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Strategic Report

Global Power and Renewables

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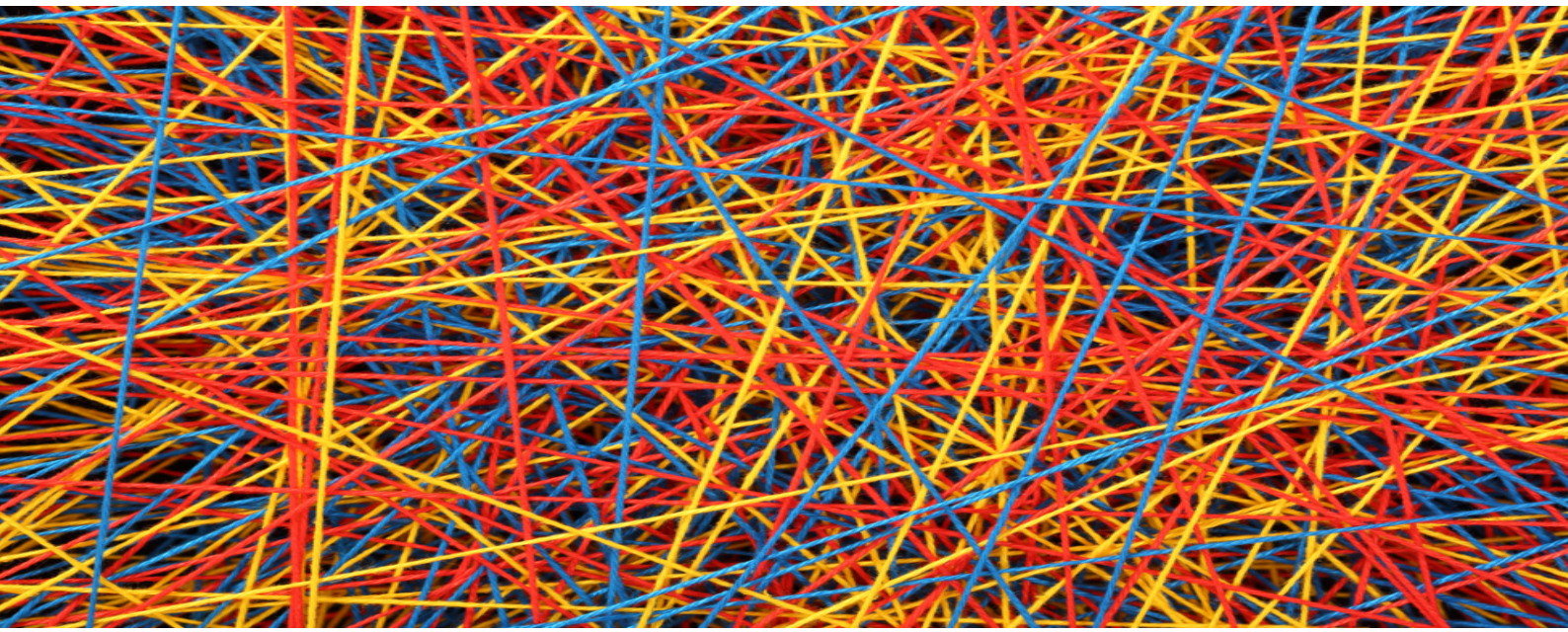

Africa review and outlook (2022–23)

Turbulence on the road to recovery

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Summary

Macro outlook

- In 2022, GDP growth was supported by the end of COVID-19 restrictions and renewed economic activity, but gains were weighed down by fallout from the Russia-Ukraine war, such as high commodity prices.
- Public sector debt continued to rise in 2022, and debt restructuring and reprofiling is likely in low-income and debt-distressed countries in 2023.
- In 2023, growth will slow further on the expectation of mild recession in some advanced economies.
- While high commodity prices benefited some African economies, government support programs designed to ease the burden of high food and fuel costs also added debt and slowed growth.
- Jihadist militancy and national elections are key sources of existing and potential political strife.
- Africa—and other developing markets—registered gains at the 2022 United Nations Climate Change Conference (COP27) by securing commitments for new sources of climate finance, but governments are expected to continue advocating for turning these promises into concrete actions.

Upstream

- Gas shortages resulting from the Russia-Ukraine conflict made energy security a top concern among policymakers worldwide, lending sympathy to calls from African leaders to support the exploitation of the continent's national hydrocarbon reserves, especially gas.
- New licensing rounds in Sub-Saharan Africa remain focused on the offshore.
- Frontier exploration in Sub-Saharan Africa had another banner year in 2022, further burnishing the region's reputation as a global E&P hotspot.
- Civil society continues to challenge upstream activity, which may lead Sub-Saharan Africa's producers to turn to investors and financiers less constrained by climate policies.

Downstream

- Growth in refined product demand was third highest among regions worldwide in 2022 and is on course to lead in 2023.
- Growth in product demand has been driven, despite high product prices, by increased economic activity following the relaxation of COVID-19 restrictions and by government interventionist policies aimed at shielding consumers from those high prices.
- Economic activity is pronounced in the road freight sector and in extractive industries, especially in mining, in which increased activity has been caused, ironically, by high demand for battery minerals.
- Other key factors underpinning growth are the switching from natural gas to more competitively priced liquid fuels and the increased use of products for power generation, especially in South Africa.

– In 2023, product demand is expected to continue rising, albeit more slowly as government subsidies are reduced.

– Africa faces a looming diesel shortage of 700,000 b/d, a situation exacerbated by regional refinery closures, and while Russian diesel may offer a solution, redirecting supplies from restricted European markets may not be simple.

