claim that their support for fossil fuel expansion is consistent with the Paris Agreement. Breaking from this, their 1.5°C-aligned scenario showed new oil and gas fields are not compatible with meeting this goal, and that governments need to urgently step up their ambition in phasing out fossil fuels.[16] Indeed, the 2019 and 2020 Production Gap Reports from the United Nations Environment Programme (UNEP), Stockholm Environment Institute, and others show that oil and gas production globally needs to decline by about four percent and three percent respectively every year between 2020 and 2030 to meet the 1.5°C goal.[17]

In addition to the reserves associated with already-committed projects shown in left hand column in Figure 1 above, new fossil fuel projects are still being planned. Prior to the March 2020 oil price crash, industry data projected at least $5 trillion globally in investments in new oil and gas exploration and production over the next decade (2020-2030), and $714 billion in investment in coal across the supply chain from 2019–2030.[18] While these projections are now more volatile and uncertain, the fossil fuel industry is doubling down on lobbying to safeguard these expansion plans and attract as much of this projected investment as they can.[19] If they are allowed to continue to expand production, even if at a slower pace than earlier projections, it will set the planet on course for out-of-hand warming well above 2°C.

Figure 2: Lifecycle of a typical oil and gas field, showing the kinds of carbon lock-in that usually occur at each stage

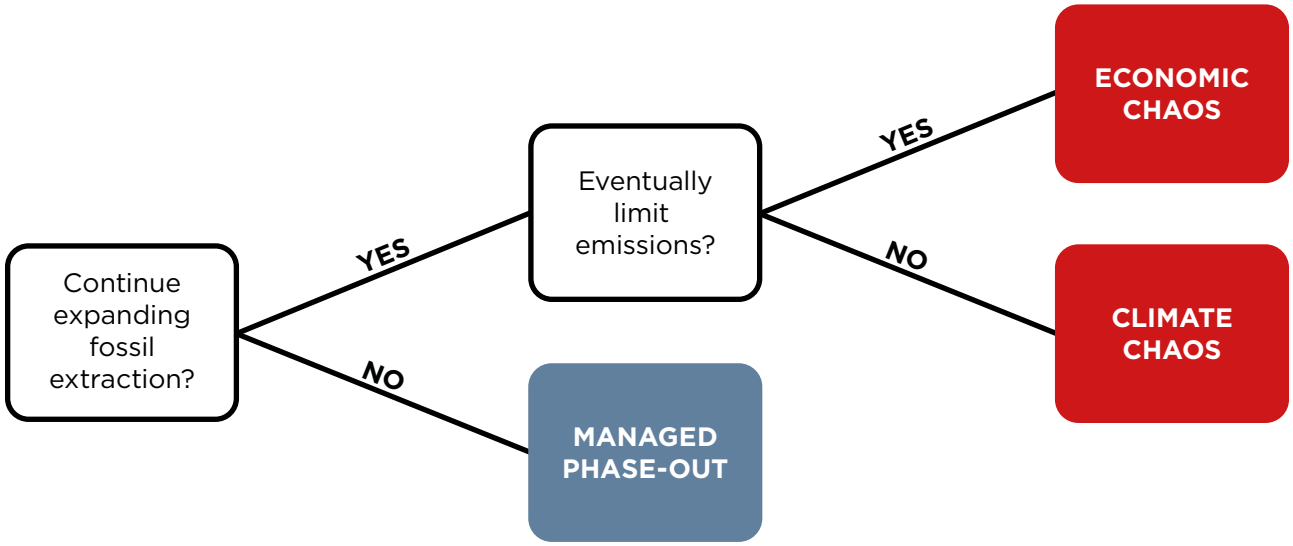


Source: Oil Change International

WHY FOSSIL FUEL EXTRACTION MATTERS

Avoiding the most severe climate change impacts will require a just transition away from fossil fuels across the supply chain. Most climate policy work focuses on the 'demand side' of this problem – building up renewable energy, energy efficiency, and other solutions to offset the end uses of fossil fuels. This is important, but this report focuses on the more-often neglected problem of fossil fuel production (the "supply side"). Supply side action is critical because once a fossil fuel project is built, it "locks in" the associated carbon dioxide emissions, impacts, and investment over the long lifetime of the infrastructure, which is usually 20 to 40 years.[20] Consequently, decisions made now about potential fossil fuel developments will shape emissions decades into the future. The early retirement of fossil fuel production is possible, but much more difficult to effectuate given the barriers of legal, economic, and political lock-in. Figure 2 shows the different kinds of lock-in that accumulate over the lifecycle of an oil and gas field (a process which is similar for a coal mine).

Figure 3: Logic tree of continued fossil fuel production vs. a managed phase-out



Source: Oil Change International

TO AVOID CLIMATE AND ECONOMIC CHAOS, WE NEED AN EQUITABLE AND MANAGED PHASE-OUT OF FOSSIL FUEL PRODUCTION

The prospect of economic collapse for production-dependent regions in Africa provides additional rationale for a swift energy transition. As Figure 3 below outlines, continued fossil fuel production means either facing severe and irreversible climate impacts if new projects go ahead (climate chaos) or an unmanaged decline of the industry with stranded assets, unfunded clean-up, job losses, shortage of government revenues, and cascading losses across the economy.[10]

An equitable and managed phase-out of fossil fuel production and a just transition to a clean energy future provides future provides an alternative to climate chaos or an unmanaged decline of fossil fuel use. It would avert these outcomes by limiting the worst impacts of climate change, maximizing the likelihood that fossil fuel companies will pay for damages, and ensuring time for planning to protect impacted communities.
In short, a "managed phase-out" is a systematic approach to wind down fossil fuel production in a just manner – with different timelines and speeds according to wealth and historic responsibility (see Section 5.2 for a full set of principles).
It does not mean shutting down fossil fuel production or use overnight. Ideally, governments would cease approvals and licensing for new fossil fuel extraction projects and retire existing fields and mines over time. This would free up resources and time economy-wide planning for a just transition for workers and communities, and for gradual transition planning for downstream grids already using fossil fuels.

> Overall, the petroleum civilization has seduced humanity to think that there are no viable alternatives to crude oil and its many derivatives. Feeding this myth means accommodating unconscionable ecological degradation, including climate change, as a minor price to pay. However, all is not lost. The petroleum civilization will have an end. And that end is near. It is for humans to decide if we want an orderly transition or a haphazard and cataclysmic one. The end is inevitable.[21]
> *Nnimmo Bassey, Director of Health of Mother Earth Foundation and Right Livelihood Laureate*

Of course, in practice, a combination of the three outcomes in Figure 3 is likely. Climate impacts have started to unfold, the fossil fuel industry is already facing some stranded assets and signs of financial weaknesses, and some jurisdictions are taking steps toward an equitable and managed phase-out. The task ahead for the governments is to secure a managed phase-out ambitious enough to be in line with a 1.5°C-aligned trajectory that is not heavily reliant on false solutions like carbon capture and storage (CCS), and to ensure this is pursued in a globally and locally just manner.

THE GLOBAL FOSSIL FUEL INDUSTRY IS ALREADY SHOWING SOME SIGNS OF SYSTEMIC FINANCIAL DECLINE

Changing regulatory environments, climate policy implementation, and the increasing competitiveness of renewable energy sources are lowering current and projected demand for fossil fuels globally.[22] Market forecasters anticipate that electric vehicles will be cheaper to buy and run than combustion engines by the mid-2020s. This is already dramatically true when mobility needs are met through electrified mass public transit instead – with the costs per person being many times less than for fossil-fueled cars.[23] International Institute for Sustainable Development found that by end use, most gas used in the Global South has renewable-based alternatives that are already cheaper.[24] The vast majority are expected to be cheaper within a few years, with small exceptions for industrial feedstocks and cement that make up less than 10 percent of gas use. For the largest end use – off-grid and grid-based electricity – renewables are already the least expensive option, with costs continuing to fall.[25]

The climate justice movement is intensifying these pressures. It has helped spur policies to accelerate the adoption of renewable energy and other climate

solutions. On the supply side, growing efforts to end subsidies and finance for fossil fuels and to block new fossil fuel infrastructure increasingly impact the decisions of policymakers and financiers and contribute to the devaluation of the dirty energy projects.[26] In the face of these political and economic pressures, some fossil fuel projects have already become stranded assets or even liabilities. All new and some existing oil, gas, and coal projects are at risk of this outcome.[27] It is clear that new fossil fuel projects are now a highly risky proposition, not just for the climate but for jobs, government revenue, and a stable energy supply.

COVID-19 AND THE OIL PRICE CRASH HAVE FURTHER DESTABILIZED THE FOSSIL FUEL INDUSTRY'S PROSPECTS

The industry's long-term structural decline has combined with two new factors in 2020 to destabilized the oil market: an oil price war among producers and demand reduction due to the COVID-19 pandemic.[28] These impacts also destabilized the larger fossil fuel industry, providing a preview of how an unmanaged, overnight shut-down or collapse of the industry may occur.

Global annual oil, gas, and coal consumption for 2020 declined eight percent, three percent, and seven percent respectively compared to 2019.[29] This intensified an already-downward trajectory in fossil fuel companies' financial performance, with a record-breaking $145 billion in asset write-downs from major oil and gas companies, the layoff of at least 400,000 permanent oil and gas workers worldwide, and pay cuts for a third of the sector.[30]

The destabilization of the industry from COVID-19 and the oil price crash also caused unexpected crashes in government revenues for jurisdictions dependent on fossil fuel production. Oil and gas-producing countries in Africa faced greater shocks than their peers in 2020 and slower subsequent recoveries to date because of higher dependency on extraction for government revenues and less flexibility to provide economic stimulus packages to counterweigh the impacts.[31] In their 2020 Africa Oil & Gas Review, PricewaterhouseCoopers analysts estimated Nigeria, Algeria, Libya, and Egypt could each be facing $20 billion in lost oil export revenues that year.[32]

BOX 1: FOSSIL GAS IS NOT CLEAN, CHEAP, OR NECESSARY FOR DEVELOPMENT

Fossil gas, or natural gas, is often promoted as a "bridge fuel" that can help reach climate goals and contribute to reliable electricity grids. This is a myth because:

1. **Gas breaks the carbon budget:** As shown in Figure 1, the carbon dioxide emissions associated with the oil, gas, and coal in the world's extraction projects that currently produce or are under construction alone would overshoot a likely carbon budget for 1.5ºC. Figure 1 also does not take methane emissions along the gas supply chain into account, which can make gas more climate-damaging than coal.[33] Further development of untapped gas reserves, anywhere in the world, is inconsistent with the climate goals in the Paris Agreement.
2. **Coal-to-gas switching and CCS do not cut it:** Climate goals require the entire global energy sector to decarbonize by mid-century. Replacing coal plants with new gas plants will not cut emissions by nearly enough, even if methane leakage is kept to a minimum.[34] Energy models that project continued gas production while meeting climate goals rely on unrealistic levels of carbon capture and storage (CCS), a technology that is much more costly than renewable energy alternatives and remains unproven at scale.[35] Most scientists and practitioners recommend reserving CCS or other carbon dioxide removal technologies for the hardest-to-decarbonize sectors.[36]
3. **Gas is not needed for reliable power generation or other uses:** The majority of gas consumption is associated with uses that already have cost-competitive clean alternatives in most countries and circumstances.[37] For other uses of gas, costs of alternative new technologies are falling, with competitiveness expected to be achieved in the 2020s or 2030s. Almost half of gas use is for power generation, where industry lobbyists argue electric grids will require it to balance energy supply and use.[38] Wind and solar require balancing, but gas is not the only, nor the best, resource available for doing so. In many circumstances, battery storage is already competitive with gas plants designed for this purpose (known as "peakers") and costs are falling rapidly. Wind and solar plants coupled with battery storage are also becoming a competitive, "dispatchable" source of energy. Managing high levels of wind and solar on the grid requires optimizing a wide range of technologies and solutions, including battery storage, demand response, and transmission.[39]
4. **Gas investments often displace lower-cost clean alternatives:** Investments in gas pipelines, LNG terminals, and compressor stations are usually made with the assumption that they will operating for 40 or more years. In Egypt, Mozambique, Algeria, South Africa, Namibia, Botswana and Ghana, among many others, gas infrastructure, long-term gas contracts with poor terms, and the political incumbency of the gas industry have worked in combination to crowd out renewable energy investments.[40]
5. **Gas does not deliver on jobs, energy access or government revenues:** As we detail in Chapter 2, the gas industry – like oil and coal – has consistently over-promised and under-delivered on development benefits. This situation stands to get worse as decarbonization creates more stranded gas assets.[41]
6. **Fossil gas has a human cost:** Fossil gas infrastructure and use is often associated with negative health impacts and local environmental damage.[42] Building new fossil gas infrastructure will stand in the way of a just transition for workers and communities.

In this report, we recommend a managed phase-out of gas (and oil and coal) production. For this to be successful and equitable, this will require adequate finance for grid reliability and renewable energy, as well as open sharing of technology and knowledge. Global North countries must commit to doing their fair share on both fronts. Furthermore, a realistic phase-out will not occur overnight. Governments should cease approvals for new gas production, and make plans to gradually phase out gas use in electricity grids or elsewhere over the coming decades.

2. HOW FOSSIL FUEL EXTRACTION HURTS COMMUNITIES AND UNDERMINES DEVELOPMENT

This chapter reviews the human and environmental costs of fossil fuel production in Africa to date, finding that extraction projects:

- **Leave people behind while rewarding corporations and overseas financiers**, due to poor contract terms, shrinking royalties, debt traps, and ownership of production by multinational corporations.
- **Fail to deliver on promised development dividends** of jobs and energy access.
- **Exacerbate environmental and social harms** suffered by communities on the frontlines of extraction and climate change.
- **Compound the region's heightened climate vulnerability** by increasing emissions and eroding resilience.

As we discuss in the next chapter, plans for new oil, gas, and coal projects are poised to further lock in fossil fuel investments while locking out renewable energy investments, creating risks of stranded assets and unfunded clean-up. As fossil fuels become less viable and producers rush to recover what they can of their investments, they cut costs at the expense of people and the environment. Consequently, the shortfall in delivering on economic benefits and the harms of fossil fuel production are both set to grow.

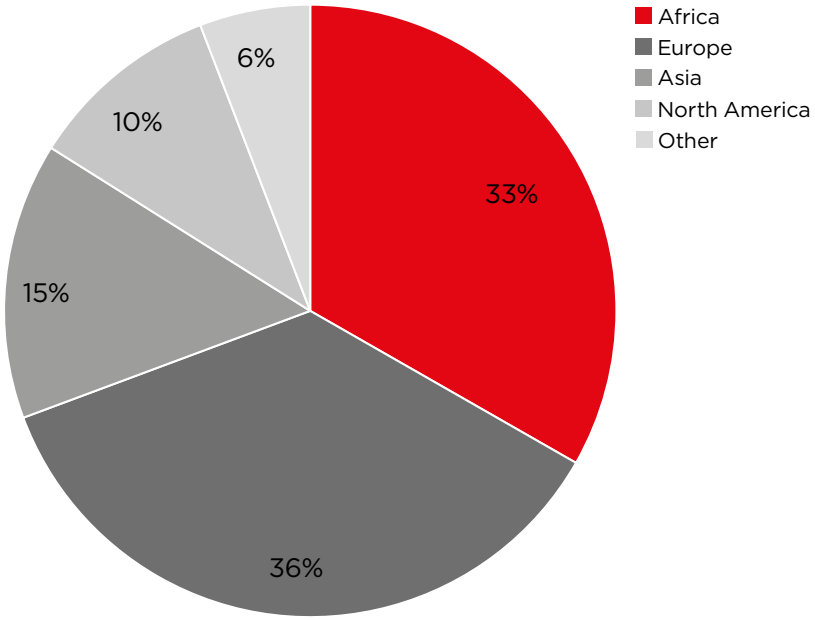
> *"Extractive companies ... realize extremely high profits through rapacious appropriation of resources and the externalization of costs. Often, companies gain their concessions through coercion, bribery, and corruption. When resistance does spring up, they rely on a plethora of strategies to neutralize these, including co-opting movement leaders, dividing populations, and undermining struggles through social and environmental responsibility programs. Failing that, they pressure the states where they operate to violently repress resistance."*
> Hamza Hamouchene, Transnational Institute. [45]

2.1 FOSSIL FUEL PROFITS ARE NOT FLOWING TO COMMUNITIES OR PUBLIC GOODS

The fossil fuel industry markets extraction as a source of public revenues, jobs, and energy access. But the experiences of Africa's oil, gas, and coal producers tell a different story, a story of socialized risk and privatized rewards. Fossil fuel extraction has overwhelmingly generated private riches concentrated in the Global North rather than public revenues for Africans, while creating conditions for greater corruption and debt loads.

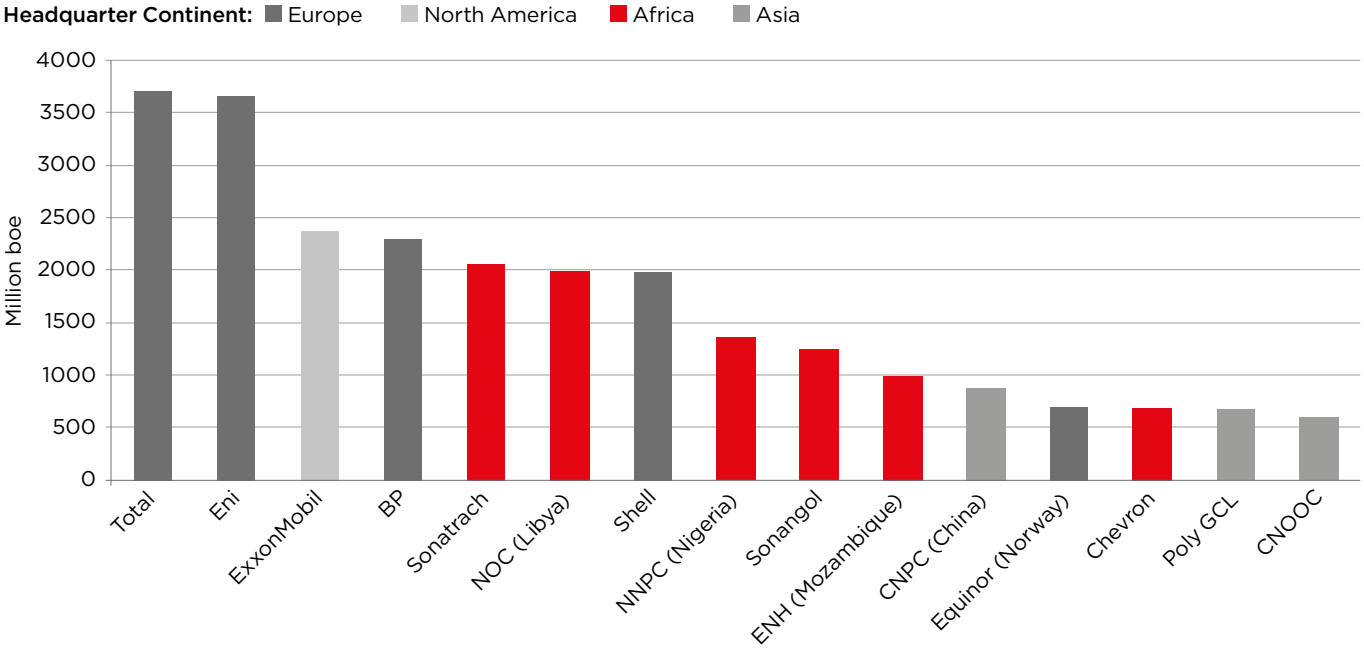
Multinational corporations own a growing majority of production: While the public bears the risks of fossil fuel development, multinational corporations headquartered outside Africa reap the rewards of oil and gas extraction. European, Asian, and North American companies control 60 percent of the projected production in Africa from 2020–2050.[43] Where there is ownership by African countries, this is heavily concentrated in a few countries – with Algeria, Libya, Nigeria, and Angola's state-owned companies own 94 percent of the total share held by African companies. In Algeria, Angola, and Nigeria, state-owned companies have undergone various degrees of liberalization since the 1990s, transferring fewer profits for public spending and more to multinational corporations and domestic elites.[44] In contrast, multinational corporations hold most of the production in prospective "new entrant" fossil fuel producing countries, such as Mozambique and Tanzania.