Power and renewables

– In 2022, regional power consumption increased by only 1%, following 3% growth in 2021.

– Growth in 2023 will be constrained owing to slowing global economic activity and domestic power supply problems.

– Power demand remains less than 500 kWh per capita, the lowest in the world.

– Sub-Saharan Africa's power mix is dominated by coal—mostly in South Africa—as well as hydropower, while renewables showed robust growth, with 2.4 GW of additions in 2022.

– Further renewable development is expected to be affected by global supply chain bottlenecks and increased technology costs.

– But corporate renewables procurement has increased in popularity, driven by large grid consumers impaired by the intermittence and unreliability of grid power, most prominently in South Africa.

– Sub-Saharan Africa's capacity to produce green hydrogen is a nascent sector that is attracting global attention.

Introduction

Sub-Saharan Africa's energy sector remains subject to the turbulent push-pull of conflicting forces, despite renewed regional economic activity resulting from the end of COVID-19 restrictions. COVID-19–era debt is a weight on regional economic growth, and the Russia-Ukraine conflict looms large in the region. High commodity prices resulting from the conflict have been both an economic boon and a bane, depending on the country, and the conflict has also reminded investors and policymakers worldwide why energy security is important—which has supported energy investment across the region. Although the region had a banner year for world-class frontier hydrocarbon discoveries, energy transition considerations remain a challenge to future upstream activity. The region is a leader in refined product consumption, but this also gives rise to supply concerns, including from the power sector, which increasingly has turned to liquid feedstocks to compensate for failures of grid power. Renewables, however, may increasingly fill some of these power supply gaps. This report, as in past editions, reviews the progress that was made over the course of the past year, and offers an outlook on the complexities and questions the region will face in the coming year.

Macro outlook

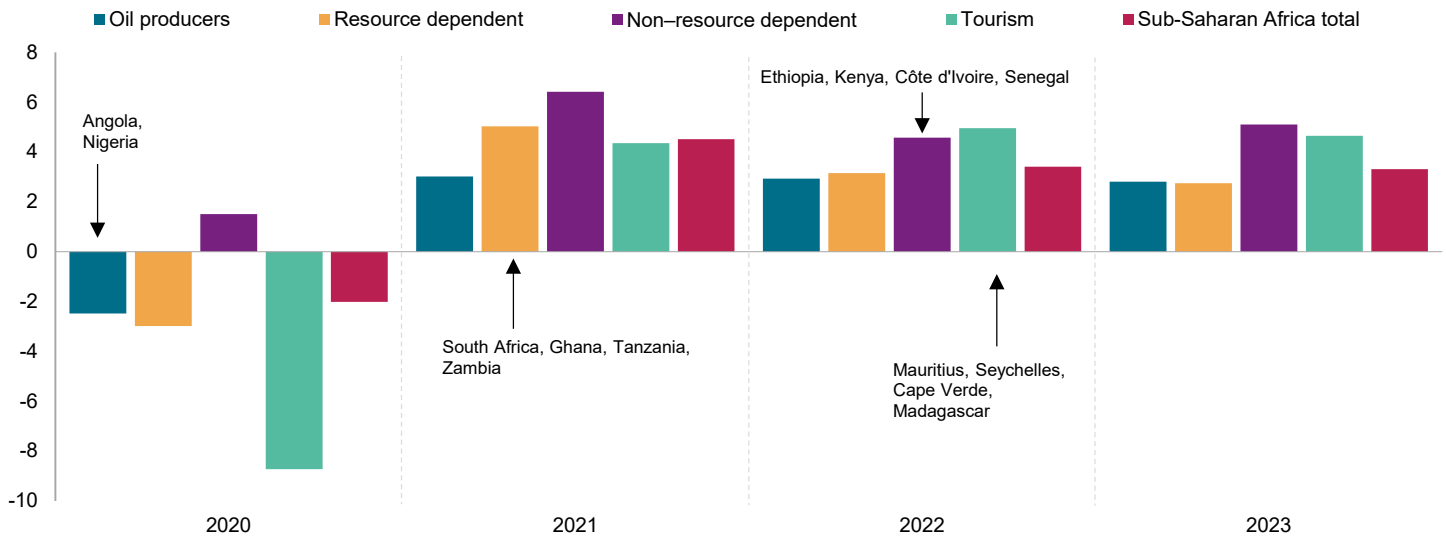
The real GDP growth rate in Sub-Saharan Africa slowed to 3.5% in 2022 compared with 4.7% in 2021 (see Figure 1). Although the easing of COVID-19 lockdown measures and the return of tourism supported GDP growth, the conflict between Russia and Ukraine that began in February 2022 led to a substantial increase in commodity prices globally. S&P Global Market Intelligence's Material Price Index, an aggregate index of

commodity prices, registered 16% year-on-year (y/y) growth during the first half of 2022 following a 62.1% y/y rebound in 2021. For the Sub-Saharan Africa region, however, results were mixed. Buoyant export prices for oil, copper, platinum, coal, gold, and other commodities benefitted the region, but they were offset by high import prices for agriculture products, such as wheat, vegetable oils, and fertilizer as well as refined fuel products. Moreover, the region's current account deficit widened to an estimated 1.9% of GDP in 2022 from a deficit of 1% of GDP in 2021, while higher food and transport costs pushed headline inflation to an estimated 13.1% in 2022 from 10.3% in 2021. Inflation is expected to remain elevated longer in Sub-Saharan Africa than in other regions. In line with the global trend, central banks of major African economies including South Africa, Nigeria, Ghana, and Kenya tightened their monetary policies, leading to higher interest rates. After significant rises in 2022, however, in 2023 interest rates are expected to decline in Angola, Ghana, Mozambique, and Uganda. But access to global financial markets has become more difficult, especially in countries experiencing debt distress such as Ghana, Malawi, and Zambia. The region also saw increased requests for multilateral support for debt restructuring.

Real GDP across Sub-Saharan Africa is expected to drop to an average of 3.3% in 2023 owing to a mild recession, which is expected to hit advanced economies early in the year and cut global growth to 1.9% in 2023 from around 3% in 2022. But the cancelation of zero-tolerance COVID-19 policies in mainland China—a key regional trading partner and the world's largest consumer of commodities such as food and oil—could support supporting overall emerging market growth, expected to remain unchanged at 3.5% in 2023. Economic recovery is now anticipated in mainland China, and along with low inventory levels across multiple commodities, global commodity prices are expected to stabilize from second half 2023 onward. Headline inflation in Sub-Saharan Africa will average 10.3% in 2023 compared with 13.1% in 2022. This level exceeds the region's five-year average of 9.2% and discourages any rapid movement toward loosening monetary policy. Also supporting regional economic growth is investor interest in natural gas, especially in Mozambique, Tanzania, and the Republic of the Congo, as Europe cuts off Russian gas imports. Senegal is expected to become one of the best-performing countries in the region in terms of GDP growth during 2023 with the commencement of natural gas exports.

Figure 1

Real GDP growth forecasts (y/y % change)



Data compiled January 2023.
Source: S&P Global Market Intelligence.

Debt consolidation stalled by the Russia-Ukraine conflict and weaker global growth in 2023

The surge in global commodities prices in 2021 gave room to Sub-Saharan Africa countries to adopt fiscal consolidation measures as tax proceeds, particularly from the mining sector, boosted government revenue. But government policies enacted to address high food and fuel costs—including fuel subsidies, price caps on food products, and cash transfers—stalled fiscal consolidation around the region. Consequently, the fiscal deficit in 2022 is expected to reach 5% of GDP, an increase from 4.1% in 2021. Moreover, public sector debt levels have continued to rise. This contributed to the decision of such countries as Nigeria, Senegal, Côte d'Ivoire, and Kenya to delay their issuance of Eurobonds in early 2022. Slower GDP growth in 2023, together with lower commodity-related income windfalls, will further slow efforts to decrease debt levels. Furthermore, higher debt servicing costs will damage fiscal balances following the steep depreciation of local currencies against the US dollar and sharp increases in local government bond yields. Debt restructuring and reprofiling is likely in low-income and debt distressed countries during 2023, although disorderly debt default is deemed unlikely. Countries such as Ghana, Nigeria, Malawi, and Mozambique have a high—if not imminent—risk of debt restructuring.

Social stability and security

Militancy and elections remain major sources of instability across the region. In East Africa, the Ethiopian government and the Tigray People's Liberation Front—the dominant party of the insurgent Government of Tigray—signed a cessation of hostilities agreement in November 2022. But this agreement is more likely to facilitate the end of conventional warfare in the Tigray region rather than entirely end the insurgency there. In Nigeria, President Muhammadu Buhari is stepping down after two terms. Whoever wins the general election in February, however, will be confronted by numerous and urgent challenges. These include Nigeria's unsustainable fiscal position, with more than half the 2023 budget to be financed with new debt, and its precarious security situation, including disturbances that may be sparked by the election itself, especially if the result is close or disputed. Furthermore, decision-making capacity in countries such as Angola, Mozambique, Senegal, and South Africa may be constrained by contentious elections, political infighting, and popular protests driven by socioeconomic factors. Other coastal West African countries, particularly Benin and Togo but also Côte d'Ivoire and Ghana, have a heightened risk of jihadist attacks by groups that are taking advantage of continued instability in Mali and Burkina Faso to move further south. Burkina Faso is likely to increasingly engage Russia-backed Wagner private security contractors, but it is not expected that this alliance will prevent jihadists from establishing greater de facto control of national territory. Rwanda is further building its reputation as a key regional partner for Western countries, with military deployments aimed at promoting their energy (Mozambique) and security (Benin) priorities, and "offshore" migrant processing agreements (United Kingdom and Denmark) aimed at enhancing their regional political profile.

Energy sustainability and security

In November, Egypt hosted COP27, which focused a spotlight on how African countries relate to sustainability concerns. One of the most important topics at the event was climate finance for developing countries. It is estimated that between 2020 and 2030, African countries require in aggregate $280 billion annually in order to realistically implement their Paris Agreement nationally determined contributions. Between 2016 and 2020, however, only around $20 billion was provided to Africa in total. Given this, African countries are expected to continue advocating for greater levels of climate finance, especially grants and concessional loans, which do not exacerbate debt service or fiscal sustainability risks. Countries may also pressure finance providers to

follow in the example of South Africa's $8.5 billion Just Energy Transition Partnership. African countries are also increasingly likely to seek ways to monetize financial instruments such as carbon credits, green-, social-, blue- and sustainable bonds or debt-for-nature swaps. In these areas, Gabon and Seychelles lead the way not only in Africa but also globally.