Figure 4: Who profits? Ownership of projected production volume from new, not-yet-approved oil and gas projects in Africa 2020-2050 by company headquarter location.



Source: Oil Change International analysis based on data from Rystad UCube.[46]

Figure 5: Top 15 companies for projected oil and gas production from new, not-yet-approved projects in Africa, 2020–2050



Source: Oil Change International analysis based on data from Rystad UCube.[47]

The share of production held by overseas companies is growing: multinational corporations own 66 percent of the production from new, prospective projects slated for construction in the next three decades. Respectively, Total, Eni, ExxonMobil, and BP are projected to build the most new production (Figure 5).

Poor contract terms: The contract and fiscal terms governing the split of earnings between fossil fuel companies and governments has not favored African governments, leaving them to bear the risk of price fluctuations or other uncertainties. This trend has worsened as many countries' sectors underwent liberalization over the past decades and as the industry has faced new decarbonization pressures.[48] Since the oil price crash of 2014 and the subsequent dramatic drop in investment in oil and gas sector on the continent (see Figure 17), the conventional wisdom from financial advisors and fossil fuel industry analysts has been that countries in Africa need to offer more favorable fiscal terms – including lower royalties, profit shares, and required state ownership stakes – to try to attract foreign capital back.[49] The industry is also rushing to produce more oil and gas while money can still be made. In recent years as the outlook for fossil fuels has become riskier, many companies have attempted to consolidate power and exert more pressure on countries to soften fiscal terms, an activity which intensified during COVID-19.[50]

As a result, many countries in Africa seeking to woo investors have offered terms that are unfavorable to the public. These countries often do not receive any corporate tax payments until years after oil and gas production begins, due to

Orlando Power Station Towers, Soweto, South Africa. © Anagoria, Wikipedia Commons (CC BY 3.0)

contract provisions that allow developers to recuperate costs before any taxes are paid.[51]Furthermore, production-sharing and concession agreements typically contain unfavorable terms for host governments, which bear the financial risk associated with the project and incur debt and other costs associated with ancillary infrastructure developments. Long-term agreements, with a duration of 10 to 30 years, continue to dominate the oil and gas market, and are often underscored by clauses that operate to freeze the right of host states to amend local laws that benefit the public.[52] For example, "take or pay" clauses require the purchaser to commit to buy a contractually agreed quantity of the oil or gas, or pay the corresponding amount often at an agreed minimum price (or a price pegged to market conditions), as is the case with Ghana (see Section 4.2).[53] All too often, governments sign these clauses without ensuring that sufficient local demand and/or distribution infrastructure will enable the use of the fossil energy they agree to buy.

Corruption and conflict divert royalties from public coffers: When resource rents do make their way into the public budget, countries must spend funds effectively to reduce poverty and promote welfare. Unfortunately, governments that rely heavily on natural resources like oil, gas, and coal for their revenues rarely equitably distribute the benefits of resource extraction to the public. This "rentier state" phenomenon has been extensively documented.[54] A 2017 World Bank paper found that after major natural resource discoveries, in the short-term, countries experience lower growth rates than prior to the discovery.[55] A 2013 working paper published by the African Development Bank found, based on data covering the period 1955 to 2008, that "oil wealth is statistically associated with a lower likelihood of democratization."[56]

Secrecy, corruption, and conflict remain persistent problems across the oil and gas industry everywhere it operates, not just in Africa. A 2019 report by the Natural Resource Governance Institute assessing natural resource governance in 28 African countries that produce oil, gas and minerals concluded: "The overall picture remains that the more dependent a country is on natural resources, the less transparent and accountable the management of the extractive sector."[57]

The corruption associated with the oil, gas and coal sectors is not simply about African elites pocketing public resources – although that is part of the story.[58] The structural opportunities that the fossil fuel industry creates for multinational companies and individuals to siphon off wealth through tax evasion and avoidance, transfer pricing, and other forms of illicit financial flows have fostered corruption in many – if not all – of the jurisdictions the industry operates. In short, natural resources provide countries with opportunities to greatly expand the volume of total trade, which correlates with the volume of illicit financial flows. Multiple studies have shown that illicit financial outflows are particularly concentrated in oil-exporting countries in Africa, and that a statistically significant relationship exists between oil exports and illicit financial flows.[59] Researchers posit several reasons for this phenomenon, including the technical nature of the industry (which can provide cover for illicit transactions and transfer pricing), the concentration of ownership and lack of competition in the capital-intensive oil sector (which tends to create unaccountable monopolies), and the heightened incidence of corruption

In Nairobi, the youth lead a march and climate strike to urge world leaders to take meaningful steps to address this crisis with the urgency it requires. Joel Lukhovi © 350.org (CC BY-NC 4.0)

in resource-rich countries, particularly where the line between public and private ownership is blurred in joint ventures.[60]

The magnitude of the illicit financial flows is staggering, though strong sector-level data is not available. It is estimated that Africa lost over $50 billion per year to illicit financial outflows between 1980 and 2018.[61] A 2018 study of 30 African countries shows that their losses to capital flight from 1970–2015 far exceed their debt stock and the cumulative foreign aid they have received, combined.[62]

Debt and structural adjustment have further reduced the royalties flowing to public goods: A 2005 report published by Oil Change International, *Drilling into Debt*, found that oil exporters experience heightened economic volatility and expanded access to external credit.[63] This research showed a positive correlation between oil exports and debt burden: debt increases as dependence on oil exports increases. As a result, governments mortgage future fossil fuel production to access capital, contributing to a cycle of indebtedness and extraction. In short, high debt burdens have driven oil producers to pump more oil to pay off loans.[64] While economic growth on its own is not a sufficient indicator of inclusive and just development, African economies that do not depend on extractive sectors appear to be growing more than three times faster than those of the continent's oil producers, according to the IMF.[65]

Structural adjustment and "fiscal consolidation" imposed by international financial institutions since the 1970s have also exacerbated the impacts of these unsustainable debt burdens driven by fossil fuel extraction. As we discuss in Box 2 this is one of multiple ways Global North countries and their institutions are undermining development and delaying climate action in Africa. These typically take the form of lending from international financial institutions like the International Monetary Fund (IMF) and World Bank being made conditional on cuts to public services like education, healthcare, and infrastructure maintenance.

The oil price crashes in 2014 and 2020 also drove many producers to take on new, unfavorable loans in the face of unexpected shortfalls in revenue.[66] The resulting high debt payments are starting to drive new debt crises in many countries as they also struggle to free up budget space to address COVID-19 and implement recovery measures. If governments do not take steps towards a just transition and economic diversification (see Section 5.3 on Recommendations for Governments), fossil fuel producing countries risk cascading economic impacts including revenue shortfalls and economic collapse as oil prices crash and countries are called upon to pay up. Without planning and a commitment to economic justice, conditions of fossil fuel industry decline are likely to result in austerity conditions from producing governments. This means making cuts to public goods that are typically borne by the most vulnerable in society.

Examples of oil-induced debt spikes and their relationship to the corruption abound. Following the discovery of offshore oil in Ghana and Senegal in the 2010s, both governments racked up considerable debt."[67] In the Republic of Congo, opaque loans taken out by state-owned company Société Nationale Des Pétroles du Congo (SNH) led to the need for a bailout following the 2014 oil price crash. In Uganda, the government counts on oil revenues (which have yet to materialize since oil was discovered in 2006) to repay a mounting public debt, which was equivalent to 42 percent of GDP in 2018 and 50 percent of GDP by early 2021.[68] In Mozambique, undisclosed borrowing arranged between Mozambican government officials and London financiers – combined with other factors like damages from Cyclone Idai in 2018 – has forced the country to default on loans. The high debt payments and lack of debt cancellation and climate finance from international financial institutions have led the government to decrease public spending per person by 30 percent between 2014 and 2019.[69] The government officials had planned to repay this illicit debt using future gas revenues that are now in question. This corruption scandal has also sparked international criminal investigations into the banks and government officials involved in the illicit loan (see Section 4.3 on Mozambique).

BOX 2: HOW GLOBAL NORTH COUNTRIES ARE UNDERMINING A JUST TRANSITION IN AFRICA

Here we briefly summarize the major ways Global North countries contribute to fossil fuel lock-in and climate action delays in Africa.

Climate finance, reparations, and debt justice: In the Paris Agreement, developed countries reaffirmed their promises to provide $100 billion a year in climate finance to developing countries by 2020, and to continue at least at this level to 2025. There are varying estimates because of conflicting definitions of what should constitute climate finance, but most find the 2020 target has not been met. Civil society has long criticized the goal of $100 as far out of line with the United Nations Framework Convention on Climate Change (UNFCCC) principle of recognizing "common but differentiated responsibilities" for the climate crisis. The literature on what a fair contribution would be for rich countries includes estimates that are magnitudes higher. For example, civil society organizations in the United States calculate that their government's fair share alone would be $100 billion a year.[70]

In addition to the climate finance owed to African countries, there is an ethical and climate imperative for Global North countries to forgive debts arising from inequitable global trade and finance policies.[71] Debt crises have heightened in many African countries in the wake of the COVID-19 crisis and oil price crash and are acting as a barrier to the pursuit of a just transition. This has been the case in low-income fossil-fuel producing countries especially.

Beyond the need for Global North countries to cancel existing unfair economic debts and increase climate finance, there is also a strong case for further reparations to countries and communities around the world for the social, economic, and environmental damages caused by colonialism.[72]

Together, climate finance, reparations, and debt justice would constitute a massive redistribution of money from the wealthiest countries to countries in Africa. It would require a rebuilding of international relations towards one centered on cooperation. In the wake of COVID-19, advocates have proposed moratoria on debt payments, climate finance that does not create new unsustainable debts, and $3 trillion in new allocations of Special Drawing Rights from the IMF to be distributed among Global South countries.[73] Beyond these initial proposals, greater financial commitments across all three categories would still be needed to fully reflect historic responsibilities and harms.

International public finance: In December 2015, countries agreed to make "finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development" under article 2.1c of the Paris Agreement. But in the four years following Paris, the world's richest countries provided 3.7 times as much money in international public finance for fossil fuels in Africa as they did for renewable energy in the four years following the Agreement.[74] This amounted to $47 billion for fossil fuels ($7 billion of this was for coal and the remainder for oil and gas) and just $13 billion for renewable energy. The largest sources of this trade and development finance for oil, gas, and coal in African countries were China, the US, Italy, the World Bank Group, and Japan.

Public finance for energy plays an outsized role in shaping energy systems for several reasons. For one, public loans, grants, equity, and guarantees lower risk for other investors because they are government-backed and are often provided at preferential below-market rates.[75] This helps leverage additional investment for proposed projects. In addition, public finance institutions shape the energy landscape by signaling government priorities and adding research and advisory capacity.[76] Research and advisory capacity has not just been limited to project design but extends to influential advice on government policies, including encouraging tax cuts or other subsidies for the fossil fuel industry (or even conditional lending).[77]

In contrast, international finance for renewable energy has remained low. Less than 1/100th of the renewable energy capacity brought online globally in 2018 was from projects in "Sub-Saharan" Africa.[78] While some development finance institutions have increased their focus on renewable energy generally, the *distributed* renewable energy solutions that are most needed to achieve universal energy access continue to be neglected. Between 2014 and 2017, distributed renewables in Africa received less than 2 percent of energy finance from multilateral development banks.[79] The portfolios of bilateral donors reflect the same shortchanging of distributed renewables.[80]

The good news is that most international public finance has already shifted from coal, and a similar transition away from oil and gas finance is on the horizon. In 2021 the EU, UK, and US among other major economies committed to phase out their fossil fuel finance and to encourage other countries to follow suit.[81] Such a shift would make fossil fuel infrastructure projects less likely to go forward, as evidenced by the recent wave of new coal exclusion policies. However, it is important that it is accompanied by a shift into renewable energy finance, and particularly support for the distributed renewable energy most needed to achieve universal energy access.

Domestic policies: The structure of international governments' policies – especially those of the world's richest and largest economies – deeply influence the spending on energy systems in Africa. These government actions shape global energy markets, technology development, and global policy norms. Energy Policy Tracker, a civil society coalition tracking energy spending from 31 governments and the eight major multilateral development banks, found that between January 2020 and September 2021, 40 percent of $866 billion had flowed to fossil fuels and fossil fuel intensive sectors, compared to 35 percent for clean energy.[82] This is a slight improvement to broader energy subsidy trends prior to 2020, but still grossly misaligned with what is needed to avoid the worst impacts of the climate crisis.

Technology transfer: Most patents for renewable energy and other green economy technologies are held by entities in the Global North and China. Most green manufacturing capacity lies in these jurisdictions as well. Trade agreements and intellectual property rights can act as a barrier to the deployment of new technologies outside of these countries. International legal and trade agreements must be amended so that countries in Africa and throughout the Global South have affordable access to use and develop green technologies, not simply to purchase or lease goods and services.[83]

Rwanda Solar Project, Power Africa (CC BY-NC 2.0)

2.2 FAILURE TO DELIVER ON JOB AND ENERGY ACCESS PROMISES

Limited job creation: Africa's extractive sectors are estimated to employ less than one percent of the continent's workforce. Furthermore, fossil fuel projects are especially capital-intensive and create fewer jobs compared to investments in other extractive industries (as well as those in almost any other sector).[84] Fossil fuel production also spurs little indirect job creation in other sectors of the economy (often referred to as a low 'multiplier effect'), particularly when projects are located in remote areas, such as the offshore extraction that will make up most of the new production in Africa.[85] Of the jobs created by the oil and gas industry, training programs for local residents are often over-promised and under-delivered, with few permanent or higher-paying jobs reserved for locals.[86]

In the 2010s, many of the major fossil fuel producing countries on the continent implemented "local content policies" to require foreign extractive companies to hire local staff and or award procurement contracts to local companies. However, the requirements for local content policies have weakened over time, with "soft" or voluntary requirements without targets or regulation becoming the norm. Scholars like Jesse Salah Ovadia point to "lobbying efforts by international companies, investors and Western governments" as the likely driver of this weakening.[87] The impact of this trend is that in emerging producing countries like Mozambique, Tanzania, and Uganda even fewer jobs are poised to be held by local populations. In addition, to date these policies have largely not included adequate resources for training programs to promote access to higher-quality jobs in the sector. Instead, companies and elites have often manipulated them to pursue corruption and capture profits.[88] Youth, women, and migrant workers face disproportionate unemployment and precarity across many fossil fuel-producing countries or prospective producers. Moreover, the industry has under-delivered on promised training programs and job creation targeted at employment for these groups.

For example, the promised coal boom and gas development to date in Mozambique has seen much smaller local job creation than promised.[89] Finally, these prospects are expected to dim further as the fossil fuel sector experiences a period of automation and consolidation globally that is expected to lead to permanent job losses well beyond the impacts of COVID-19 and the oil crash.[90]

Globally, every dollar of renewable energy investment generates two to five times more jobs than the equivalent investment in fossil fuels.[91] In South Africa, renewable energy investments have created twice as many direct jobs than investments in oil, gas, and coal.[92] The ratio of renewable job creation relative to fossil fuels is likely even higher in other fossil fuel producing countries in Africa because the coal sector (which is dominant in South Africa) typically generates more jobs than oil and gas – though these are also often more dangerous and precarious.[93] In other green economy sectors such as public transit, conservation agriculture, energy-efficient building retrofits, and climate adaptation, direct job creation figures are even more dramatic, at five to 25 times the level of job creation provided by fossil fuel sectors.[94] More modelling at the country level in Africa to estimate potential green job creation is needed to better show the job creation potential of fossil fuel alternatives.

Renewable energy, not fossil fuels, are the solution to energy access in Africa: Over 600 million people in Africa (45 percent) lack access to electricity, and 900 million (70 percent) lack access to clean cooking.[95] In 2019, Africa was home to 17 percent of the world's population, but made up only 6 percent of global energy demand, three percent of global

electricity demand, and only four percent of power supply investment. In 2019, the IEA estimated that existing policy commitments will leave 530 million people in Africa without electricity access and 1 billion without clean cooking access in 2030, when countries have pledged to reach universal energy access under the UN Sustainable Development Goals.[96]

While energy access rates vary greatly within and between countries, areas with fossil fuel production do not fare better in rates of energy access. As discussed in Section 3.4, almost all current and future oil, gas, and coal production on the continent is designed for export to foreign markets. Using fossil fuels for electrification requires costly processing plants for generation and extended grid networks for distribution, few of which currently operate in most African countries. For example, Nigeria is Africa's top oil exporter, but only 60 percent of the Nigerian population enjoyed access to electricity in 2018. This figure reflects significant urban-rural disparities. In urban areas electricity access was 86 percent in 2018 but in rural areas, only 41.1 percent.[97] Moreover, the country relies on imported fuel because it lacks operational refineries to process the crude oil extracted on its territory. All too often, refineries or power generation facilities supply the extractive operations themselves, rather than the surrounding communities – see Section 4.4 on Mozambique for an example of this phenomenon.

Low rates of energy access in Africa take a disproportionate toll on women, who frequently bear responsibility for gathering wood for fuel.[98] Women not only do almost all of the work needed to perform household chores and farm labor in the absence of modern energy sources but are also disproportionately exposed to health risks related to the collection and burning of fuel wood.[99]

The UN Sustainable Energy for All initiative includes as a core recommendation that "financing of fossil fuel projects as a means of closing the energy access gap should be terminated," as they are no longer the most cost-effective means of providing electricity and rarely target the most rural areas or off-grid urban areas. Distributed renewable energy has strong cost and resilience advantages over fossil fuels.[100]

Due to comparatively low rates of infrastructure development, most countries in Africa are not already locked in to risky, fossil-based grids. Rather, African countries are poised to leapfrog directly to more advanced and affordable renewable energy technologies – which also lend themselves to democratic ownership models more easily than traditional centralized fossil fuel powered grids.[101] It took China and India 35 and 16 years, respectively, to attain electricity coverage rates of 95 percent. The IEA has suggested that given the emergence of new distributed technologies, electrification could take much less time in countries in Africa.[102] Where electricity grids already exist or grid-based systems are the best solution, building or extending these with renewable energy is already cheaper than fossil fuels in almost all cases, and costs are continuing to fall.[103] This cost comparison takes into consideration storage and other measures to ensure reliability given the variability of renewable energy.

Carbon Tracker has also deemed Africa a "renewable energy superpower" given it has 39 percent of the world's total renewable energy potential, by far the largest share of any continent.[104] The IEA calculates that "Africa has the richest solar resources in the world but has only 5 gigawatts (GW) of solar PV [photovoltaic system], less than one percent of the global installed capacity."[105] The situation is similar for other forms of renewable energy – there is rich wind potential across the continent (albeit a bit less consistently than for solar) and strong potential for small-scale hydropower, especially in South Africa, the Democratic Republic of the Congo, and Sudan.[106] East Africa has some of the highest geothermal potential globally.[107]

For clean cooking, electric cooking solutions are already the cheapest option in many circumstances, but locally sourced biogas or liquefied petroleum gas (LPG) are still more appropriate as an interim solution in some specific cases.[108] Because it is typically distributed in canisters, LPG does not require long-lived gas distribution infrastructure, such as pipelines, when used as a clean cooking solution. LPG is a minor byproduct of oil and gas production, and if used in some specific cases for improving access to clean cooking, would not justify any further investment in oil and gas exploration or production activities.[109]

March for Climate, Jobs and a Just Recovery in Tshwane, South Africa; *Aliki Saragas / Elafos Productions © 350.org (CC BY-NC 4.0)*

2.3 HUMAN RIGHTS, HEALTH, AND ENVIRONMENTAL HARMS IN FRONTLINE COMMUNITIES

If capitalism is an "economy of unpaid costs,"[110] its greatest debts may be to frontline communities in the sacrifice zones of extraction. These communities endure the externalized social and environmental costs that the market prices of oil, gas, and coal do not reflect. Around the world, oil, gas, and coal developments are disproportionately situated in impoverished and marginalized communities who are often excluded from the formal economy, ignored, or repressed by the state, and deprived of political power – the very same communities that bear the brunt of climate impacts.

The lack of baseline information on environmental and socioeconomic conditions prior to the discovery of oil, gas, and coal impairs our ability to accurately analyze the impacts of the fossil fuel industry throughout Africa.[111] Despite these constraints, many civil society groups and community organizations have extensively documented the social, health, and environmental harms the fossil fuel industry causes.