Upstream exploration: Conventional and frontier

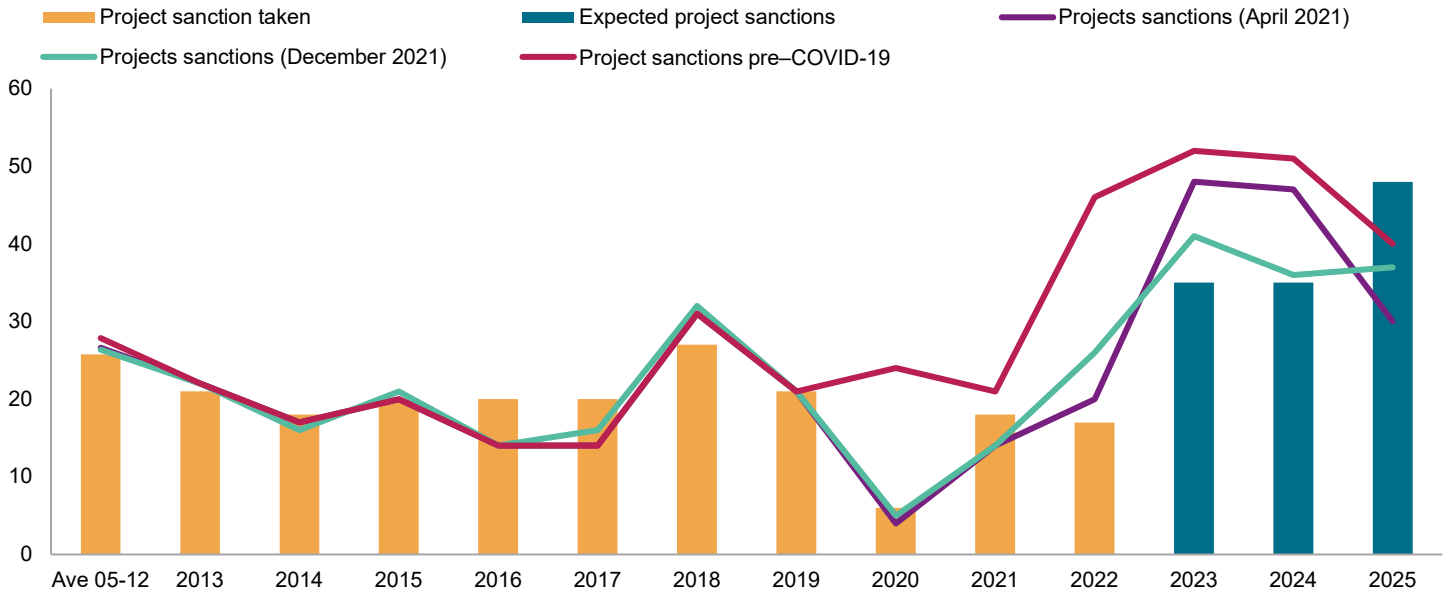
Hydrocarbon producers and hydrocarbon frontiers alike face urgent, complex, and far-reaching energy policy decisions amid climate concerns. Although challenges arising from COVID-19 and the global energy transition dimmed the outlook for upstream activity in Africa in 2021, in 2022 the picture brightened. One reason is a greater appreciation for the position broadly supported across Africa that African countries, which are in critical and urgent need of revenues, economic growth, and reliable access to power, should have the right to develop national fossil resources, especially gas reserves. This argument, which was prominently represented at COP27, gained currency amid the current global gas crisis, particularly in Europe, where consumers seek alternative supplies to Russian gas. To meet the increase in gas demand, new projects to add gas supplies and gas export projects are being fast-tracked in Angola, Congo, Equatorial Guinea, Nigeria, and Mozambique. Longer-term LNG projects with domestic supply components—in Mauritania, Mozambique, Senegal, and Tanzania—are also being accelerated, expanded, or revived, and the more ambitious and challenging pipeline projects from Nigeria to Europe are again under consideration.

New licensing in Africa remains focused on the deep offshore, where certain international oil companies (IOCs) and foreign national oil companies (NOCs) can leverage technical and financial advantages. In 2022, frontier areas had another great year for exploration, following a banner year in 2021. Discoveries in offshore Namibia by Shell and TotalEnergies have ignited a frenzy of activity in the Orange Subbasin akin to the excitement that Guyana generated, raising interest among explorers more generally in Africa. Although political volatility in key states may constrain E&P progress, some governments are improving E&P terms for new licensing efforts. Mindful that the window to capture foreign upstream investment may soon close, they have enacted or are considering how to improve their fiscal and contractual terms. In the coming year Angola, Nigeria, and Tanzania may try to bolster possible new acreage offers with more attractive terms. Although current elevated crude prices are likely to be sustained, attracting IOC capital remains challenging owing to the region's high aboveground risks and operational challenges.

Although the total number of exploratory wells globally is significantly lower today than before the 2014–15 oil price crash, Africa has seen a far higher percentage of new wells drilled in frontier basins. This activity reflects a strategy by IOCs to "rationalize operations" and focus on "low-carbon barrels"—staking a position in frontier areas that meet these criteria, even if intending to divest other less-attractive projects. This strategy has been adopted both by the more active African focused majors and by some that are less active, such as Chevron and ExxonMobil. However, established independents such as Savannah and Perenco, and new players like Afentra, have expanded their positions through M&A. Going forward, medium-sized and small players will remain strategically important to smaller producing countries and are expected to have a more prominent role in the African upstream. But these companies are even more dependent than major IOCs on third-party funding that is increasingly linked to environmental, social, and governance (ESG) criteria that discourages investment in fossil fuels. This may hinder future investment activity. Still, hydrocarbon development projects have been progressing apace. In 2023 it is expected that up to 30 new projects may reach financial investment decision (FID), and another 30 projects in 2024 (see Figure 2). However, owing to the challenging economic environment, future demand uncertainty, and the introduction of more stringent environmental policies, these are fewer FIDs than what was forecast in 2021.