Human rights abuses: Many governments in Africa, as elsewhere in the world, are taking increasingly punitive measures against journalists and environmental and human rights defenders. In a February 2020 report, the UN Special Rapporteur on Human Rights Defenders expressed concern about the ongoing "deterioration of civil society space in [Africa]," noting that "[t]he space in which human rights defenders carry out their work has been restricted through both legal instruments and use of force," including "widespread arbitrary arrest, threats, physical attacks and intimidations made against human rights defenders," often without "fair legal proceedings."[112] In addition, defenders are increasingly under attack for their online activities.[113] A 2019 report by groundWork, Center for Environmental Rights, Human Rights Watch and Earthjustice documented threats and attacks against digital activists in coal mining-affected communities in South Africa.[114]

Health: The health impacts of fossil fuels range from asthma triggered by particulate pollution to leukemia caused by benzene exposure.[115] The inadequacy of environmental regulation, enforcement and remediation in many countries compounds communities' exposure to the harms of dirty energy. The costs companies save from not needing to meet stringent health, safety, and environmental standards acts as an indirect subsidy to industry, boosting their profits at the expense of human lives and livelihoods. The COVID-19 crisis has further underscored the toll that environmental pollutants take on human health because people living in areas with heightened air pollution from petroleum refineries, gas flares, or coal plants are at greater risk of developing complications from the virus.

Displacement and loss of livelihoods: Some of the most devastating impacts of the fossil fuel industry on frontline populations have been the loss of livelihoods arising from pollution and the forced displacements of communities from ancestral and Indigenous lands. Incessant pollution by fossil fuel companies have made traditional settlements uninhabitable, while forced relocation and evictions of agrarian and fishing communities in favor of new fossil fuel projects have wiped out traditional sources of livelihood and left previously self-sustaining communities poorer.[116]

Environmental degradation: Oil, gas, and coal production undermine many aspects of the health of local ecosystems upon which frontline communities depend. In the Niger Delta region, for example, recurring incidents of oil and gas pollution have contaminated fresh water sources, arable land, mangroves and swamps, and fish. Incessant gas flaring has exposed communities to acidic rainfall, highly toxic atmospheric conditions, and health challenges.[117] Human Rights Watch has similarly documented the impacts of coal mining expansion in Mozambique on food security, access to water, traditional livelihoods and other human rights in communities surrounding coal mines, including among resettled families.[118]

Conflict and militarization: Fossil fuel companies, financial institutions, and developed country governments have helped fuel numerous conflicts in Africa and elsewhere that have, in turn, kept oil profits high. As economic analysis of the past 60 years has shown, the relative profitability of major oil companies is closely tied to instability across oil producing economies in the Middle East and North Africa.[119] As one example, in Nigeria, Cyril Obi writes that "multinational oil corporations, private security actors and geopolitical counterparts depend on the Nigerian state's increasingly militarized oil extraction practices in the Niger Delta to ensure continued, high-levels of production."[120]

2.4 COMPOUNDING CLIMATE VULNERABILITY

A global phase out of fossil fuel extraction is needed to stay within the global climate budget for 1.5ºC (Figure 1). It is an unjust reality that overshooting that budget by drilling and digging for new oil, gas, and coal anywhere in the world will disproportionately harm Africans despite the continent only contributing two percent of cumulative global emissions from 1890 to the present.[121]

As a continent home to nine of 14 different major global biomes, there is a large variety in the kinds of climate impacts already facing Africa and those that are expected.[122] However, scientists predict that Africa will warm faster than the global average rate and that many of its subregions are "hotspots" expected to experience some of the most extreme impacts. In this section we summarize the climate impacts that are expected in Africa as well as those already unfolding.

1.5 or 2°C? A matter of life and death: As in the rest of the world, every bit of additional warming adds greater risks for Africa in the form of harsher droughts, more heat waves and more potential crop failures.[123] Significantly higher proportions of the African population will be exposed to poverty at warming of 2°C than 1.5°C,[124] and reductions in economic growth in Africa are more severe at 2°C warming than at 1.5°C.[125]

Climate change as an "inequality multiplier": An average global temperature rise of approximately 1.5°C is expected to both "make poor people poorer and increase the poverty head count."[126] IPCC urban areas and some rural regions in southern, eastern, and western Africa will experience the most severe poverty increases due to climate change. It's estimated that climate change could cause developing countries up to $4 trillion per year in financial losses by 2030, "with least developed countries facing the largest damages proportionate to the size of their economies."[127]

Climate change hotspots: Regions in Africa within 15 degrees of the equator are projected to experience an increase

in hot nights as well as longer and more frequent heat waves.[128] Western Africa and southern Africa have been identified as climate change hotspots, with some of the largest global changes in temperature and precipitation expected, posing systemic risks to rain-fed agriculture.[129]

Food insecurity: In 2019 there were already reports of climate-induced food shortages in southern Africa. Impacts of further warming on crop yields in Africa, particularly of maize, rice, and wheat, are expected to pose severe threats to food security.[130]

Flooding and drought: Average global warming of 2°C would augment the probability of dryness and water shortage in northern and southern Africa.[131] Both rural and urban populations are expected to face both increased flooding as well as droughts with 1.5°C warming.[132] Current warming trends have already exacerbated water precarity in multiple areas.[133] Cape Town, for example, experienced severe drought between 2014 and 2017, forcing the population to dramatically reduce water consumption and prepare for "Day Zero," when the city would run out of water.[134] Climate change-induced water shortages will also affect hydropower generation throughout the continent, underscoring the importance of ensuring diverse sources of energy, minimizing reliance on massive hydropower, and increasing installed distributed renewable capacity.[135]

Health crises: A 2014 study from World Health Organization that is now cited as overly conservative found that with a medium-high future emissions trajectory, climate change is expected to cause approximately 145,000 additional deaths per year in Africa, primarily from malnutrition, malaria, diarrhoea, and heat stress.[136] This did not consider deaths from food scarcity, natural disasters, or extreme cold.

Ecosystem collapse: As weather patterns shift, scientists expect to see biodiversity loss, habitat shrinkage, and surges of pest populations, as well as a decline in the food and water provision capabilities and carbon storage capacities of ecosystems. We are already seeing these impacts begin. For example, in early 2020, swarms of locusts descended on East Africa, eating crops and threatening the food security of an estimated 20 million people.[137] Scientists have linked the surge in the locust population – which represents an unprecedented threat to food security and livelihoods – to an uptick in cyclones, such as those that hit Eastern Africa in 2019 and created unusually fertile breeding grounds for the insects.[138]

Local impacts of fossil fuel extraction on climate resilience: Fossil fuel extraction not only unlocks greenhouse gas emissions that contribute to climate change, but also erodes the resilience of affected communities and ecosystems through adverse local impacts like the destruction of mangroves, the depletion of local livelihoods, and biodiversity loss.

Climate change impacts everything, and as a result there are also many less obvious linkages where fossil fuel extraction worsen climate impacts beyond just the greenhouse gas emissions released. For example, zoonotic viruses, such as the SARS-II virus that causes COVID-19, are expected to increase in frequency as the planet warms.[139] Particulate air pollution from extraction and processing of oil, gas, and coal heightens the health risks from COVID-19 and other respiratory viruses for surrounding communities.[140]

People take refuge on the roofs of buildings following flooding caused by Cyclone Idai in Mozambique DFID - UK Department for International Development CC BY 2.0

3. INDUSTRY PLANS FOR FOSSIL FUEL PRODUCTION IN AFRICA

This chapter outlines the current industry projections for future oil, gas, and coal production across Africa over the next three decades. We also look at the key projects and infrastructure most immediately on the horizon and the growing systemic financial risks associated with these plans as fossil fuel markets enter an expected period of increasing volatility and decline.

We use projections by consultancy Rystad Energy to model developments in the fossil fuel industry in a business-as-usual climate scenario. Rystad's UCube model forecasts the future production and economics of 60,000 worldwide oil and gas projects, based on bottom-up data from companies. It is important to note some of the data used in our analysis was collected at different points in time between July 2020 and April 2021 (noted in each citation), and therefore reflects differing assumptions about the future as markets shifted. While there is considerable volatility at the project and country level, at the macro level, the variations within this period and up to the time of publication were small. We consider these results to be as accurate as possible given that long-term projections by their very nature are uncertain and dependent on assumptions about the future.

3.1 CURRENT COMPOSITION OF AFRICA'S FOSSIL FUEL SECTORS

Most existing fossil fuel production Africa is for export. There is little refining, processing, or distribution capacity built to enable domestic consumption. As we discuss in Section 3.4, there are few planned or proposed projects that would reorient Africa's fossil fuel production from export to domestic use.

Oil: Africa produced nine percent of total global oil production in 2018 and made up four percent of global oil consumption.[141] While Africa is a net exporter of oil, it is the largest importer of refined petroleum products compared to any other continent, due to a dearth of local operating refineries.[142] For example, Nigeria produced over 2 million barrels of oil a day in 2019, but relies heavily on imported fuel as refining capacity is inadequate and existing facilities run under capacity due to a lack of maintenance investments.[143] Fuel imports accounted for 22 percent and 16 percent of Nigeria's total imports by dollar amount in 2018 and 2019, respectively.[144] Although the privately-owned Dangote refinery is expected to start operating by 2023, it is unclear how much of its capacity will serve the Nigerian market.

Gas: Africa produced six percent of total global gas production in 2018 and made up four percent of global gas consumption.[145] There are fewer established major gas producers in Africa relative to oil, with 85 percent of existing production located in Algeria, Egypt, and Nigeria. Africa's gas consumption represents 4 percent of the global total, as few countries possess grid distribution infrastructure for gas. For LNG specifically, Africa supplied 10 percent of global exports as of 2018 but accounted for just 0.3 percent of imports.[146]

Coal: Africa produced four percent of total global coal production in 2018 and made up three percent of global coal consumption.[147] Relative to both oil and gas, the continent's coal production is much more concentrated, with 92 percent occurring in South Africa.[148] South Africa also consumes almost all coal produced in Africa– see Section 4.5 for more details on the country's coal sector.

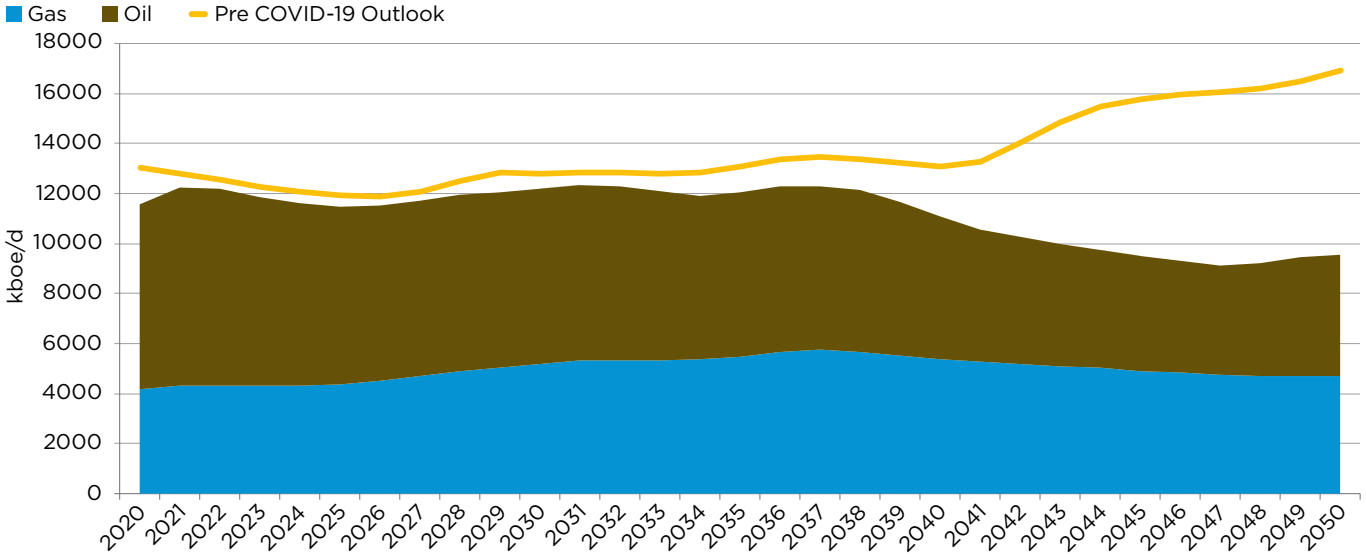
3.2 PROJECTIONS FOR FOSSIL FUEL PRODUCTION IN AFRICA, 2020–2050

After the oil price crash and COVID-19 in 2020 there was a dramatic decrease in the expected production of oil, gas, and coal in Africa for the next three decades (Figure 6 and Figure 7). This trend should give significant pause to African countries planning to initiate fossil fuel production, and to existing producers that lack diversification and phase-out plans. The oil price crash and COVID-19 market instability have already caused negative economic impacts in production-dependent governments and communities, providing a preview of how an unmanaged, overnight shutdown or collapse of the industry may play out.[149] We discuss how producers in Africa have been impacted by the events of 2020 and the implications of this increased risk in pursuing new fossil fuel projects in Section 3.5.

Instead of growing 32 percent by 2050 as expected prior to 2020, the rate of oil and gas production in Africa is now expected to *decline* by 24 percent (Figure 6).[150] In January 2020, oil production was expected to grow by nine percent from 2020–2050, while by March 2021 it was expected to *decline* by 42 percent. The rate of gas production was expected to grow by 74 percent in this period, and now it is expected to grow by just 13 percent. Less detailed coal projections are available, but the rate of coal production was expected to stay consistent to 2040, and it is now expected to drop 12 percent below 2019 rates by 2040.[151]

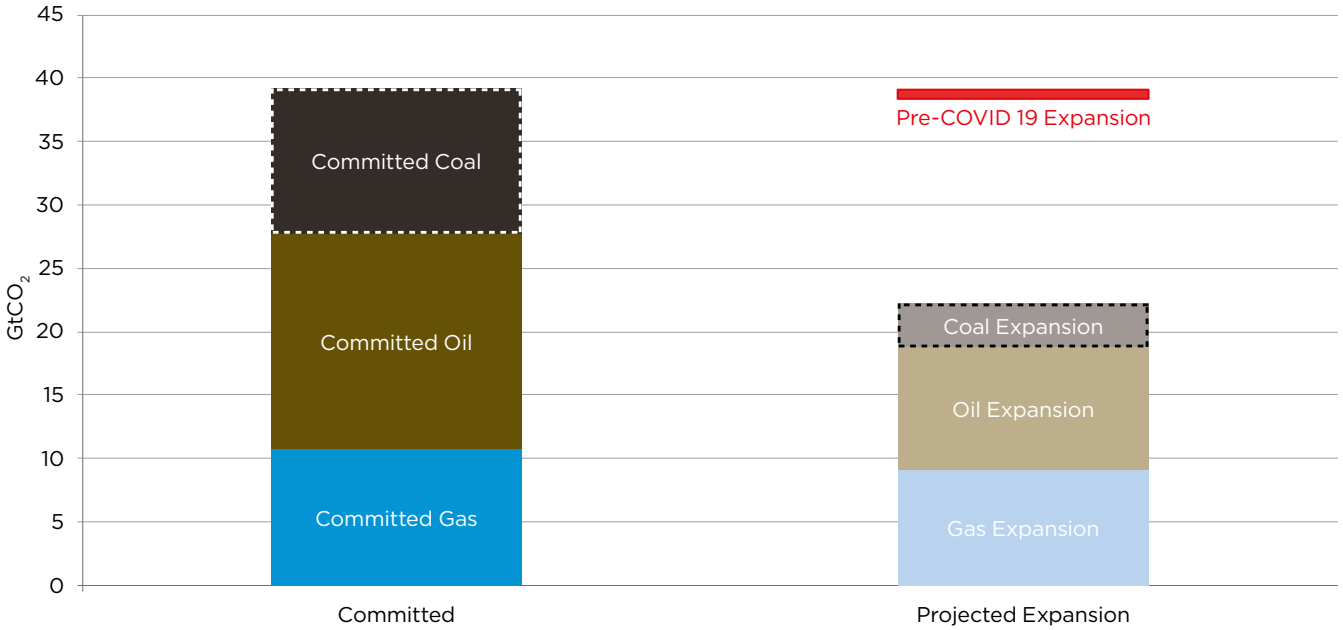
This decrease in Africa's projected production in the wake of the shocks of 2020 was more dramatic relative to other regions because much of it comes from frontier areas without a developed sector or from unconventional sources (or both).

Figure 6: Projected oil and gas production in Africa 2020–2050 (kboe/d) in January 2020 compared to March 2021.



Source: Oil Change International analysis based on data from Rystad UCube.[152]

Figure 7: Projected emissions from oil, gas, and coal produced in all African countries, by stage of development, 2020–2050, billion tons of CO_2 ($GtCO_2$). The right-hand column shows projects that have not yet been approved, equivalent to more than a third of all the projected emissions from African fossil fuel extraction in this period.



Source: Oil Change International analysis based on data from Rystad UCube, IPCC, IEA World Energy Outlook 2019, IEA World Energy Outlook 2020, Trout et al. (forthcoming) and Burton et al. (2018).[154]

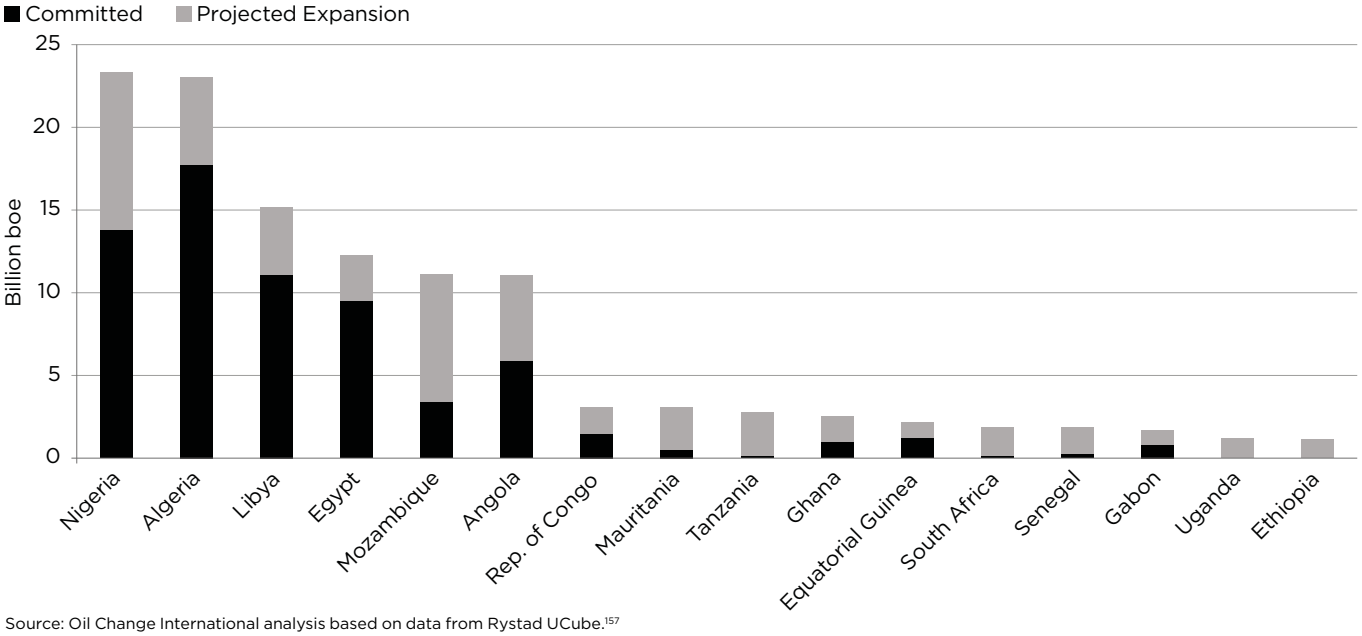
These factors rendered many projects relatively more costly and higher risk, and therefore more attractive for companies to delay or cancel.

These lower projections are overall good news for frontline communities and the climate given the local and global impacts of burning these reserves. However, government reactions to these shifts will determine whether a just transition will be planned to protect workers and communities from the continued impacts of this oil price crash as well as future market shocks. We discuss the steps producing governments can take towards a managed phase-out rather than an unmanaged decline in Section 5.

Despite these downgraded projections for Africa, massive future extraction plans that are misaligned with climate goals and development priorities remain in place. Industry projections anticipate the production of 69 billion barrels of oil, 335 trillion cf of gas (56 billion boe), and 5.8 billion tons of coal equivalent in Africa in the next three decades. As Figure 7 shows, burning these fossil fuels would emit 62 billion more tons of CO_2. This is equivalent to about 14 percent of the remaining 458 billion tons of CO2 carbon budget that is associated with a 50 percent chance of staying within a 1.5°C level of warming.[153]

This report recommends that governments in Africa cease licensing and approvals for new fossil fuel projects. This should be accompanied with a gradual, managed phase-out of existing projects at a pace that allows for a just transition for impacted workers and communities and economic diversification of the wider economy (see discussion in Section 3.5). To do so, governments must refrain from developing the projects associated with the block shown on the right of Figure 7, equivalent to 36 percent of the production projected in Africa over the next three decades. This represents 22 billion tons of CO_2 or five percent of the global carbon budget. Broken down by fuel, 36 percent of the projected oil production is not yet approved, 46 percent of gas, and 23 percent of coal.

Figure 8: Projected top 16 oil and gas producers in Africa (2020–2050).



Source: Oil Change International analysis based on data from Rystad UCube.[157]

Seven of the 16 countries expected to be the leading oil and gas producers in Africa from now through 2050 are newcomers to the sector, countries with negligible oil and gas production today (Figure 8). Combined, these countries – Mozambique, Mauritania, Tanzania, South Africa, Senegal, Uganda, and Ethiopia – produced just three percent of Africa's gas output and less than one percent of Africa's total oil production in 2019.[155] If industry plans are allowed to go forward, these "new entrant" producers would make up 18 percent of Africa's oil and gas production over the next three decades. When just projects that are not yet approved are considered, this share grows to 33 percent.

This is different than the story for coal. There are some plans for new mines to be built in Mozambique, Botswana, Zimbabwe, or elsewhere, but 87 percent of cumulative production 2020–2040 is still projected to take place in South Africa, similar to the shares of production in 2019.[156]

As with all projections regarding future oil and gas production, these numbers are speculative. However, such projections are even more volatile now in the wake of the oil price crash and the COVID-19 pandemic and can be expected to continue to fluctuate.[158] Consequently, it is possible that some production that is currently decommissioned could become economically attractive again. This likelihood of this outcome would increase if governments in Africa and around the world listen to fossil fuel industry lobbyists, and structure their COVID-19 recovery spending to further subsidize this sunsetting industry.

Ella Ivanescu / Unsplash ©350.org

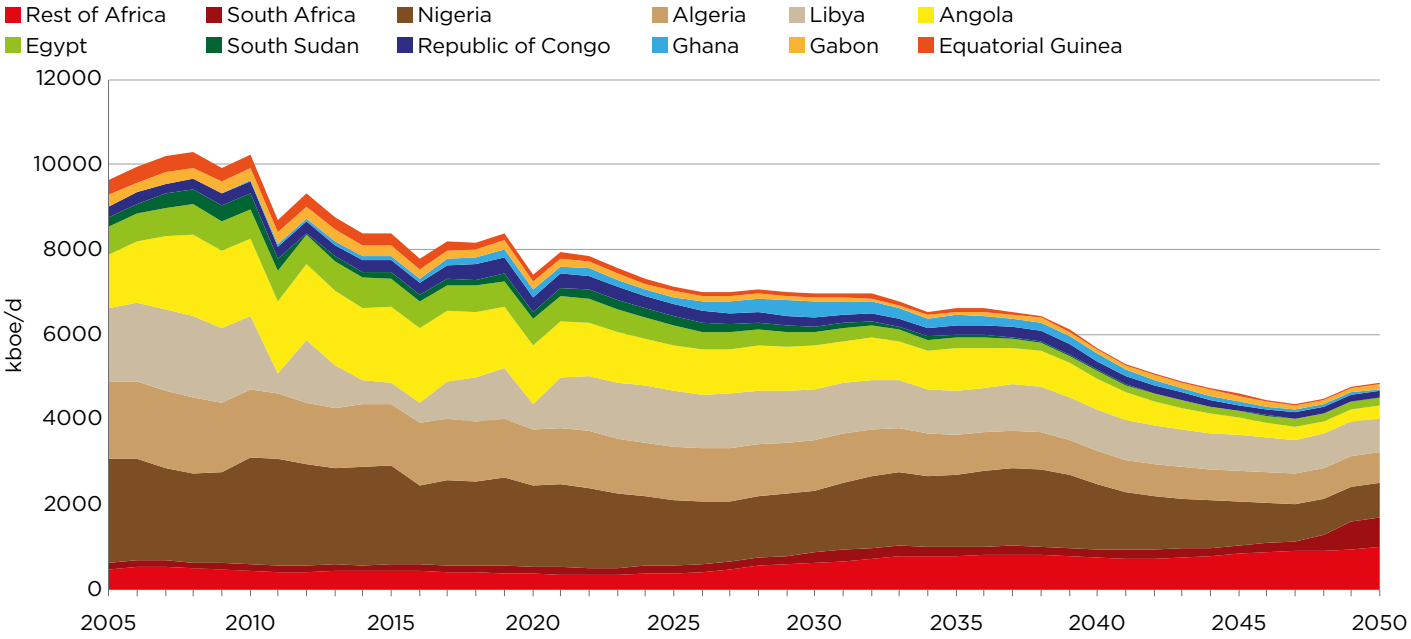
OIL

The events of 2020 have impacted oil projections more than those of gas or coal. All oil producers on the continent are expected to extract less by 2050 than they were prior to the oil price crash and COVID-19. Established producers (both large and small-scale) have largely maintained or slightly increased their projected *share* of African production, while the share of newer market entrants, especially South Africa and Senegal, has shrunk. However, emerging oil producers are still the only countries projected to increase their current volume of oil production (Figure 9).

The larger drop in expected oil production in new entrant countries results from two factors: first, established producers have already developed most of the supporting infrastructure and regulations needed for production; second, much of the now shelved production in "new entrant" countries was from costly unconventional or deepwater offshore projects.

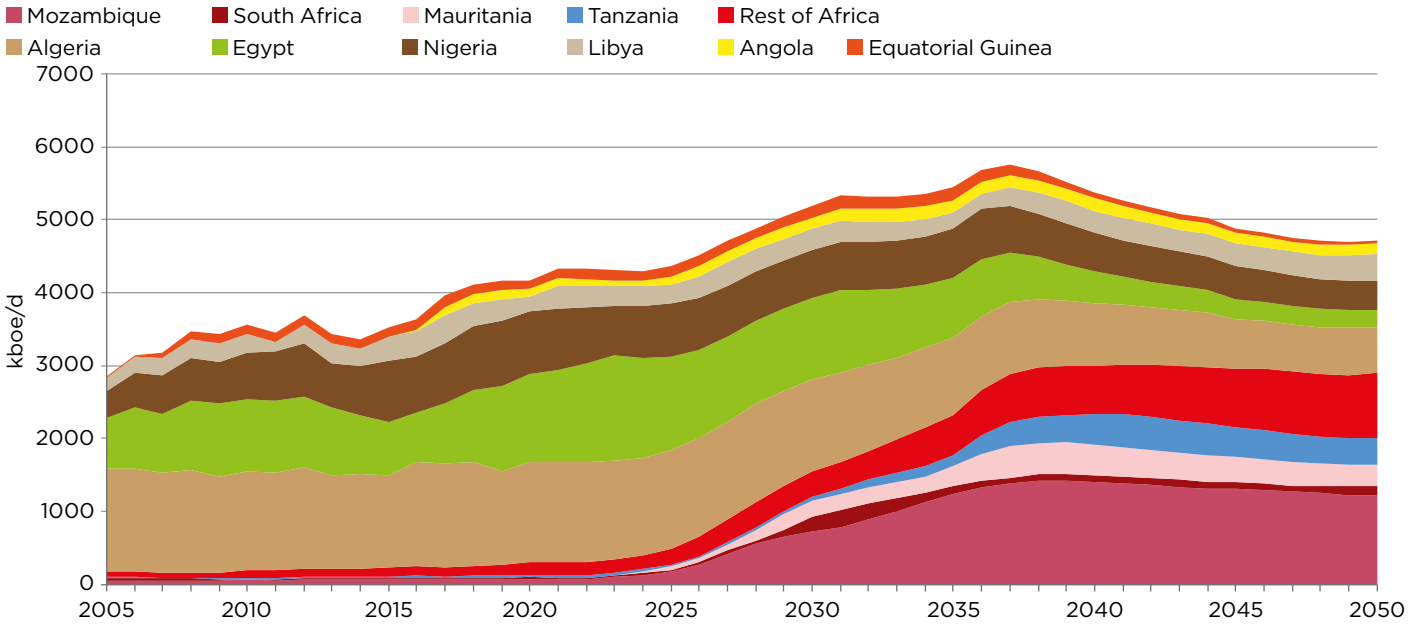
A third factor likely contributed to the greater reduction in projected oil production from new entrants: multinational corporations hold a larger share of these projects. State-owned enterprises hold a much larger stake in established producers (though this state-owned enterprise stake has been shrinking over the last three decades). As multinational corporations looked to cut capital expenditure in the face of investor pressure in 2020, the relatively high breakeven prices of planned developments in Africa were among their first and deepest cuts.[159] State-owned

Figure 9: Africa's past and projected oil production 2005–2050, kboe/d. Trajectories for the top 10 oil producers are disaggregated. Large-scale established producers are shown in greyscale, small-scale established producers in blue, and emerging producers in red.



Source: Oil Change International analysis based on data from Rystad UCube.[161]

Figure 10: Africa's past and projected gas production 2005–2050, kboe/d. Trajectories for the top 10 gas producers are disaggregated. Large-scale established producers are shown in greyscale, small-scale established producers in blue, and emerging producers in red.



Source: Oil Change International analysis based on data from Rystad UCube.[164]

enterprises generally face less short-term pressures for decision-making and have incentives to maximize production in the country they are based. They have not to date announced assumptions of lower long-term oil prices or as many write downs of assets as multinational corporations have.[160]

GAS

The largest increase in projected fossil fuel production in Africa is in the gas sector, due to some major new gas discoveries: in the Indian Ocean, off the coasts of Mozambique and Tanzania; in the Atlantic Ocean, near the Senegal-Mauritania border; and in the Red Sea, off the coast of Egypt. Prior to COVID-19, these new discoveries were expected to see Africa overtake Russia as a gas supplier by 2040.[162] If industry plans proceed, Mozambique, Mauritania, Tanzania, and South Africa, among other new entrant gas producers, will still constitute more than half of Africa's gas production by 2038 from negligible amounts in 2020 (Figure 10).

Relative to oil, more "new entrants" in the gas sector are still expected to become established in the next three decades. Mozambique, Mauritania, Tanzania, and South Africa all produced less than 100 kboe/d in 2019 but are projected to become top 10 gas producers in Africa with 3000 and 30,000 kboe/d each by 2050. While these projects still face considerable risks of becoming stranded assets, relative to new oil projects in new entrant producing countries, they are more cost-competitive with projects in established regions in the rest of Africa and globally.[163]

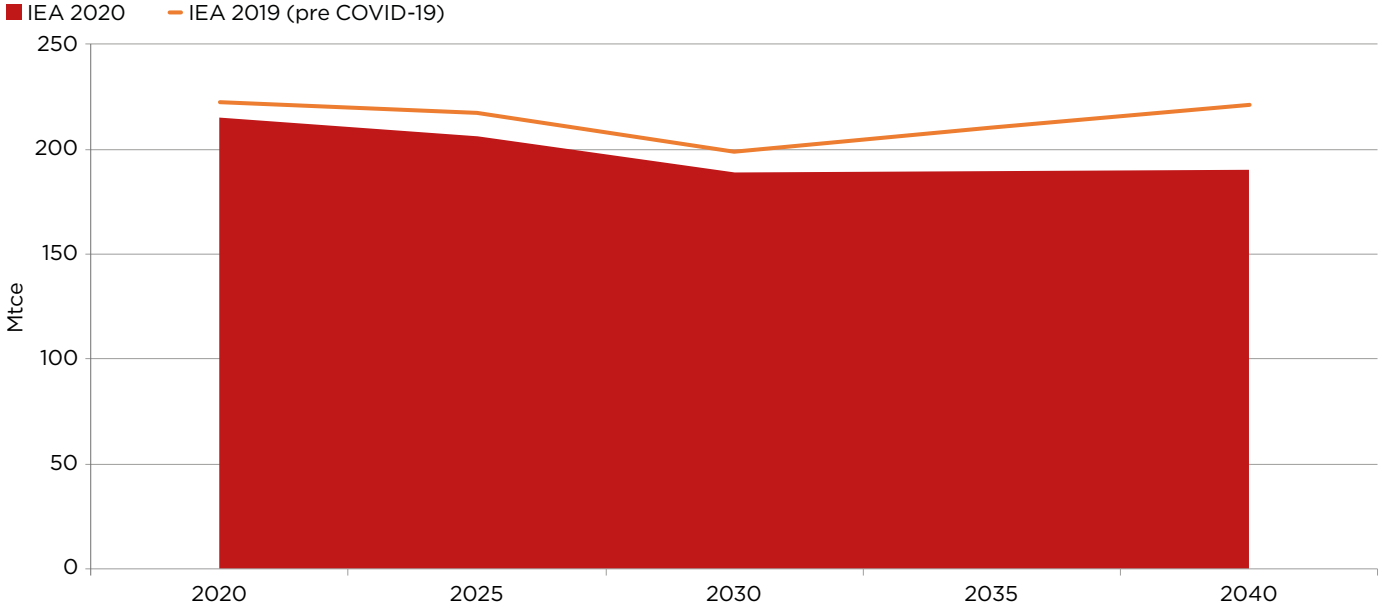
COAL

While coal mining has been a core industry in South Africa, it has not been dominant anywhere else on the continent due to a lack of abundant profitable reserves. Less granular and long-term projections are available for coal than oil and gas. The IEA numbers we rely on here are based on the IEA's stated policies scenario, which assumes no new policies aimed at decarbonization will be implemented.[165] Projections made prior to 2020 from the IEA showed no decline in coal production in Africa by 2040. Since then, they have decreased their 2020 to 2040 projection by a cumulative 250 Mtce, equivalent to a bit more than one year's production (Figure 11).

India, the buyer of 60 percent of South Africa's coal exports, has used to date a considerable amount of its COVID-19 stimulus spending to grow both domestic coal production and renewable generation. This trend could significantly dampen South African production in the long run.[167] Globally, stimulus spending trends have also shown that most major importers of coal are hastening the transition away from it.[168]

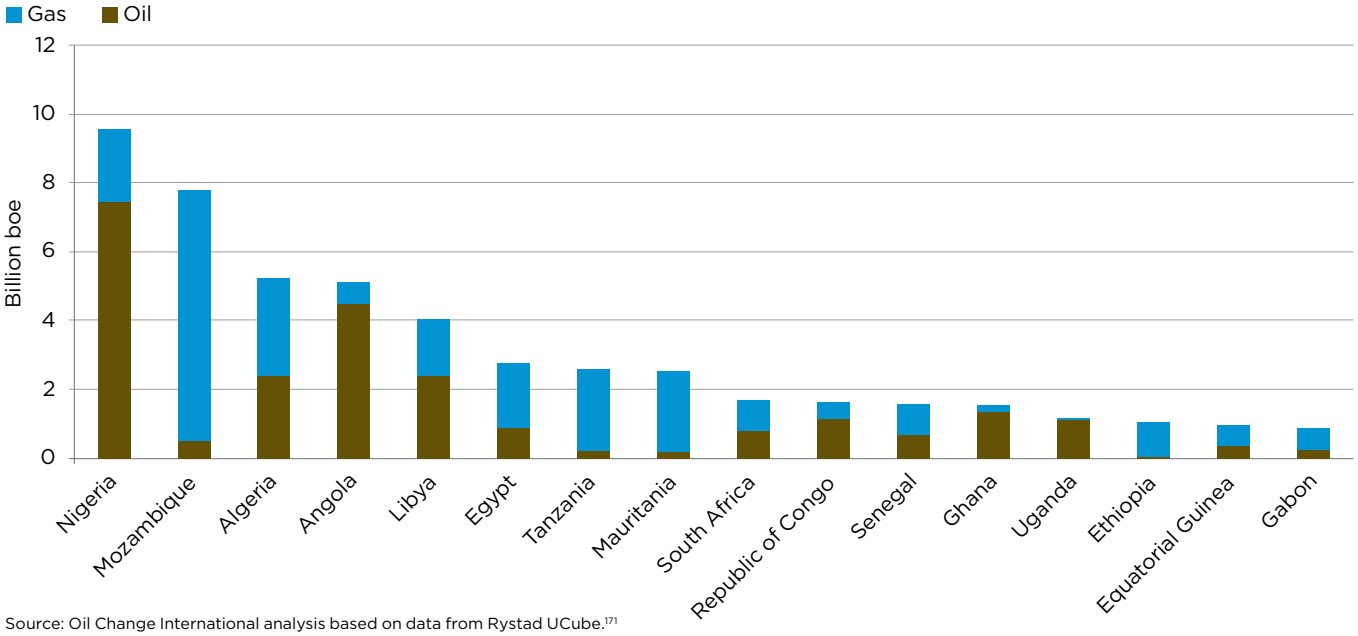
The IEA predicts that Africa will remain a net exporter of coal, although production will decline.[169] South Africa will remain the dominant producer for the next two decades, continuing to account for three quarters of the continent's coal output in 2040.[170] Updated country-level coal projections are not yet available, but 2019 projections show 87 percent of cumulative production 2020–2040 will come from South Africa, compared to 9 percent from Mozambique and 4 percent from all others.

Figure 11: Africa's projected coal production 2020–2040.



Source: International Energy Agency[166]

Figure 12: Top 16 African countries for oil and gas production from new, not-yet-approved projects (2020–2050).



Source: Oil Change International analysis based on data from Rystad UCube.[171]

3.3 WHERE IS NEW PRODUCTION EXPECTED? MAPPING KEY COUNTRIES AND PROJECTS

The section above discussed all projected production. This section zeroes in on the 36 percent of projected production in the next three decades that would come from projects that are not yet producing or under construction. These are particularly important as there are relatively few legal, political, and economic barriers to cancelling these, and greater risks of them becoming stranded assets. Ceasing new project approvals would allow African producers to gradually wind down extraction over decades, rather than face the threat of overnight shutdowns. As we discuss in Section 5, this wind-down must accompany a just transition for impacted workers and communities.

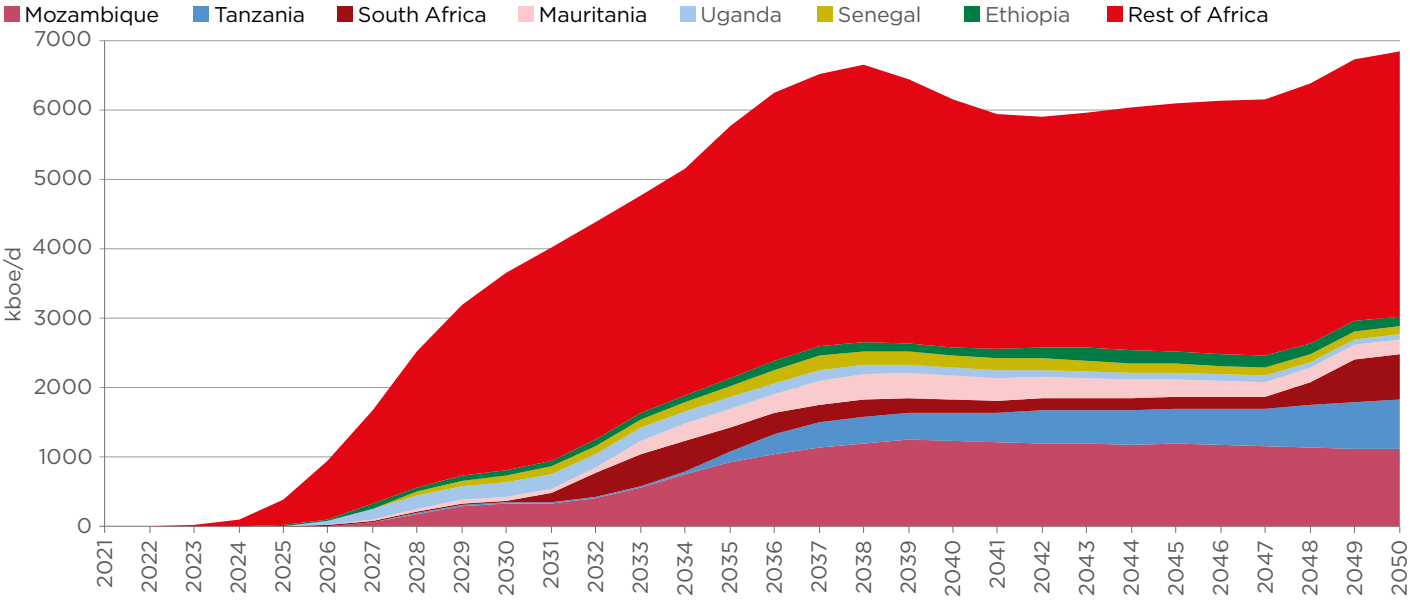
As Figures 6 and 7 show, market shocks in 2020 caused many companies to delay the construction of new fossil fuel projects until the 2040s and 2050s, with Rystad projecting a large portion of these will never go online at all. These obstacles to fossil fuel build-out provide governments and communities with more time to build a just transition locally. These trends also create the potential that the already-weak business case for this expansion will evaporate.