Figure 2

Africa upstream project sanctions by year

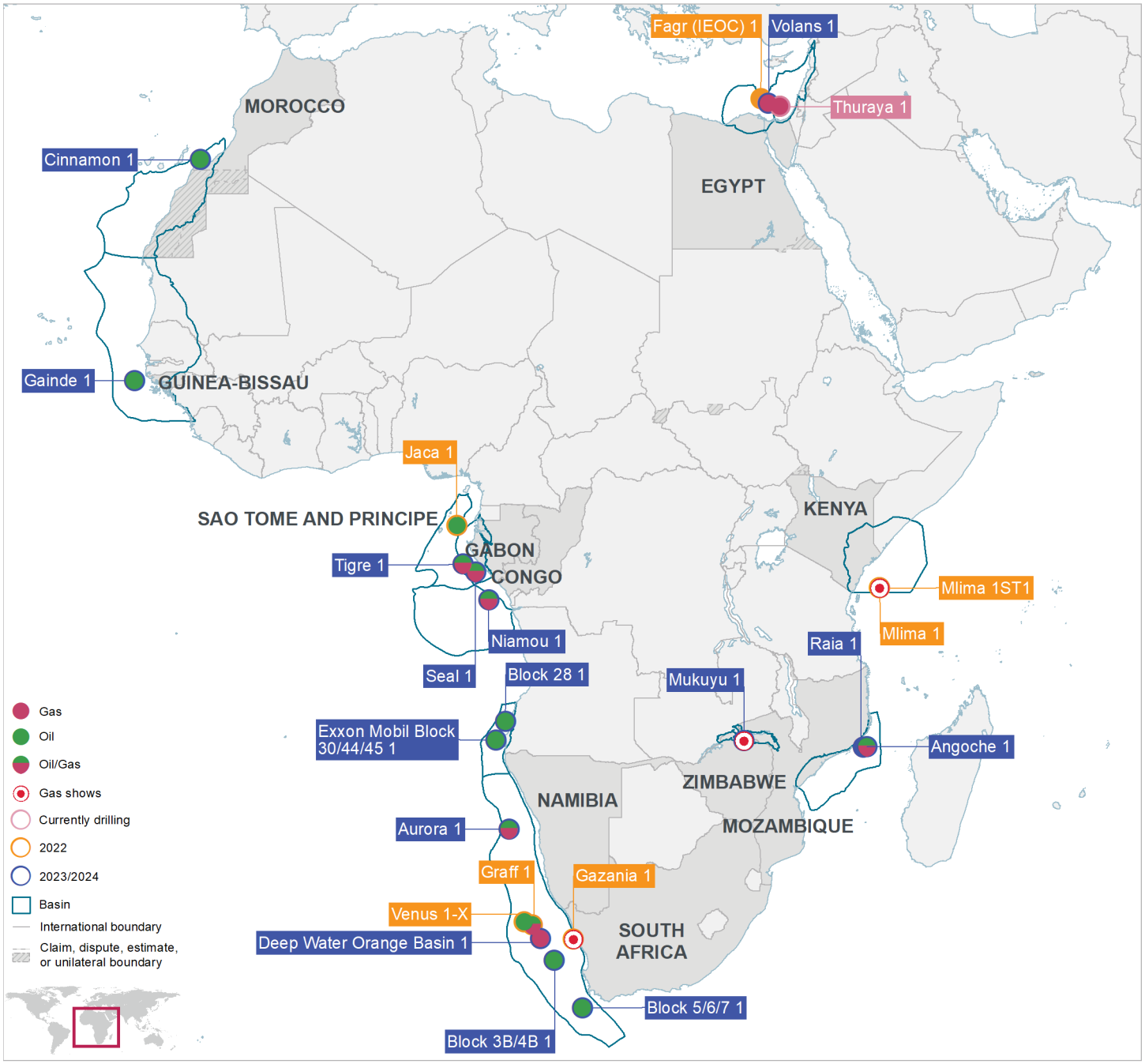


Data compiled Jan. 17, 2023.
Source: Data taken from S&P Global Commodity Insights upstream E&P content (Vantage).

Despite Africa's global leadership in frontier E&P, hydrocarbon investment will increasingly face headwinds generated by challenges from civil society. High-impact well drilling is expected to remain robust in 2023 with new wells in Namibia, Congo, Gabon, and Mozambique (see Figure 3). But all elements of the upstream resource development chain remain exposed to disruptive legal and direct action by environmental and climate campaigners (see Figure 4). Exploration activity in South Africa and Namibia has faced court challenges, while activists have also targeted the financing of major midstream projects in Mozambique and Uganda. New projects in Namibia and Tanzania could face similar hurdles. Moreover, around the world, IOCs face increased liabilities and compliance costs from new environmental legislation in their headquarter countries. Frontier and emerging producers will increasingly turn toward investors and financiers who are less constrained by climate policies. This shift will have wide-ranging implications for E&P activity and host governments.