NEW PRODUCTION BY COUNTRY

This section examines major trends and upcoming projects for each of the top 16 countries for projected expansion, divided into three groups: **new entrants, large-scale established producers, and small-scale established producers**. From 2020 to 2050, seven of the sixteen countries projected to be the lead oil and gas producers are new or relatively new entrants into the oil and gas markets with less than 75 kboe/d production in 2019. These are Mozambique, Tanzania, Mauritania, South Africa, Senegal, Uganda, and Ethiopia.

Five of the top 16 oil and gas producers are established large-scale producers with over 1500 kboe/d of production on average in 2019: Nigeria, Algeria, Angola, Libya, and Egypt. Of this group, only Egypt is not an OPEC member (Egypt is not a major exporter due to relatively high levels of domestic oil and gas consumption). Lastly, the Republic of Congo, Ghana, Equatorial Guinea, and Gabon are "small-scale" established producers with only 200 to 400 kboe/d of production in 2019. Of these smaller established producers, only Ghana is not a member of OPEC. This is because Ghana only started producing oil and gas in 2011.

Figure 13: Oil and gas production from new projects in top "new entrant" producing countries in Africa, thousand barrels of oil equivalent per day, 2020–2050. This includes only new projects that are not yet approved or operating.



Source: Oil Change International analysis based on data from Rystad UCube.[173]

NEW ENTRANT PRODUCERS

Together, the seven largest "new entrant" producers make up 33 percent of expected production from new projects. All statistics in the following tables are from Rystad UCube.[172]

Mozambique

	Investments in new developments (USD)	Tons CO_2 from new developments	Largest new project
2021 to 2030	44 billion	46 million	Area 4 LNG (T1-T4)
2021 to 2050	159 billion	2.8 billion	

In Mozambique, most capital expenditure is directed at four LNG megaprojects located offshore of the northern province of Cabo Delgado. Incidentally, these are the top four largest gas projects expected to be built in Africa by 2030. There will be small amounts of oil extracted from these offshore fields as well. "Ultra deepwater" drilling at depths greater than 1500m will account for over 90 percent of this expansion. Total, followed by ENH (Mozambique's National Oil Company) and ExxonMobil, hold the largest stake in these developments. Coal expansion plans in Mozambique are poised to become stranded assets, with the Moatize, Zambeze mines, Benga mine expansion, and the Nacala Corridor rail and port projects all recently shelved.[174] See Section 4.4 for more detail on Mozambique's planned gas expansion.

Tanzania

	Investments in new developments (USD)	Tons CO_2 from new developments	Largest new project
2021 to 2030	2 billion	7 million	Tanzania LNG T1
2021 to 2050	155 billion	867 million	

Tanzania has been producing small amounts of gas (100 million cm/ day) from onshore and shallow water reserves for domestic use since 2003. This will continue but little expansion is expected. Almost all future projection production is associated with large offshore gas reserves discovered in southern Tanzania in 2012, and the majority of licenses were purchased by international companies, including Statoil, ExxonMobil, Shell, Ophir Energy and Pavilion Energy.[175] About 2 billion cf/d of this offshore gas production is projected to come online in the mid-2030s, and another 1.5 billion cf/d by 2050.[176] Up to 100 kbbl/d in oil production from the same blocks is projected by 2050 as well. The development of the offshore discoveries and an associated onshore LNG plant, which is estimated to require $30–40 billion investment, is planned only for export. If realized, these projects will produce an estimated 15.7 trillion cubic feet of gas between 2020 and 2050 (2.6 billion barrels of oil equivalent).[177] Over half of this would come from "ultra deepwater" drilling.

Senegal and Mauritania (Grand Tortue)

	Investments in new developments (USD)	Tons CO_2 from new developments	Largest new project
2021 to 2030	14 billion	54 million	Greater Tortue Ahmeyim LNG Hub
2021 to 2050	59 billion	1.0 billion	

BP is leading a major new deepwater offshore oil and gas development, the Greater Tortue/Ahmeyim field, at the border of Senegal and Mauritania. It is the second largest new gas play on the continent after Mozambique's gas expansion. BP holds a 61 percent interest in the two offshore blocks.[178] The U.S. company, Kosmos Energy, holds a 29 percent stake, and the national oil companies of Senegal and Mauritania own five percent each.[179] There is no existing oil and gas production in either country. With an estimated 15 trillion cubic feet of gas and 1 billion barrels of oil, the first third of production capacity from the Greater Tortue/Ahmeyim field is expected to come online by 2030, and the rest by its peak by 2040.[180] Production is projected to be split 60 percent for Mauritania and 40 percent to Senegal. Less than 15 percent is expected to flow to domestic markets.[181]

South Africa

	Investments in new developments (USD)	Tons CO_2 from new developments	Largest new project
2021 to 2030	16 billion	16 million	Brulpadda
2021 to 2050	79 billion	662 million	

As of January 2020, South Africa's oil and gas output was projected to increase nearly seven-fold between 2020 and 2050.[182] This has since been downgraded to a 4.5-fold increase as of publication. Furthermore, as much of the projected production is near expected breakeven prices, the projection outlook is expected to remain extremely volatile. Potential production growth is anticipated in two areas in particular: offshore gas and onshore shale oil. In 2019, Total confirmed its discovery of gas in the Brulpadda deepwater field, which will make up one-third of South Africa's projected 6 trillion cubic feet of gas production between 2020 and 2050.[183] Most offshore production is currently only expected to begin in the 2030s, and further exploration continues. Onshore, several companies, including Royal Dutch Shell, Falcon, and Sunset hold permits to explore South Africa's shale gas resources. Earlier estimates by the U.S. Energy Information Agency (EIA) suggested that South Africa's Karoo might contain one of the top ten shale resources in the world, but these findings have been disputed.[184] Rystad Energy data projects shale oil production will now only be about 1/10th of South African oil and gas production between 2020 and 2050 at 422 million barrels of oil cumulatively.

Uganda

	Investments in new developments (USD)	Tons CO_2 from new developments	Largest new project
2021 to 2030	6 billion	125 million	Tilenga
2021 to 2050	22 billion	518 million	

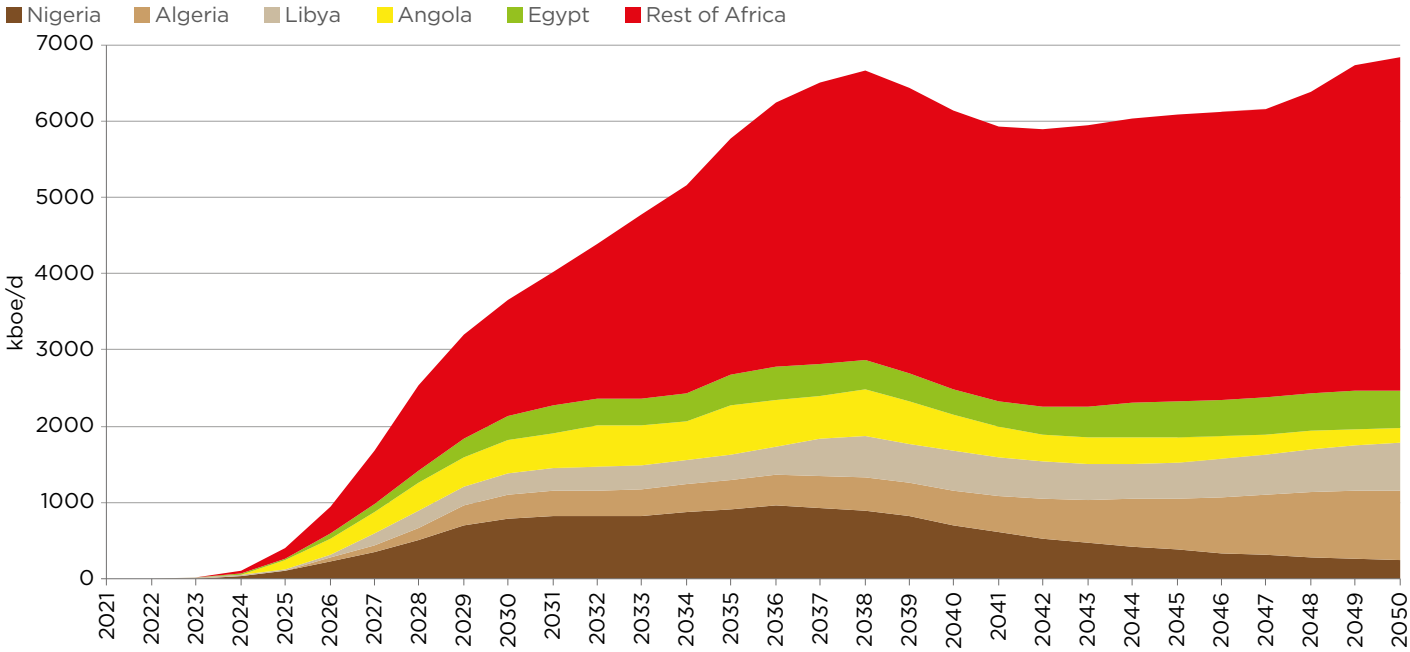
The Albertine Graben basin along the Uganda-DRC-Lake Edward-South Sudan border is estimated to contain 2.5 billion barrels of oil, with 1.3 billion barrels to be extracted by 2050.[185] Two thirds of this is conventional, and the rest is extra heavy.[186] Almost all expected production is to come from its two major fields (Tilenga and Kingfisher), with two-thirds held by Total, and most of the remainder by CNOOC. Because Uganda is landlocked, extraction of Ugandan oil depends on the construction of a heated oil pipeline, the East African Crude Oil Pipeline (EACOP), to liquify the fields' waxy crude oil and bring it to an export terminal.[187] Tilenga, Kingfisher, and EACOP are all expected to come online by the mid-2020s but face fierce public resistance (see Section 4.6).

Ethiopia

	Investments in new developments (USD)	Tons CO_2 from new developments	Largest new project
2021 to 2030	2 billion	10 million	Ethiopia-Djibouti Poly GCL Onshore LNG T1
2021 to 2050	12 billion	427 million	

Ethiopia has no existing production, but 6.7 trillion cubic feet in new gas production is projected by 2050 in Somali Regional State. About half of this production capacity is expected to come online by 2030, with the rest by the mid-2040s. Only trace amounts of oil are expected to be extracted alongside this. Poly-GCL made the discovery of this gas in 2018 and owns all stakes in it alongside China Communications Construction Company and the China-Africa Fund. Export of this gas depends on the construction of the Ethiopia–Djibouti Gas Pipeline and an export terminal in the Red Sea.[188]

Figure 14: Projected oil and gas expansion from major established producers in Africa, thousand barrels of oil equivalent per day, 2020–2050. This includes only new projects that are not yet approved or operating.



Source: Oil Change International analysis based on data from Rystad UCube.[189]

MAJOR ESTABLISHED PRODUCERS

Nigeria

	Investments in new developments (USD)	Tons CO_2 from new developments	Largest new project
2021 to 2030	27 billion	438 million	NLNG Seven Plus
2021 to 2050	86 billion	1.9 billion	

While projections show that the rate of production in Nigeria will decline in the next three decades, the large scale of Nigeria's oil and gas sector means there is still more production from new projects expected here than any other country in Africa. The decrease is driven mostly by onshore oil production coming offline. Most of the new oil projects planned for 2020 to 2050 are instead offshore, with three-quarters of the 4 billion barrels from new projects coming from these.[190] In contrast, 70 percent of the 8 billion cubic feet of new gas extraction is expected to be onshore. The ongoing human and environmental rights violations of Nigerian oil and gas production, and the urgent need for transition planning, are spotlighted in Section 4.3.

Pollution from Oil in the Niger Delta (CC BY-ND 2.0)

Algeria

	Investments in new developments (USD)	Tons CO_2 from new developments	Largest new project
2021 to 2030	18 billion	133 million	Ahnet gas project
2021 to 2050	78 billion	962 million	

Between 2021 and 2030, almost all of Algeria's projected fossil fuel expansion will occur in conventional onshore oil and gas production. In later decades, Rystad projects new fracked oil and gas and ultra deepwater extraction instead. Algeria or their state-owned company Sonatrach own 90 percent of expected new extraction projects, and international oil companies own the remaining 10 percent. Algeria's new projects face extra risks as the market shocks of 2020 and financial struggles in the years have left the industry's viability in doubt. In February 2021, the minister in charge of economic projections made the dramatic statement that "Algeria is no longer an oil country."[191] However, observers have also posited that Algeria may soon allow more foreign investment, making it more likely that these new projects will get built.

Angola

	Investments in new developments (USD)	Tons CO_2 from new developments	Largest new project
2021 to 2030	21 billion	314 million	Angola LNG T1
2021 to 2050	82 billion	1.3 billion	

Angola is an outlier among established producers, with almost all of its projected new production for oil and little for gas. 3.5 billion barrels of oil and 1.1 trillion cubic feet of gas from expansion are projected by 2050. This is all offshore, with 60 percent in the ultra deepwater category. The government of Angola and its state-owned company Sonangol own 40 percent of this new production. International majors, Total, BP, Eni, ExxonMobil, and Chevron together own 49 percent. About half of this new production capacity is expected to be built by 2030, and the other half by the mid-2030s.

Libya

	Investments in new developments (USD)	**Tons CO_2 from new developments**	**Largest new project**
2021 to 2030	14 billion	129 million	A&E Structures
2021 to 2050	83 billion	1.2 billion	

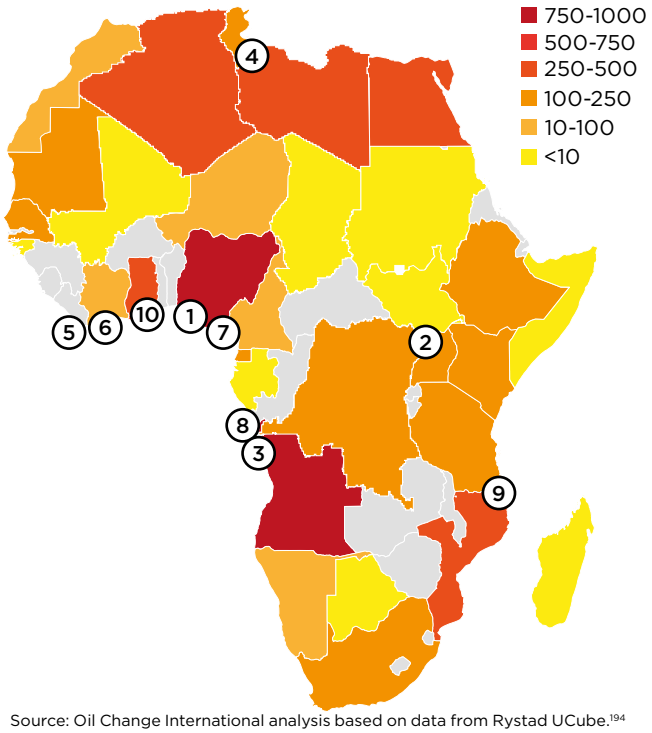
Most new production in Libya is expected to be from conventional onshore projects or shallow (shelf) basins, with the remaining 40 percent from deepwater. Sixty percent of this is expected to be from oil. Around 70 percent of this is held by the government-owned National Oil Corporation or by the government in open acreage. Eni holds 20 percent, and all other companies hold less than 3 percent.

Egypt

	Investments in new developments (USD)	Tons CO_2 from new developments	Largest new project
2021 to 2030	18 billion	126 million	Nile Delta Offshore
2021 to 2050	149 billion	1.1 billion	

Offshore expansion makes up about three-quarters of Egypt's planned oil and gas production for 2020–2050. Gas makes up two-thirds of this because while Egypt's net oil production is set for a steady decline, its gas extraction is expected to grow until the mid-2020s. Eni, BP, Shell, and Chevron hold the largest shares in Egypt's new production, with BP's West Nile Delta expected to be the largest project built this decade. Fracking for oil and gas in the Western Desert (held primarily by Shell and Apache) is also expected also expand, making up five percent of Egypt's new production in barrels of oil equivalent.

Figure 15: Projected oil and gas production expansion in Africa 2020 to 2030, in million barrels of oil equivalent. Highlighting the 10 largest new, not-yet approved projects based on their expected production by 2030, in million barrels of oil equivalent.



	Project	Country	Production (Million boe)
1	NLNG Seven Plus, NG	Nigeria	369
2	Tilenga, UG	Uganda	238
3	Angola LNG T1, AO	Angola	213
4	A&E Structures, LY	Libya	203
5	Pecan FPSO, GH	Ghana	169
6	Owowo West, NG	Nigeria	134
7	Area 4 LNG (T1-T2), MZ	Mozambique	127
8	PAJ (Block 31 South East), AO	Angola	113
9	Ogo, NG	Nigeria	109
10	Afina, GH	Ghana	91

Source: Oil Change International analysis based on data from Rystad UCube.[194]

SMALL SCALE ESTABLISHED PRODUCERS

In **Equatorial Guinea** overall production is declining, and production expected from new projects is two-thirds gas.[192] In **Ghana** most production only began in the 2010s and it is expected to peak by 2030. Of the expected production from new projects, 85 percent is for oil. Production in the **Republic of Congo** is expected to have peaked in 2019, and new projects going forward will be 70 percent oil. While none of these countries are expected to have over 2 billion boe in new production from 2020 to 2050, oil and gas are a central part of their economies. Consequently, these countries will require a managed and just transition to phase out fossil fuels without undue impacts on workers, communities, and government revenue.

OTHER AFRICAN FOSSIL FUEL PRODUCERS

Our analysis is focused on Africa's top 16 countries by expected expansion (and by overall production in Section 3.2) but it is important to note many other countries have plans to continue extracting fossil fuels. Cameroon, Sudan, South Sudan, and Chad all rely on oil and gas revenue for more than 10 percent of their total government revenue (a staggering 78 percent in the case of South Sudan), and these governments should work towards economic diversification and just transition plans for workers and communities. Other African countries could also soon join the list of major "emerging" producers above. Canadian company ReconAfrica is pursuing exploration in northeast Namibia and northwest Botswana near the Okavango Delta that they have claimed could result in a staggering 60 to 120 billion barrels of oil equivalent in new oil and gas reserves.[193] Similarly, proposed exploration in the Democratic Republic of Congo could result in largescale oil and gas production in Virunga National Park.

HOTSPOTS: NEW PRODUCTION EXPECTED THIS DECADE

Figure 15 shows that Angola and Nigeria, followed by Ghana, Mozambique, Libya, Egypt, and Algeria are projected to have the most expansion in the next decade. We highlight the 10 largest projects expected by 2030.

Fishing threatened by fossil fuel pollution, Ghana. ©Nana Kofi Acquah/Ashdenaa

Figure 16: Proposed and under development oil and gas pipelines, coal terminals, and LNG terminals in Africa.

Source: Global Energy Monitor's Fossil Fuel Infrastructure Tracker. More project information and an updated map are available here.[198]

3.4 MAPPING NEW PIPELINES, TERMINALS, AND OTHER FOSSIL FUEL INFRASTRUCTURE

An exploration boom that peaked in 2011–2014 identified oil and gas reserves in increasingly remote and far offshore areas in Africa.[195] As laid out in Section 3.1, Africa possesses neither the adequate refining capacity nor penetration of gas infrastructure to enable local consumption of extracted resources. Rather, most companies operating in Africa target overseas markets.[196] As a result, proposals for new pipelines, ports, and liquefaction plants where gas can be compressed for shipping overseas have accompanied the plans for the production of oil, gas, and coal in new regions of Africa.

Oil & gas pipelines: There are 105 major operating oil and gas pipelines on the continent, three under construction, and 13 more proposed.[199] For some of the proposed projects in early stages it is not yet clear what markets they are intended to supply, but of the nine that do, seven are primarily for export and two are focused for domestic or regional use. All but three of the plans are for gas pipelines and they are concentrated in West Africa. The anticipated growth in gas exports from Southern (particularly Mozambique) and East Africa will depend more on liquefaction and LNG transport.

Many of these pipeline proposals are facing local resistance. We detail the case of EACOP in Section 4.6, but two other notable cases are the Lokichar to Lamu pipeline and the Nigeria-Morocco Gas Pipeline. Organizers from Save Lamu, a coalition who won a legal case that will likely see the permanent cancellation of the Lamu Coal Plant,are also opposing the Lokichar to Lamu pipeline that is part of the larger LAPSSET corridor.[200] The massive Nigeria-Morocco Gas Pipeline that would extend the existing West Africa Gas Pipeline (WAGP) from Ghana to Morocco and on to Europe was proposed in late 2016 with a feasibility study completed in January 2019. Civil society organizations oppose the project, calling out the lack of consultation and commitments to provide energy to communities near the pipeline that currently lack access to fuel and electricity.[201] They have called instead for finance for accessible clean energy alternatives to fossil fuels.

LNG Terminals: There are nine operating LNG terminals in Africa, six under construction, and 14 others proposed.[202] Eighty-three percent of this capacity is for export. Further, the ratio of export to import is similar for those terminals already built vs. in development, in line with the IEA's projections that the portion of LNG production for domestic or regional use is not growing.[203] Of the capacity for import, 77 percent is in Egypt and Morocco, meaning import plans are largely not serving countries with low levels of energy access.

Coal terminals: Disruptions from COVID-19 and legal challenges, divestment campaigns, and other strategies from environmental justice organizations have delayed plans for new mines in South Africa, Botswana, Tanzania, and Zimbabwe as well as the terminals, power plants and other infrastructure associated with them.[204] However, the mines as well as plans for new coal terminals in various parts of southern and eastern Africa could again become feasible. Years of community organizing and legal challenges from Save Lamu, deCOALonize, and others around the Lamu Port and Lamu Power Plant have resulted in the main investor pulling out among other victories and should serve as an important warning to other proponents of fossil fuel megaprojects.[205]

> *"Extractivism remains the most enduring economic model in Africa. The continent procures the world with bodies and brains, copper and cobalt, oil and gas, diamonds and gold, wood, fish, artifacts and cultural heritage. It bleeds it dry at the expense of its populations already blighted by extreme poverty... Colonialism faked its own death in Africa."*[197] –
> Amy Niang, Associate Professor in International Relations at Mohammed VI Polytechnic University in Ben Guerir, Morocco.

3.5 THE SYSTEMIC ECONOMIC RISKS OF LOCKING IN FOSSIL FUELS IN AFRICA

Continuing down a path of fossil fuel extraction means facing stranded assets that could have cascading effects on producing countries' economies, environments, and frontline communities. Fossil fuel producing countries also risk being locked out of green economy.

As discussed in the introduction, even before the pandemic, the fossil fuel industry was already showing signs of systemic weakness. The fossil fuel sector underperformed the broader stock market for all but one year of the 2010s. By 2019, the industry had accumulated unsustainable levels of corporate debt, driven by the increasing competitiveness of renewable energy and the growing political power behind calls for climate action.[206] The COVID-19 pandemic and oil price crash in 2020 further destabilized the industry, providing a preview of the way that an unmanaged, overnight shut-down or industry collapse may play out. This section considers the implications of this global economic context for oil and gas producing countries in Africa specifically. For more discussion of the risks facing coal production, see the Section 4.5 on South Africa.

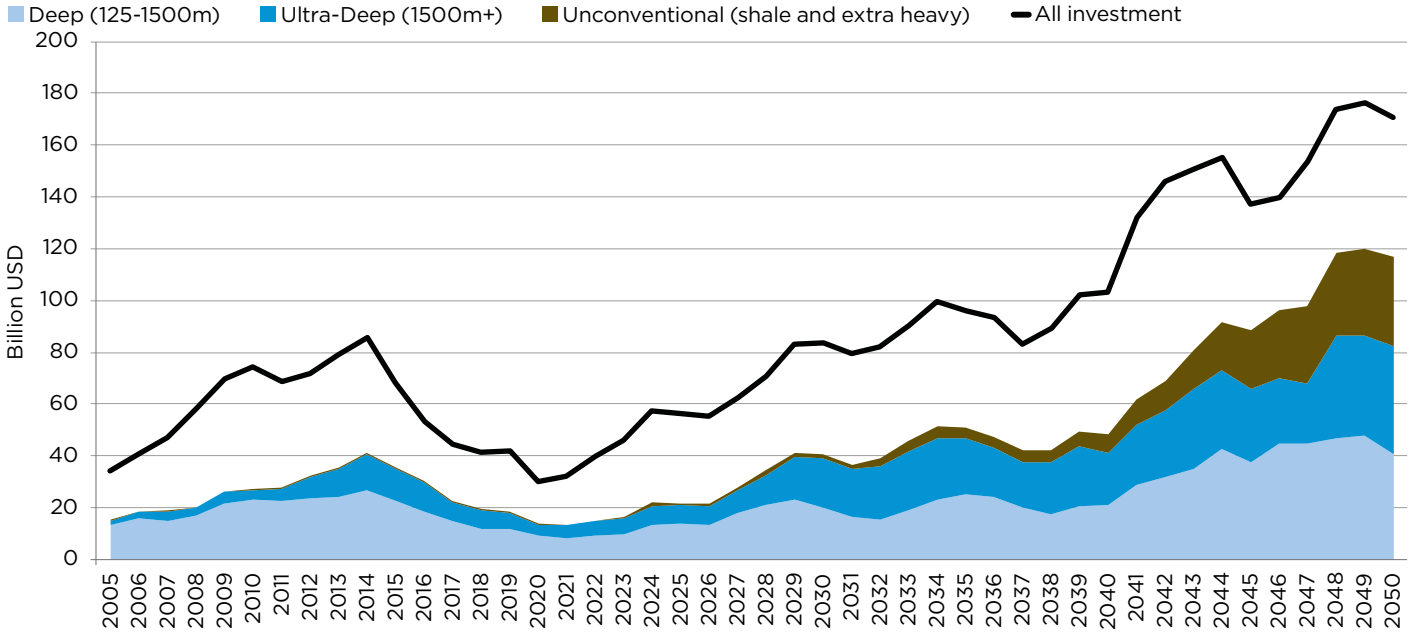
MOST AFRICAN PRODUCTION IS AT ELEVATED RISK OF BECOMING STRANDED

The pressures on the fossil fuel industry now mean that **any** further investment in undeveloped projects is at risk of becoming stranded. The IEA states that even some already-operating projects are likely to become stranded; in other words, "some fields may be closed prematurely or shut in temporarily."[207] Indeed, the agency's 2021 Net-Zero Emissions (NZE) Scenario report states that in a 1.5ºC aligned pathway, "there are no new oil and gas fields approved for development and no new coal mines or mine extensions are required."[208]

Unfortunately, the fossil fuel industry's plans to build new projects does not align with a 1.5°C scenario. The investment associated with exploring for and building new oil and gas developments in Africa in the next nine years (by 2030) is **$230 billion**. Over the next three decades (by 2050) this is expected to grow to **$1.4 trillion.** These investments in new fields represent an enormous and high-risk potential misallocation of capital. Notably, this calculation does not include the sizable investments in midstream and downstream infrastructure associated with these projects.

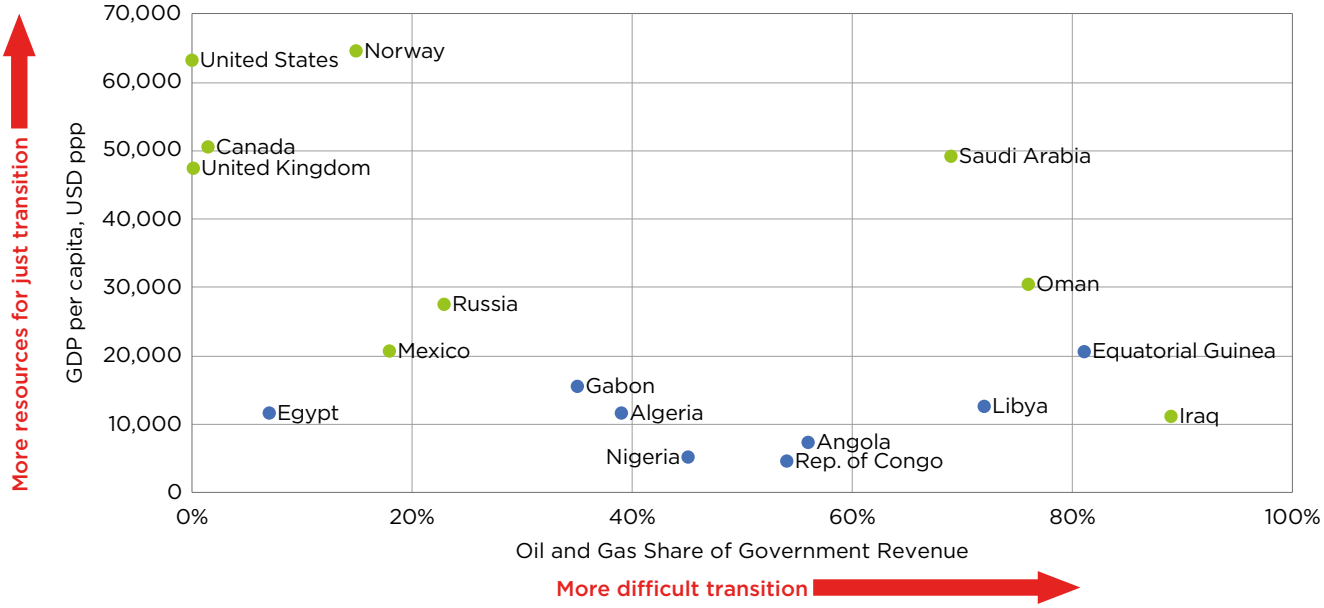
In addition, some projected production faces added risks of becoming stranded. The following figures show two different ways of approximating which projects are at the highest risk of decommission. First, by method and location of production: an increasing share of planned investment in oil and gas in Africa is expected to flow to unconventional and deep-water offshore projects (Figure 17). The cost of extraction is often more expensive than conventional onshore extraction, and the remote location of many of these projects mean there are added costs of building the infrastructure to get these fossil fuels to market on top of this. The situation is similar for the 33 percent of undeveloped production associated with projects in "new entrant" countries without established sectors or infrastructure. In its 2019 Africa Energy Outlook, the IEA warned offshore gas production in new entrant producers Tanzania and Mozambique was at risk of "cost overruns which could significantly undermine the competitiveness of the projects."[209] Combined, 71 percent of projected new oil and gas production in Africa over the next three decades is either for more costly methods of production, in new entrant countries, or both.

Figure 17: Past and projected capital and exploration expenditure for oil and gas extraction in Africa, 2005–2050.



Source: Oil Change International analysis based on data from Rystad UCube.[210]

Figure 18: Share of central government revenue from oil versus per-capita GDP (PPP), selected countries, 2018 (or nearest year for which data is available). Most producing countries in Africa face larger barriers to transitioning than producers in other regions. Those with a higher share of government revenue from oil also face larger risks from not pursuing a transition.



Source: Updated and adapted from Muttitt and Kartha, 2020.[216]

The second way we can assess vulnerability to becoming stranded is by the expected "breakeven price" of projected projects. This is the minimum price needed to cover construction and operational expenses in the long run. We find that modest drops in the currently projected prices would shelve or strand 65 percent of oil and 54 percent of gas expansion plans by volume.[211] This is based on the prices the IEA estimates for 2030 in its net-zero scenario: $35 a barrel for oil and $4.50/MMBtu for gas.[212] It is worth noting of course that these price points are still well above many of the lows seen throughout the last decade, meaning much larger portions of future production may be unviable.

WHAT STRANDED ASSETS MEAN FOR GOVERNMENTS IN FOSSIL FUEL PRODUCING COUNTRIES

Market shocks in 2020 and the poor performance oil and gas markets since mean that by 2023, shelved and delayed oil and gas extraction projects since the start of the pandemic are expected to add up to $25 billion less capital expenditure on oil and gas in Africa.[213]

A recent Carbon Tracker study found that Angola, Republic of Congo, Equatorial Guinea, and Libya all depend on fossil fuel exports for more than half of their public budget and stand to lose 40–80 percent of this revenue in a "low-carbon" scenario where the long-term price of oil is $40 per barrel.[214] Algeria, Nigeria, and Gabon all depend on oil and gas revenue for more than a third of their budgets and are similarly vulnerable to lost future revenues in a low-carbon scenario. As Figure 18 shows, many African oil producers draw a higher percentage of government revenue from oil and gas and have a lower GDP per capita than producers elsewhere, and so face larger barriers to ensuring a just transition and a greater vulnerability to future price volatility. Beyond making up high portions of government revenues, fossil fuels also make up a majority of many of these countries' exports.[215]

The poor terms of investment contracts, production sharing agreements, and concessions between the host government and the operating company outlined above in Section 2.1 make the prospect that returns on fossil fuel investments may dwindle over time makes the even more concerning.[217] Specifically, because contracts are more frequently delaying revenue until after initial cost recovery by the investors or until certain rates of return are reached for operators, governments are more likely to be left with little or nothing if operators abandon fossil fuel projects before their expected lifespan concludes because of changing economics. Similarly, as discussed throughout Chapter 2, any job, public revenue, and energy access promises associated with fossil fuel projects are less likely to be delivered on if the industry is under strain and in unmanaged decline. At the same time, if states move to shut down projects before their anticipated lifespan because of their contribution to climate change or otherwise, investors could sue them through investment arbitration tribunals.[218]

Emphasis is often placed on the economic impacts of stranded assets, but the environmental and social toll of the abandoned fossil fuel infrastructure that can accompany it is often more devastating. Past oil booms that have collapsed provide a preview of the socio-economic and ecological toll that stranded assets may take as companies renege on their clean-up responsibilities.[219] For example, communities near Merti in north-central Kenya experienced the short-lived rush for oil after CNOOC reportedly discovered reserves in their area through exploration drilling in 2008.[220] But by 2011, CNOOC had left. Today, land cleared for promised health facilities and schools remains empty, and the communities still lack desperately needed infrastructure, such as pipe-borne water. Frequent oil industry traffic damaged the only roads to Merti and companies never repaired them. Wages paid to local laborers were exploitative, including a reported $40 per month for 15-hour days as a cook. Concerns persist about lasting health impacts of exploration activities as well, including reported increase in incidence of cancer and other diseases.[221] See Section 4.3 on the Niger Delta for further examples of companies offloading their liabilities onto the public.

Because of the high degree to which energy infrastructure is economically embedded, stranded oil, gas, and coal production assets may also have "cascade effects" on other sectors. For example, in Angola, the sharp decline in oil prices in 2014 led to foreign currency shortages among other impacts on financial services and the economy.[222]

MISSING THE CHANCE TO LEAPFROG TO A JUST AND RENEWABLE ECONOMY

The risks of allowing the fossil fuel industry to continue with business as usual must also be compared with the alternative development opportunities on the table. If countries do not start to develop the infrastructure and technologies that will enable them to implement clean energy sources, they could also be locked out of the coming low-carbon economy.[223] Many countries in Africa have a comparative advantage for renewable energy. Africa has an outsized share – 40 percent – of the world's renewable energy potential as well as variety of the minerals and resources needed to build renewable infrastructure.[224] With a few exceptions, there is also much less lock-in of midstream and downstream fossil fuel infrastructure.[225] However, choices made now could exclude Africa from the next industrial revolution and make it a dumping ground for fossil fuel infrastructure and technologies. Unfortunately, this phenomenon has already begun as financial institutions in the Global North facilitate the development of fossil fuel infrastructure and import of technology to extract in the Global South while pursuing transition at home.[226]

Many of the broken promises regarding the benefits of fossil fuel development for poverty reduction and public services detailed in Chapter 2 stem from an "extractivist" economic model that makes the export of raw materials under poor trade terms one of the only options for African countries. This has reproduced many of the dynamics of colonialism. Given the speed of the global energy transition, it is no longer advisable for African fossil fuel producers to invest in long-lived refining capacity or petrochemical plants (investments that have typically allowed for more local consumption and "value-added" exports in other producing countries in the past).[227] Instead, there is an opportunity for Africa to break out of the extractivist trap and build local, democratic and equitable economies instead.

In Cape Town, South Africa, The Canary Project and local citizens created an enormous Solar Sun out of 70 high powered parabolic solar cookers with the "rays" being on the ground tables where the local community feasted on traditional food made in the solar cookers. After the event, the solar cookers were donated to the Khayelitsha community of Cape Town where many people do not have access to electricity.

4. EXAMPLES AT THE COUNTRY LEVEL

In this chapter we go through six country case studies from major existing or prospective producers in Africa that help illustrate the risks, impacts, and resistance to continuing to approve new fossil fuel projects in the coming decades.

4.1 SENEGAL: INTERNATIONAL CORRUPTION UNDERMINING PUBLIC REVENUES

Even though production has barely begun, offshore gas development in Senegal has already faced massive corruption scandals. In 2019, an investigative report by the BBC revealed evidence of corruption in the issuance of the offshore blocks in Senegal and subsequent business dealings that implicate British and American majors, BP and Kosmos. The so-called "PetroTim" scandal involved Frank Timiș, a London-based businessman, who was accused by the BBC to have conspired with Senegalese President Macky Sall's brother to siphon at least $9 billion in gas wealth away from the public purse – with BP's knowledge or acquiescence. In 2011, the Senegalese government awarded Timis' company, PetroTim, licenses for two offshore blocks, despite the company's unincorporated status and lack of experience in petroleum exploration and drilling. They later transferred these licenses to Kosmos Energy and BP for $250 million and an agreement that PetroTim would receive between $9 and $12 billion from BP over 40 years.[228]

To put these figures into context, Senegal's 2018 annual government budget was $6.3 billion, and about 40 percent of the population lives on less than $2 a day.[229] BP has contested these figures and denies any wrongdoing, stating that Timis' corporation will receive less than $230 million of the revenues the Senegalese state will earn from Grand Tortue.[230] Even as the Senegalese people have taken to the streets to protest these charges, government authorities have not yet opened an investigation. While the amount of future profit PetroTim expects to receive is still not public, the Natural Resource Governance Institute has found that the contract arrangements violate seven of the twelve most common characteristics associated with extractive sector corruption cases, including conflicts of interest, unqualified companies, and payments to political figures.[231]

4.2 GHANA: "TAKE-OR-PAY" IN GAS CONTRACTS DRIVING DEBT AND LOCKING OUT RENEWABLES

Ghana's experience illustrates both the economic risks of new oil and gas development and the influential role that international public finance institutions have played in deepening economic reliance on fossil fuel production. Touted as a key to Ghana's development and a pathway to energy independence, offshore gas has instead acted a fiscal burden that has locked out renewable energy development.

Ghana started producing oil and gas in 2011. The World Bank Group played an advisory role and provided approximately $2 billion in public finance for Ghana's energy sector, almost all in support of oil and gas infrastructure development. The bank allocated $1.2 billion of this support to Ghana's first gas-only field, Sankofa. A "take or pay" clause in the Sankofa project agreement with Eni obliges the government to pay for a set amount of gas per day. Consequently, Ghana has paid between $250 to $500 million a year for gas it does not use. The contract did not make gas purchases contingent on the presence of adequate infrastructure to use or export it.