Figure 3

2022 and 2023 High Impact Wells



Data compiled: Jan. 13, 2023.
Source: S&P Global Commodity Insights upstream E&P content (EDIN/GEPS)

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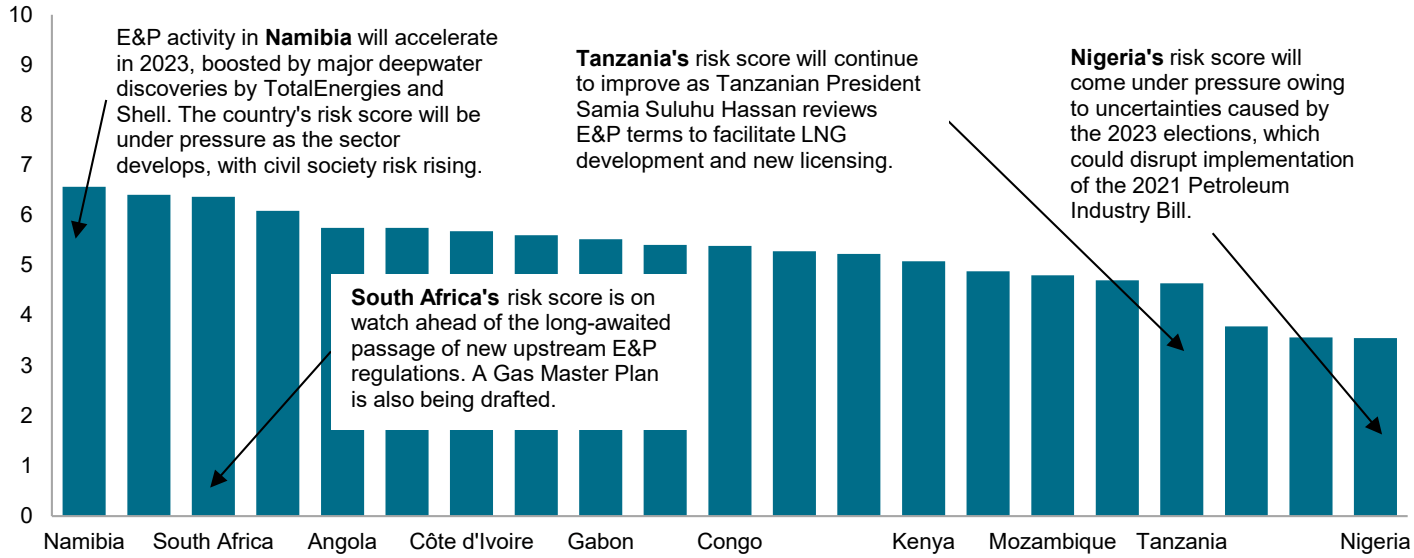
Figure 4

PEPS Oil and Gas Risk overall Sub-Saharan Africa risk scores—Selected countries and key trends to watch

Level of risk (10 = less risk)



Data compiled January 2023.

Sources: S&P Global Commodity Insights PEPS Oil and Gas Risk.

Downstream

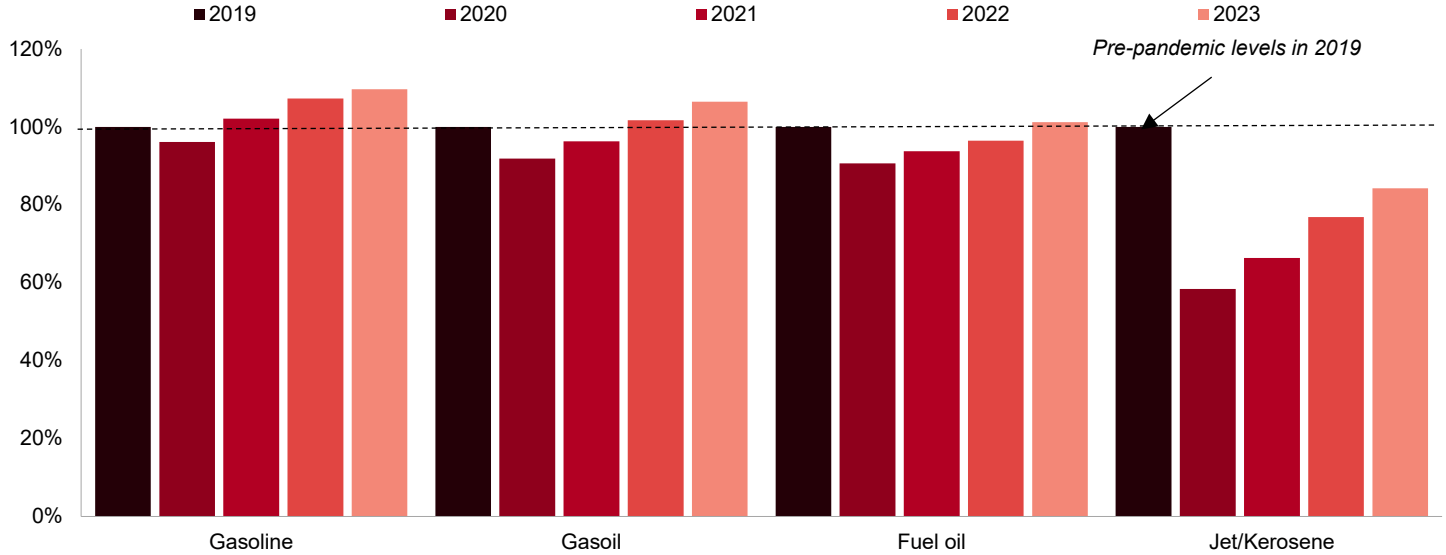
In 2022, Sub-Saharan Africa's refined product markets once again bucked the global trend of slowing demand growth, ranking among the top three regional performers in the world. The region is expected to regain its position in 2023 as the world's fastest-growing market, and, barring any significant external shocks, it is well positioned to avert a major slowdown in demand growth. Regional product demand has already returned to pre-pandemic levels with the exception of jet fuel, which lags in line with still-constrained tourism and business travel. Gasoline and gasoil demand in 2022 was about 7% and 2% higher than 2019 levels, respectively, in contrast with global demand for these two products, which has yet to recover (see Figure 5).