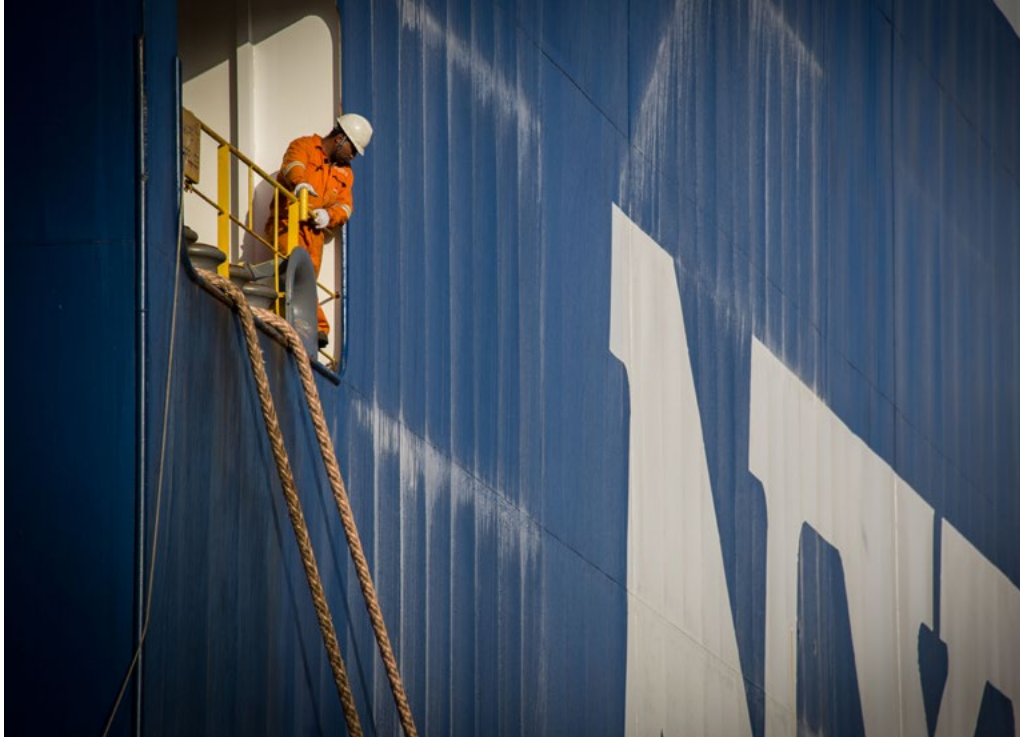
A similar situation exists with respect to Ghana's long-term, gas-fired electricity contracts set in 2015, which oblige the government to pay private electricity producers about $500 million a year for unused electricity. In total, in 2019 the cost of these take-or-pay clauses in gas and power contracts almost outweighed the government's reported $937 million in overall revenues from the country's oil and gas extraction. This discrepancy results from the World Bank's grossly overestimated revenue numbers from Ghana's oil and gas projects. The 2019 Energy Sector Recovery Programme estimated accumulated energy sector debts will reach $12.5 billion by 2023 without contract renegotiation or the completion of new infrastructure. The Economist Intelligence Unit predicts that even if new infrastructure is built to increase gas use, the "legacy of the 'take or pay' contracts is expected to remain a burden on state finances throughout the 2019-23 forecast period."[232] Ultimately, BloombergNEF analysis summarizes that these poor gas contract terms have "hamstrung" the development of cleaner, renewable sources from Ghana's energy mix.[233]

4.3 NIGERIA: DEATH AND DESTRUCTION ON THE FRONTLINES OF OIL EXTRACTION

The Niger Delta is emblematic of the toll that unbridled extraction takes on local communities and the environment. Since the discovery of oil in the Niger Delta in 1956, companies – in particular Royal Dutch Shell – have drilled thousands of wells and earned billions of dollars. As fossil fuels enriched overseas companies, the health, livelihood and wellbeing of local communities and their environment suffered.

Deadly repression of civil society and ongoing human rights abuses: Ken Saro-Wiwa and other activists in the Movement for the Survival of the Ogoni People (MOSOP) exposed internationally the impacts of oil production in Ogoniland, the Indigenous territory of the Ogoni people. This cast the spotlight on Shell's rampant pollution and abuses. MOSOP

issued the Ogoni Bill of Rights in 1990 calling for political autonomy and an end to the "unchecked environmental pollution and degradation" caused by oil exploration and exploitation by multinational oil companies with the blessing of the government of Nigeria.[234] Saro-Wiwa and eight other members of the "Ogoni Nine" were executed in 1995 for their campaign against Shell and the injustice of extraction, framed for murder by corporate executives. Since that time, human rights abuses have continued. In collaboration with Nigerian civil society organizations, Amnesty International has produced numerous reports detailing military and police action against protesters, industry-funded militias, and refusal to clean up and provide reparations for spills and other damages.[235]



Dar es Salaam Port, Tanzania. ©Rob Beechey/World Bank Photo Collection (CC BY-NC-ND 2.0)

Degrading local environment and health: Multinational corporations like Shell and Chevron have neither cleaned up the toxic mess in the Niger Delta nor compensated communities for decades of harm. Uncontrolled spills, blowouts, and fires are rampant in oil and gas facilities in Nigeria. For instance, the Grace-1 HWU rig at the Ororo-1 well located in Oil Mining Licence (OML) 95, a high-pressure well previously operated by Chevron, has been continuously burning since May 2020 and had not stopped at the time of publication.[236] Shell and other oil majors have consistently underreported the volume and frequency of these infractions of environmental regulations.[237] According to a 2011 study by the UNEP, oil pollution in Ogoniland has contaminated soil, fisheries, and drinking water, and exposed the local population to grave health risks.[238] Community members drink water that contains 900 times the level of benzene, a known carcinogen, permitted under World Health Organization guidelines.[239] Conditions in Ogoniland also illustrate the risks of stranded assets. There are many sites where abandoned oil infrastructure has never been properly decommissioned or rehabilitated.[240] Amnesty International, Environmental Rights Action/Friends of the Earth Nigeria, Friends of the Earth Europe, and Milieudefensie released a report in June 2020 decrying the lack of action to implement UNEP's 2011 assessment.[241]

4.4 MOZAMBIQUE: RISKING IT ALL ON LNG

Mozambique is the epicenter of the LNG boom on the African continent. Its gas development to date has acted as a microcosm of the risks and impacts laid out in this section. If realized, current plans for the development of "ultra deepwater" gas would make Mozambique one of the top three exporters of fossil gas in the world in less than a decade.[242] At the time of publication, Total – the company with the largest stake in the planned projects – had declared *force majeure* (a contract clause freeing parties from liabilities or obligations under unforeseeable emergency circumstances) due to gas-linked violence in the region, putting its projects on hold and freeing itself from many of its contractual obligations.

The planned development: Four offshore fields and five LNG trains – facilities that process fossil gas into liquid so it can be transported internationally – are currently slated for development. If built, these would produce 30 million tons of LNG per annum (MTPA) (2.4 trillion cf) of gas at full capacity.[243] Total, ENH (a Mozambican state-owned company), ExxonMobil, Eni, and China National Petroleum Corporation hold the largest shares in projected production. The projects' financiers include the export credit agencies of nine overseas governments, the African Development Bank, the US Development Finance Corporation, Korea Development Bank, and the World Bank Group.[244] The loans and guarantees provided by these public finance institutions have lowered the risk and cost of financing for private financiers, and the World Bank and the IMF have both given direct technical support to the projects.

Poor contract terms and high risk mean uncertain revenues: The pandemic and global recession as well as the conflict in the region have thrown the economics of Mozambique's gas development and projected production figures into doubt, with a number of project delays announced at the time of writing.[245] Prior to this added uncertainty, annual government revenues from future gas production were expected to not exceed $500 million before 2030 and to peak at $3.2 billion in 2040 (an estimate which includes a consideration of state-owned ENH's expected profits).[246] Poor contract terms that see more early profits flow to multinational companies rather than the government cause this lag in the potential for revenues to accrue.[247] Consequently, more government than company profit will be at risk later in the projects' lives, as the assets become increasingly likely to be stranded due to climate action.

International corruption: Between 2013 and 2016, the London branches of Credit Suisse and VTB Capital worked with some Mozambican officials to arrange illegal loans worth over $2 billion for naval forces to protect the offshore gas fields, betting that projected LNG production would provide compensation.[248] This scandal led the IMF, among other foreign donors, to halt new aid to the country in 2016, and prompted criminal investigations by several governments, including in the US, where authorities brought criminal charges against three international bankers and a Mozambican official.[249]

Debt and austerity: Mozambique has high levels of debt – in no small part due to the corruption scandal with London banks noted above – that have meant the IMF has been able to impose policy advice to lock the country into gas expansion. The country's debt-to-GDP ratio jumped from 46.8 percent of GDP in 2010–2015 to 99.8 percent in 2016 and still over 90 percent in 2020.[250] The IMF has helped to enable LNG build-out by supporting fossil fuel producer subsidies and Mozambique's high levels of debt have bolstered the narrative that LNG development is Mozambique's only opportunity for development.[251] However, the IMF's macroeconomic projections and debt sustainability analyses rely on LNG investments succeeding, failing to adequately consider the risks of LNG build-out and thereby legitimizing these investments. Even if the full projected revenues reach public coffers, recent trends in Mozambique's economic policy raise doubts about the likelihood of the government to pursue pro-poor spending. A review completed by UNCTAD in 2012 found that megaprojects had failed to benefit the people of Mozambique, despite the large economic growth and foreign investment they have generated.[252] These latest policies imposed by the IMF continue a vicious cycle that have hurt the country's development. From the 1980s to present, the IMF has conditioned its lending in the country on fiscal austerity measures that have reduced the deficit to GDP ratio at the expense of the poorest and most vulnerable Mozambicans. This has included the reduction of wheat subsidies, hiking electricity and public transportation tariffs, cutting public infrastructure investment, and worsened health and education.[253]

Militarization & violence: Violence from ISIS-linked insurgent groups has spiked in the area slated for gas development, with at least 2,600 deaths and 670,000 displaced.[254] Grievances around the unfulfilled promise of gas wealth are a key driver of the violence.[255] In particular, local organizations have raised concerns that the Mozambican government is has expanded military presence in the area in order to protect foreign investment from vandalism from insurgents. .[256] Total has also sought additional protection from the government.[257] In 2021, the escalation of conflicts north of Cabo Delgado prompted Total to withdraw all personnel from its Afungi site and put the project on hold.[258]

Compounding climate vulnerability: The LNG developments will contribute to significant increases in greenhouse gas emissions, worsening the global warming trends that have already threatened the country's population and environment. For example, in 2019 Mozambique was devastated by two cyclones, Idai and Kenneth, whose severity has been causally linked to warming oceans and air. These cyclones killed over 600 people, destroyed 35,000 homes,[259] ruined an estimated 800,000 hectares of crops,[260] displaced more than 2 million people, and resulted in over $2 billion in damages.[261] In addition to their human toll, these storms deepened Mozambique's debt crisis as the government took out new loans to pay for recovery efforts.[262]

Fueling frontline community harms and displacement, not jobs: The development of gas infrastructure on land and offshore has harmed the lives and livelihoods of the local population.[263] Fishing stocks have been depleted, training programs have led to little local hiring, and a number of journalists who have tried to report on the situation in Cabo Delgado have been arrested.[264] Resettlement processes for farming and fishing communities have been marred by inadequate consultation and compensation.[265] According to community members in the village of Milambe, for example, Anadarko took advantage of the turmoil caused by violence in the region and pressed forward with relocation of communities but failed to secure farmland for the families. As of August 2020, over 550 families had been relocated, some many miles from where they farmed or fished, and local activists anticipate another 2,000 will be soon displaced. The distance between homes and new plots for farming, compounded by the danger of travel due to the conflict, has made farming increasingly inaccessible and unsafe, and some fisherfolk have lost coastal access.

Threats to biodiversity: The project has a large footprint that encompasses some of Africa's most important mangrove forests and coral reefs, including the Quirimbas Archipelago, a UNESCO Biosphere. These are home to many endangered species, and support tourism and fishing jobs.

Locking-in fossil fuels and locking-out renewables: The gas megaprojects under development in Mozambique will require $55 billion in investment and are expected to operate for at least two decades.[266] Such a large investment will lock the country into the gas sector for the coming decades and reduce available public and private finance for cleaner and more job-creating renewable energy projects.[267]

Energy access: 80 to 90 percent of Mozambique's gas is slated for export, primarily to China and Japan.[268] Meanwhile, only 29 percent of Mozambique's population has electricity access.[269] The majority of Mozambicans are not connected to the grid, and there are no plans to build the infrastructure that would extend grid access to all.

Local organizations have long called on their government to halt plans for gas production and build a renewable, locally-owned energy system instead.[270] A June 2020 letter from 20 Mozambican organizations including the 145,000 member National Union of Peasants (UNAC) and Justiça Ambiental/Friends of the Earth Mozambique (as well as 184 international organizations in solidarity) repeated these demands for a transition to a renewable economy once again and called on the UN and African oversight bodies to ensure human rights are upheld and reparations from transnational corporations are paid. [271]

4.5 SOUTH AFRICA: THE FIGHT FOR A JUST TRANSITION FROM COAL

South Africa is the world's seventh largest producer of coal. It is also the largest consumer of coal on the African continent, accounting for 85 percent of the almost 50 GW of coal-fired capacity on the continent."[272]

Extraction: Coal mining in South Africa is shifting from Mpumalanga province to Limpopo province, as older mines are expected to be shuttered and newer mines aim to ramp up production. However, the opening of new mines in Limpopo is uncertain, as they face civil society opposition, legal challenges, and domestic and international policy changes.[273] Indeed, investment in new coal projects has declined, at a rate of 10 percent per year from 2009 to 2017, as investors become concerned about stranded assets and increasingly competitive renewables.[274]

Domestic use: In contrast to almost any other fossil fuel production subsector on the continent, more than two-thirds (180 Mt/y) of South Africa's coal is for its own

domestic consumption – primarily for electricity supply.

Exports: India and Pakistan are the destination of about 71 percent of South African coal exports.[275] The market for coal in both countries is uncertain and volatile due to the availability of more affordable renewables and coal generation capacity over-build. Both countries have also introduced new efforts since 2019 to phase out their coal imports.[276]

Jobs: Coal employs between 80,000 and 120,000 people in South Africa, less than two percent of the population.[277] Coal jobs are shrinking with automation and becoming more precarious as the sector makes cuts.[278] Informal artisanal mining in abandoned mines is also becoming more common as layoffs and unemployment rise.

Government plans: South Africa's cabinet has announced an overall commitment to net-zero emissions by 2050 as well as a plan to reduce dependence on coal for electricity generation from the current 91 percent to 41 percent by 2040 with plans to retire nearly 30 GW of existing capacity.[279] In contradiction to these promises, the government plans to build two new coal-fired power plants (Medupi is expected to be completed by 2020, and Kusile by 2024).[280] Cost overruns on these two plants as well as existing irregular and overpriced contracts for coal supply have led to $33 billion of debt for the national utility Eskom.[281] A project promoted and financed by the World Bank, Medupi has attracted debt and corruption, a key example of international finance institutions acting to lock in fossil fuels in Africa.[282]

Just transition: As the cost of production for solar and wind-powered electricity gains parity with conventional fossil fuel-powered electricity, a significant portion of South Africa's coal infrastructure is already at risk of becoming stranded assets.[283] Modelling from the University of Cape Town has shown a renewable energy future for South Africa would be more affordable, create more jobs, and be more inclusive and reliable than continued dependence on coal.[284] Climate Justice Coalition, a group of civil society, grassroots, trade union, and community-based organizations in South Africa, have recently launched the Green New Eskom campaign calling on the state-owned utility to implement a rapid and just transition away from coal and towards socially-owned renewable energy.[285] This must include tackling Eskom's debts related to over-priced contracts and corruption surrounding its coal supply.

4.6 EAST AFRICAN CRUDE OIL PIPELINE: LOCKING EAST AFRICA INTO OIL?

One of the most controversial new fossil fuel projects on the continent is the $3.55 billion, 1443-kilometer East African Crude Oil Pipeline (EACOP), designed to transport 216,000 barrels of waxy crude oil per day along a heated pipe from oil fields near Lake Alberta, Uganda to the coastal city of Tanga, Tanzania.[286] The pipeline would exacerbate global warming by unlocking an additional 34 million tons of CO2 emissions each year – substantially more than the annual emissions in Uganda and Tanzania combined.[287] The project reached a tripartite agreement between Total, Uganda, and Tanzania in April 2021, but campaigns targeting prospective financiers and insurers continue with the aim of blocking the project.[288]

The oil for EACOP will come from Uganda's Albertine Graben basin. Just two of the basin's major fields (Tilenga and Kingfisher) will produce almost all of the expected production. Two-thirds is held by Total, and most of the remainder by CNOOC.

Civil society organizations, including the StopEACOP coalition, have sounded the alarm about many aspects of the project. Over 100,000 people will be displaced in ten districts across Uganda for the pipeline and the associated Tilenga and Kingfisher projects.[289] This has been accompanied by a lack of transparency and delays in compensation, which have impacted livelihoods, exacerbated food insecurity and disrupted school attendance. All of this has gendered impacts, hurting women and girls, and especially female-headed households the most.

The planned pipeline also poses significant risks to local ecosystems. Approximately one third of its length, 460 kilometers, will be constructed within the basin of Lake Victoria, Africa's biggest lake on which 40 million people depend for water and food production.[290] Local civil society groups warn that the oil developments and pipeline would have irreversible impacts on sensitive habitats, including Uganda's largest national park, Murchison Falls, and coastal mangroves in Tanzania. Forty percent of the oil wells to be developed in Uganda lie within Murchison Falls National Park, an IUCN Category II protected area and Uganda's second most visited tourist attraction.[291] Despite the significant risks posed, as of publication no environmental and social impact assessment (ESIA) had been published for the Tanzania portion of the pipeline, and the study produced for the Ugandan portion of the pipeline was deemed unfit for purpose by independent experts who reviewed it at the government's request.[292] Project developers have not submitted mitigation and resettlement action plans, and have undervalued the project's carbon emissions.

The project has also been subsidized by the governments of Uganda and Tanzania, diverting resources from clean energy projects, urgently needed infrastructure investments, vital public services and environmental protection measures. In Uganda, the government's investments in the oil sector include construction of roads in oil producing areas and a new international airport.[293] Civil society organizations are concerned that debts incurred by the Ugandan government to subsidize the development of the oil sector, including guarantees reportedly provided to financiers of the $3.5 billion pipeline project, will diminish funds for measures to protect the local population and the environment.[294]

As in many communities on the frontlines of fossil fuel extraction, affected residents and civil society groups in Uganda and Tanzania risk retaliation and repression for speaking out against the planned oil developments. The hostile climate for human rights defenders and journalists in both Uganda and Tanzania heightens concerns about the ability of civil society to participate meaningfully in decisions regarding the project or to hold project sponsors accountable for human rights, social, environmental, and economic impacts.[295]

Even within this context, opposition to the project has been fierce. A growing number of prospective financiers have dropped or paused their support for the project. Six Ugandan and French organizations have also sued Total over the company's failure to take adequate measures to prevent human rights violations and environmental damage in local communities affected by the company's oil operations in Uganda. The case is on appeal in France at the time of writing.[296]

5. THE WAY FORWARD: REALIZING A JUST TRANSITION AND EQUITABLE DEVELOPMENT

The development of new fossil fuel projects anywhere on Earth is no longer advisable due to their contribution to the climate crisis as well as the increasing economic and social risks they pose. And as we established in Section 3.5, most projected African fossil fuel production faces extra economic risks. On the other hand, Africa has the greatest renewable energy potential of any region on Earth as well as other assets that position it better than many others to build a just, green economy. Continuing to double down on fossil fuel extraction may mean missing the opportunity to leapfrog to this fairer future – a risk not worth taking, as many including financial analysts, the United Nations, labour unions, and grassroots community organizers have argued.[297]

All of this underscores the urgent need for African governments to invest in a just and equitable transition away from fossil fuels. This transition must ensure economic diversification to a variety of low-carbon sectors, support the retraining of fossil fuel workers, clean up environmental contamination, generate new, secure livelihoods, improve gender equity, and ensure universal access to clean energy. However, African countries should not foot the bill alone. It is crucial that wealthy countries pay their fair share to facilitate Africa's just transition.

There is a lot of existing work across the continent that has begun to lead the way towards this future. Fierce and growing social movements led by youth climate activists, Indigenous communities, fisher people, farmers, unemployed workers, migrant workers, faith-based organizations are already engaged in work towards a just transition. Following their leadership, this section lays out principles for an equitable phase out of fossil fuels and key components for alternate development pathways that respect people and planet.

Finally, drawing from the Communiqué of the 2020 Africa Energy Leaders' Summit issued in January 2020, it ends with recommendations for three sets of actors:

(1) governments in regions with established fossil fuel production,

(2) governments with new or prospective entrants to the industry, and

(3) international governments and their multilateral institutions.

5.1 WHAT DOES AN EQUITABLE AND MANAGED PHASE-OUT LOOK LIKE?

Fossil fuel production must be phased out before 2050 if the Paris goals are to be achieved. But the implementation of that phase-out is a matter of politics and one that is likely to proceed inequitably without strong intervention from Global South governments and social movements.

Below are key principles that should guide an equitable approach to managed phase-out developed in a paper on *Climate Policy* by Greg Muttit and Sivan Kartha, which built off the work of many other climate justice scholars and activists:[298]

1. **Phase out global extraction at a pace consistent with limiting warming to 1.5°C**. This requires reducing production globally now, so we can phase out fossil fuels by 2050.

2. **Enable a just transition for workers and communities**. Safeguarding income and health, retraining and supporting skills transfer, and creating new, clean energy jobs.

3. **Curb extraction consistent with environmental justice**. Placing priority on stopping projects where they violate rights of local communities by destroying their environment or undermining their health, or where corruption or corporate capture is most grossly preventing benefits from being broadly shared within societies.

4. **Reduce extraction fastest in cases for which doing so will have the least social costs**. Given the limited carbon budget and the challenges of economic diversification, more extraction-dependent and poorer countries should be able to take more time phasing out extraction but should still begin now (see Figure 18 for one way of measuring these factors).

5. **No new fossil fuel developments should be pursued.** Given the decades-long lifespan of most extraction projects, there is little room for fossil fuel expansion in the carbon budget. While in theory some countries could increase production slightly if others made larger cuts, it is important to consider that fossil fuel extraction has infrequently benefitted the broader public and especially the most marginalized communities. The rapid timeline needed to avoid the worst impacts of climate change also makes equitable development of fossil fuel resources even less likely. Historically, equitable outcomes have been more common when development proceeds slowly, taking time to build institutional knowledge and local capacity over

decades. Meanwhile, alternative economic pathways are increasingly more promising and producing countries risked being locked out of them.

6. **Share transition costs fairly, according to ability to bear those costs**. Rich polluting countries must account for their historic responsibility and wealth by subsidizing others to phase out fossil fuel production and finance clean alternatives. This includes sharing funding, technical expertise, and intellectual property waivers as well as pursuing debt cancellation to fast track the transition away from fossil fuel reliant economies.

Muttitt and Kartha also review in their research some of the other proposals for how to set supply side targets to ensure that fossil fuels remain in the ground. We summarize this discussion here:

- Some have proposed **prioritizing the most "economically efficient" resource extraction** while requiring others to leave oil and gas in the ground. However, allowing the market to dictate the allocation of remaining carbon rights is not equitable. These formulas ignore historic responsibility for the climate crisis, the impacts of extraction on frontline communities, and are best positioned socioeconomically to pursue a rapid phase-out.[299]

- **Historical responsibility for climate change and the duration of extraction** alone cannot determine which countries should phase out production first and fastest. The African Union's Strategy on Climate Change and UNFCCC both rightly center on the notions of common but differentiated responsibilities and respective capabilities, emphasizing equity and historic responsibility for climate change. These are an important starting point, but do not apply neatly to supply side targets because of the vastly different levels of different economies' dependence on extraction. For example, after more than 60 years producing gas, Algeria could be said to have greater historic responsibility than Mozambique, which is just starting. But given how much of Algeria's public budget comes from gas sales, ceasing extraction there will be more challenging than in Mozambique, where production has scarcely begun and many investments are not yet sunk.[300]

- **Allocating the remaining extraction that the carbon budget can support to the poorest countries** is not an automatically equitable solution either given that those in poverty in developing countries have historically not benefitted (and indeed have more often been harmed) by fossil fuel extraction.

Muttitt and Kartha's principles reflect the most equitable pathway forward for fossil fuel production. Unfortunately, there are currently many political barriers to implementing a managed phase-out that respects them. The wealthiest countries in the Global North, who should be phasing out fossil fuels fastest and redistributing resources to allow others to do the same, have largely continued to pursue extraction aggressively and block multilateral progress on climate cooperation.[301] Multinational corporations and local elites who stand to benefit from continued extraction also stand as formidable obstacles to the just transition.

This political reality is made more dire by the timeline on which we need to act. For context, consider that a near immediate (five year) phase-out of fossil fuels in OECD countries and a 25-year phase-out in non-OECD would still largely exhaust a 1.5°C carbon budget.[302]

Despite these challenges, a bright trajectory towards a just and climate safe future remains within reach. A growing number of countries around the world are demonstrating leadership not just on "demand side" climate action (for example with economy-wide emissions targets and with historic levels of funding for renewable energy, public transit, and other solutions), but on phasing out fossil fuels as well. A growing number of countries have taken action to phase out coal production and use, and are beginning to implement similar policies for oil and gas as well.[303] Costa Rica has a moratorium on oil extraction and exploration in place.[304] Denmark, France, Spain, and Ireland have banned new licenses for oil and gas and are phasing out their existing extraction.[305] Belize, Bulgaria, Ireland, New Zealand, and Uruguay have banned some forms of extraction like offshore or fracking.[306] California will halt new fracking licenses in 2024 and phase out other oil and gas extraction by 2045.[307] As noted above in Box 2, a growing number of public finance institutions focused on international trade and development are also phasing out support for fossil fuels. While these actions are still far from alignment with a 1.5°C carbon budget – in particular, much earlier phase-out dates are needed from wealthy jurisdictions – they are gaining momentum. The social movements that helped precipitate them continue to build power and are pressuring decisionmakers to raise ambition and ensure just outcomes.

And regardless of how much leadership towards a phase-out other regions take, African countries stand to benefit from beginning to pursue a just transition away from fossil fuels now. Beyond the benefits for climate change, local environmental health and economic resilience and equality, this could help unlock greater cooperation among countries and regions and create the conditions needed for the principles for an equitable phase out to be respected.

5.2 PRINCIPLES FOR A FUTURE THAT IS LOCAL, DEMOCRATIC, EQUITABLE, AND RENEWABLE

Moving past fossil fuels provides an opportunity to build an energy system and wider economy that is more local, equitable, and democratic.[308] Doing so will require local planning to enable communities to make decisions about what exactly the energy transition will look like in their region.[309] However, there are some important foundational characteristics that will help ensure a democratic, equitable, and fossil-free future – and we outline these here.

Strong social movements and trade unions: Given the entrenched interests in fossil fuels from transnational corporations and global and domestic elites, strong social participation in decision-making is needed to secure just energy transition. As this report has highlighted, fisher people, farmers, peasants' movements, unemployed workers' movements, youth climate activists, migrant workers and many others across the continent have begun to lead the way toward this future. This upsurge has been built off decades of earlier social movements. From anti-fracking struggles led by unemployed youth in southern Algeria, protests of offshore extractions' damage to fisheries in Tunisia, union and community coalitions for a just transition from coal in South Africa, to Save Lamu in Kenya, to the Ogoni resistance to Shell in Nigeria, to

emerging youth climate strikes across the continent, these movements are gaining power. None of the goals that follow in this section will be possible without this bottom-up pressure.

As groundWork's 2019 report on just transition noted, building strong social movements and trade unions will require deepening civil society coalitions and developing shared visions of a different future.[310] It will also require new transnational solidarities between movements, a powerful example of which has recently been seen with the #EndSARS movement in Nigeria.

Just transition for fossil fuel workers and impacted communities: There has long been a manufactured wedge between environmental justice and labor rights, particularly when it comes to workers in the oil, gas, and coal industries. Efforts to achieve a just recovery from the present crises and a just transition to the future must protect workers and communities affected by the crisis and create long-lasting green jobs.

As discussed in Section 2.2, job creation in clean energy industries exceeds affected fossil fuel jobs by a factor of two and a half to five for every dollar of investment, and the International Labor Organization projects that, "renewable energy employment could expand to around 25 million people worldwide by 2030, easily outpacing job losses in the conventional energy sector by some 6 million workers."[311] However, union and community organizing is needed to ensure these new green jobs have strong wages, benefits, and labour rights. This has unfortunately not always been the case to date as these newer sectors have not benefited from decades of union organizing to secure these.[312] And the just transition should not act to further entrench existing inequalities by providing support only to those with jobs in the fossil fuel sector, who have typically had higher wages and job security than others in their communities, and which have often locked out women, migrant workers, and other marginalized groups. As groundWork notes, "[i]t should be remembered that workers are not only those with formal jobs who belong to trade unions. They include street traders, waste pickers and food gardeners, amongst others."[313]

The following pillars of a just transition have been developed by the International Trade Union Confederation,[314] and provide a useful summary of the measures needed:

(1) **Sound investments in low-emission and job-rich sectors and technologies**. These investments must be undertaken through due consultation with all those affected, respecting human rights, labour rights, and decent work principles.

(2) **Social dialogue and democratic consultation of social partners**. This includes trade unions, employers, and other stakeholders including communities.

(3) **Research and early assessment of the social and employment impacts of climate policies**. Training and skills development, which are key to support the deployment of new technologies and foster industrial change.

(4) **Social protection, along with active labour market policies**. This means providing income support, healthcare, and other resources during a transition as well as "active" labor market policies to ensure those impacted can find good new jobs. This can include employment services, education and training, relocation support, subsidized employment, and support for the development of small- and medium-sized businesses.

(5) **Local economic diversification plans** that support decent work and provide communities stability during the transition. Communities should not be left on their own to manage the impacts of the transition as this will not lead to a fair distribution of costs and benefits.

Renewable energy for all: We have already established in Section 2.2 the vast potential for renewable energy in Africa, given it has 39 percent of the world's total renewable energy potential, by far the largest share of any continent.[315] The lack of lock-in to centralized and expensive fossil fuel grids in most regions in Africa provides a significant opportunity to leapfrog directly to more advanced and more affordable renewable energy technologies, a transition that will be more costly on other continents.

Where there are already grids supplied by fossil fuel plants, a transition plan should be put in place to retire these plants and replace them with renewables. Trade union and community coalitions are already pushing for such a plan in South Africa with the #GreenNewEskom campaign. As Africa also has the raw materials needed to build the infrastructure for renewable energy for all, the biggest barrier is ensuring Global North countries do not use trade agreements to prevent the development of full renewable supply chains (see Box 2).

There is promising momentum in place for the growth of both distributed and grid-based renewables in Africa, though it is not yet fast enough to be on track to secure universal energy access by the African Development Bank's goal of 2025. BloombergNEF predicts that by 2021, there will be a 62 percent increase in installment of solar PV capacity in Africa over 2018 levels.[316] Kenya is among the most dramatic examples of using renewable energy to increase energy access, with its access rate going from 25 percent in 2013 to 75 percent in 2018 due to a strong grid connection push, continuous support from the government for distributed solar, and the development of mobile payment infrastructure."[317]

However, for the energy transition to be equitable, energy must be both available and affordable. Where grid extension has recently occurred, the costs of connection have often been out of reach of much of the population. Connection costs exceed average monthly income in Madagascar, Togo, and Botswana, and regular bills are difficult to pay.[318] While off-grid distributed renewable energy is about one-third of this cost on average, the private sector has led provision efforts to many of the most vulnerable populations, putting them at higher risk for punitive legal and financial penalties, such as being blacklisted for credit.[319] Policies to ensure affordable access and alternate ownership models that are not driven by a profit motive (discussed below) are imperative for ensuring renewable energy access for all.

Food sovereignty: The energy transition is also an important opportunity to transform our food systems away from insecurity, commodification, and fossil fuel-heavy inputs, and towards one based on ecological agriculture, democratic ownership, and ensuring enough healthy food for all. This must also include holding up land rights for small-scale farmers, especially women and sexual- and gender-minority farmers whose limited access and control over land makes them extremely

vulnerable to land grabbing. In their 2019 report on the just transition, groundWork highlights growing community food gardens as a transformative first step towards food sovereignty.[320]

Economic diversification for people and planet: Beyond building a renewable energy sector and a healthy food system, there are many other low-carbon sectors that will need to be built up in the coming decades. This diversification will be particularly important in countries and regions that are currently economically reliant on fossil fuel production. This leaves countries vulnerable to increasingly volatile global fossil fuel markets. This transition is an opportunity to build up low-carbon sectors that also build more resilient and equitable communities. This includes not just sectors that need to transform to reduce our emissions like energy, manufacturing, transport, agriculture, and buildings, but also expanding already low-carbon sectors like caregiving, teaching, healthcare, social work, the arts, and public-interest media.[321] These "care economy" sectors will also help build communities more resilient to the impacts of climate change.

Foster local ownership and democratic control: Due to their decentralized nature, many climate solutions – from renewable energy to ecological farming methods to public transit – lend themselves better to public, cooperative, and other not-for-profit ownership models than their fossil fuel-based counterparts. These models share benefits more equitably, create more jobs, and are more accessible to the lowest-income members of a community.[322] However, these alternate local ownership models are far from guaranteed to emerge – they must be prioritized and fostered by government and civil society. For example, ownership in the distributed renewable energy sector is so far overwhelmingly concentrated in large European and North American firms, which enjoy privileged access to financing.[323]

No false solutions or green extractivism: In testing climate solutions, it is important to ask who benefits and to assess the impacts holistically. Fossil fuel companies are increasingly pushing for unproven, expensive technologies such ascarbon capture and storage, geo-engineering, and hydrogen made from fossil gas that would allow them to keep extracting rather than meaningfully reducing emissions.[324] And while renewable energy projects on a lifecycle basis are far less destructive for people and the environment than fossil fuels, like any infrastructure development they can be implemented poorly. If not properly designed and monitored, renewable projects can replicate problems common in the fossil fuel sector. This includes the concentration of corporate power and profit in the hands of foreign investors and elites; displacement and associated land and livelihood loss; negative environmental and human rights externalities (such as sulfur dioxide emissions from geothermal plants lacking in proper technology or the reliance on inputs, such as the minerals needed for solar PV panels, sourced from companies with abusive labor conditions or operating in conflict zones). The Ouarzazate solar plant in Morocco, which privatized communally-owned land including pasture and draws heavily on scarce water resources, is one example that should not be repeated.[325] It is critical that renewable energy and other climate solutions are built with the free, prior, and informed consent of the communities impacted.[326] The right of communities, and women within them specifically, to withhold their consent from a project must be emphasized.

> *"One of Africa's great strategic advantages is that it is not encumbered with outdated fossil fuel infrastructure and can instead leapfrog that dirty energy and move straight to clean, cheap, solar and wind, with which Africa is blessed in abundance....This is the direction Africa should be going in, but oil giants like Total are desperate to exploit African oilfields, even if Africans are going to suffer the climate consequences."*[328] –
> Mohamed Adow, Founder and Director of Powershift Africa

Deep regional cooperation: Deeper economic and political coordination among countries in Africa to share resources and planning can help build complete supply chains for green technologies, ensure energy and food security, respond to climate disasters, and avoid any punitive trade actions from a shift away from fossil fuel extraction.[327] As the Transnational Institute has argued, this 'autonomous regionalism' would only be possible with strong social movements and trade unions creating adequate space for social participation in decision-making – the first principle listed in this section.

Make polluters pay: Planning should begin to ensure legal and policy frameworks will require fossil fuel companies to pay for their fair share of clean-up of damaged land and ecosystems and transition costs for workers and communities. As the risks of stranded assets escalate, companies are increasingly working to renege on these responsibilities. This should include: (a) reforming liability and bonding regimes to minimize unfunded clean-up costs and public losses related to high-carbon stranded assets, (b) securing private sector contributions to future worker and community compensation measures, and (c) limiting future possible liabilities via "investor-state dispute settlement" (ISDS) provisions in trade agreements (including in earlier stages like treaty design and avoiding ratification of deals) among others. Finally, it is not just polluting companies, but polluting wealthy countries that must pay their fair share to make a just energy transition possible).

5.3 RECOMMENDATIONS FOR GOVERNMENTS

There is no shortage of work needed to achieve a transformative and just transition away from fossil fuels that would limit average global temperature rise to a 1.5°C limit. However, there are still many political barriers to reaching this. It will not happen overnight or without strong social movements and trade unions to help advance it. In particular, new strategies to exert political pressure on the wealthiest countries are needed in order to ensure they phase out fossil fuels first and fastest and redistribute resources to support others in pursuing a just transition. But our shrinking global carbon budget requires ceasing fossil fuel expansion everywhere and beginning a phase-out of fossil fuels. Small groups of national and subnational governments globally beginning to take steps towards a managed phase out of fossil fuel production is one of the most promising pathways to unlocking the needed momentum to a more coordinated drawdown at sufficient scale.[329]Regardless of how much leadership towards a phase-out other jurisdictions take, Chapter 2 and Section 3.5 have shown that African countries stand to benefit from starting to pursue a just transition away from fossil fuels now.

We emphasize again that the solutions for this transition will look different in different countries and communities. However, here we highlight important high-level actions different governments should take to begin a fossil fuel phase-out and create the conditions for these transformative changes.

MAJOR FOSSIL FUEL-EXTRACTING COUNTRIES IN AFRICA

- Cease licensing and approvals for new fossil fuel projects.
- Phase out all subsidies for fossil fuel extraction, including tax breaks and public finance for fossil fuels.
- Review social, environmental, and trade regulations for existing fossil fuel extraction to ensure human rights are upheld, minimize local environmental harms, pay reparations for past harms, limit future possible liabilities in trade agreements, and ensure funds are secured for companies (state-owned and corporate) to pay the full cost of decommissioning.
- In coordination with subnational and local governments, and with meaningful leadership from and consultation of workers, communities, and trade unions, publish a plan for a managed phase-out of fossil fuel extraction and a just transition for impacted workers and communities by 2050 at the latest. This plan should prioritize stopping projects where human rights are at risk, and where the most marginalized communities disproportionately bear the adverse impacts of fossil fuel production.
- In line with plans for a fossil fuel phase-out and a just transition, and with similar participatory planning, begin implementing industrial and social policies towards economic diversification, with an emphasis on sectors that also build more resilient and equitable communities.
- Rapidly scale up the installation of distributed renewable energy to achieve universal energy access.
- Work towards deeper economic and political coordination with neighboring countries to share resources, technical capacity, and planning that can help build complete supply chains for green technologies, ensure energy and food security, respond to climate disasters, and avoid any punitive trade actions from a shift away from fossil fuel extraction.

NEW OR PROSPECTIVE ENTRANTS TO FOSSIL FUEL EXTRACTION IN AFRICA

- Cease licensing and approvals for new fossil fuel projects.
- Where fossil fuel extraction is already taking place, publish a plan for a managed phase-out and a just transition for impacted workers and communities by 2050 at the latest.
- Rapidly scale up the installation of distributed renewable energy to achieve universal energy access.

GLOBAL NORTH GOVERNMENTS AND MULTILATERAL INSTITUTIONS

- Cease licensing and approvals for new fossil fuel projects.
- In combination with just transition planning with impacted workers and communities, phase out existing fossil fuel production in the next five to 10 years.
- End all domestic and international subsidies and public finance for oil, gas, and coal projects. This should include ending all support for fossil fuel exploration, extraction, transportation, power plants and associated infrastructure.
- In line with historic responsibilities for the climate crisis as well as current capabilities, rapidly scale up debt-free and concessional finance for renewable energy, energy efficiency, just transition plans, energy access, and other climate solutions. This should be separate and additional to overseas development aid commitments, and to finance for climate adaptation and mitigation of loss and damage.
- Pursue debt cancellation in light of the COVID-19 crisis to immediately bring developing country debts to sustainable levels, and work towards a longer-term multilateral sovereign debt workout mechanism that reckons with historic injustices.
- Implement binding domestic regulations for environmental and human rights due diligence for transnational corporations.
- Pursue international legal proceedings and reparations for the peoples impacted by past and ongoing fossil fuel extraction.
- Negotiate an end to trade deal provisions that allow companies to sue governments for measures taken to phase out fossil fuels or hinder the sharing of green technology.

In the Fulani village of Hore Mondji, located in southern Mauritania on the banks of the Senegal River, a women's cooperative uses solar energy to operate the borehole that supplies water to the market garden.

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