The market showed remarkable resilience yet again in 2022

Despite a myriad of challenges ranging from deteriorating economic indicators to stratospheric fuel prices, total refined products consumption in Sub-Saharan Africa is estimated to have grown in 2022 by over 5.5%, well above the global average of 3%. Product prices hit record highs in 2022 across several markets worldwide owing to post–COVID-19 demand recovery, refinery closures constraining supply, and the self-sanctioning of certain international buyers of Russian refined products. Despite temporary fuel shortages in some countries, however, much of the region registered relatively strong growth in fuel demand. The relaxation of COVID-19 restrictions drove some of this demand, as did government intervention in markets through direct or indirect subsidies intended to shield consumers from high prices. These actions drove annual demand growth for road transportation fuels to exceed 6%. Furthermore, fuel switching was one of the immediate responses to skyrocketing energy prices. For instance, as natural gas prices reached record highs, some industries that relied on natural gas as a feedstock were compelled to switch to more competitive refined products to maintain a reasonable cost of production. Moreover, unreliable power supply from the grid, notably in South Africa and Nigeria, Sub-Saharan Africa's largest

Figure 5

Sub-Saharan Africa refined product demand versus 2019 level



Data compiled January 2023.
Source: S&P Global Commodity Insights.

markets, led industrial users, businesses, and households to increasingly use backup generators. This resulted in the consumption of significant additional volumes of diesel. Such use of backup power has become widespread in the commercial and the residential sectors, especially in South Africa, which is experiencing prolonged and historic levels of load shedding.

The mining sector, which is traditionally one of the largest users of refined products on the continent, has experienced strong growth—ironically—thanks to high demand for critical metals needed for the batteries and electric vehicles that are driving the global energy transition. Gasoil consumption has grown considerably, most notably in Eastern African countries where "green minerals" such as cobalt, copper, and lithium are abundant, including Democratic Republic of the Congo, Zambia, and Zimbabwe.

Despite challenges on the horizon, Sub-Saharan Africa's products markets are set to grow in 2023

Regional refined product demand in 2023 is poised to continue to expand, albeit more slowly than in 2022. Fuel retail price controls introduced in 2022, ranging from tax relief to direct subsidies, shielded customers from the full weight of high products prices. In 2023, however, many governments will likely be unable to continue providing such social protections, owing to depleted fiscal reserves and increasingly high risk of debt distress. And those that do continue to support such measures at the expense of their fiscal position may indirectly lower product consumption as a consequence of slower-than-expected economic growth. Despite these factors and the possibility of mild recession in advanced economies looming in the background, regional refined products demand in 2023 is expected to grow at a healthy rate of 4%—in line with expectations for the region's economic performance—compared with 2% globally.

Overall product demand in Sub-Saharan Africa will be led mostly by diesel, the consumption for which is expected to exceed 2022 levels by 45,000 b/d, or 4.5%. Meanwhile, gasoline demand is set to grow in 2023 by about 20,000 b/d, or 2.3%, even as fuel prices remain stable or at elevated levels and less government intervention is expected.

Absent new shocks such as a major global recession or a severe economic slowdown in mainland China—the region's main trade partner—gasoil consumption in 2023 is expected to be 6% higher than pre-pandemic levels, but globally gasoil volumes are forecast to only reach pre-pandemic levels. Buoyant extractive industries and road freight—especially from the 17 landlocked African countries—will fuel Sub-Saharan Africa's oil product market growth. In addition, with Eskom showing no signs of new or improved generation capacity, and South Africa experiencing delays in renewable project development, the use of diesel for backup generation in South Africa will likely remain significant in the country's retail and commercial sectors.

Can Sub-Saharan markets overcome the looming diesel scarcity?

On the supply side, Sub-Saharan Africa lacks sufficient refining capacity and therefore is highly dependent on imports. In particular, the region needs to import nearly 700,000 b/d of diesel, which is 80% of its needs. This gap has grown considerably since 2020 when a wave of refinery closures swept the region and slashed domestic supply. Most notably, in 2022 South Africa lost the third of its five refineries; consequently, only 35% of its refining capacity is operational. There is a possibility for additional domestic supply in the immediate term, but this hinges on the restart of South Africa's Astron refinery. Nigeria's Dangote refinery, once online, is expected to provide substantial additional volumes that will relieve pressure from supply constraints across the region. But the giant greenfield refinery still has a ways to go. It is expected to come onstream only after the fourth quarter of 2023 and not reach full capacity before the end of 2024. Moreover, in 2023 the global market is forecast to remain tight, with disruptions anticipated owing to the expected embargo on Russian exports.

With global markets already in flux in 2023, uncertainties for the supply of products to Africa abound. The embargo on Russian oil products imposed on 5 February 2023 means that diesel supply trades to African markets will require some reconfiguration, and this comes with risks. Although Africa does not import material diesel volumes from Russia, Russia is a major diesel exporter to Europe. West African markets are highly dependent on Europe, which soon will lose considerable volumes of Russian crude and diesel imports. As trades are reshuffled, Russian diesel volumes will need to find a new home if global markets are to avoid major supply disruptions and African markets are to avoid acute localized shortages. Although, in theory, West Africa can be an outlet for Russian diesel, it remains to be seen whether the clean tanker fleet can haul that much product so much further. Moreover, Russian exporters will have to overcome the considerable challenge of how to supply Africa's unfamiliar and fragmented markets. Taken together, these factors highlight how in 2023 Africa will be particularly vulnerable on the supply side.

Power and renewables

Power demand continues to grow in 2022, but at a slower pace reflecting the global economic slowdown

Sub-Saharan Africa's power market landscape did not change significantly in 2022 compared to the previous year. This is because the region continues to struggle to grow in a challenging global context with increasing fuel prices, geopolitical instability, and supply chain issues. Ongoing suppressed power demand, frequent supply interruptions—scheduled and unscheduled—and limited investment in power infrastructure remain key features of regional markets. But emerging new trends hint at rising interest in clean fuels and the energy transition at both national and corporate levels.

Power demand across the region exceeded 1% in 2022 following a 3% recovery in the previous year thanks to the swift economic recovery from the impacts of the COVID-19 pandemic. The commercial and residential sectors mainly led demand, with growth rates of around 6% and 1%, respectively, owing to the resumption of economic activity and population growth (see Figure 6). Yet slowing global economic activity and chronic problems of sporadic power supply led to a decline in industrial demand. While reliance on backup gensets across all segments continues, governments and developers increasingly search for cleaner sources of generation to reduce dependence on costly fossil fuels. Despite demand recovery, overall power demand across Sub-Saharan Africa remains on average less than 500 kWh per capita—among the lowest levels worldwide.

Figure 6

Sub-Saharan Africa's power demand

As of Jan. 23, 2023.
Others include transport, agriculture, captive power units, generation own use, and losses.
Source: S&P Global Commodity Insights.

In South Africa, which is the largest power market in the Sub-Saharan Africa region comprising nearly 48% of total demand, total power consumption in 2021 increased by 2.1%. But in 2022, power demand is expected to drop by about 2.2% owing to the decline in available generation capacity to meet power needs. Subdued levels of demand in South Africa are expected to continue through 2025, when they are to return to pre-pandemic levels. Sub-Saharan Africa's second-largest power market is Nigeria, accounting for about 12% of the region's total demand. Despite its size, Nigeria continues to experience a high level of suppressed demand resulting from persistent supply challenges and low electrification rates. The commercial and residential sectors drove demand in 2022, comprising nearly 70% of the total. But the off-grid sector also accounted for nearly half of total power demand. This level of market share is likely to persist if the country's problems with grid congestion and limited network availability remain unsolved.

Energy transition is central to the region's long-term policy, but the switch from the current power generation base remains challenging

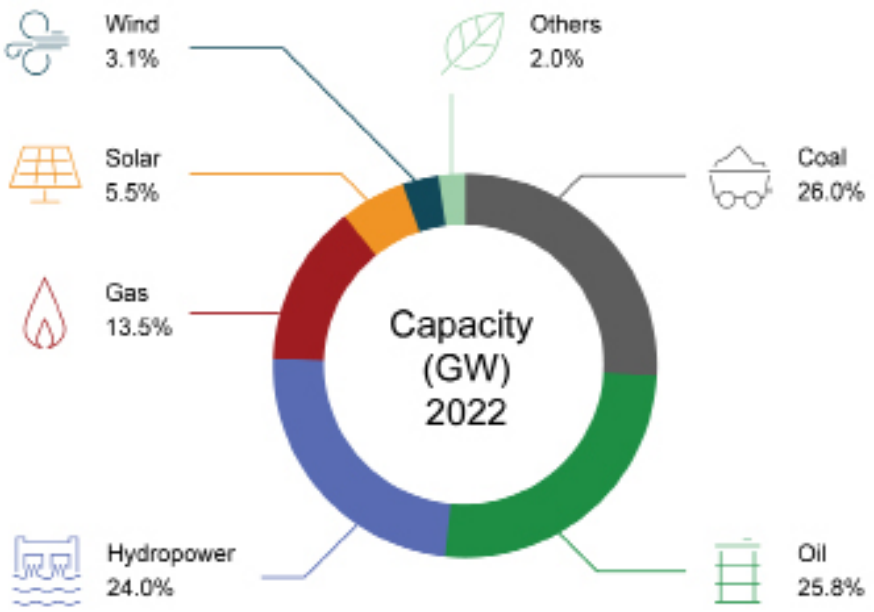
Sub-Saharan Africa continues to suffer from profound and pervasive energy poverty; nearly 600 million citizens of the continent lack access to energy. This lack of energy, in turn, hampers economic development and industrialization, which require energy for growth. As such, most governments are keen to improve the low electrification rates in their countries by accelerating the expansion of grid access and securing supply reliability. While these urgent issues are considered national priorities, governments also consider how to minimize or reduce carbon emissions from grid-based power.

In 2022, governments continued to embrace energy diversification; preliminary data show reduced levels of oil-based power generation and the increased utilization of renewables (see Figure 7). This trend reflects a focus by both governments and companies on utilizing less carbon-intensive sources of power. Yet fossil fuel–based

generation still accounts for nearly two-thirds of total regional power generation. This is because investment in new plants has been both slow and limited, and old assets continue to run at relatively low efficiency rates. Coal-fired power continues to comprise roughly a third of Sub-Saharan Africa's overall energy mix and holds the largest share of generation in South Africa and Botswana. But investment in new coal-fired plants is unlikely as international players eschew providing financial support to coal projects. Going forward, South Africa is expected to gradually retire 26 GW of coal capacity—6 GW by 2030 and 20 GW by 2040—as the country struggles to bridge the current, pressing gap in power supply, estimated at 6 GW of capacity. High gas prices have also affected the region's energy mix, which in 2022 registered a decline of gas power generation (-0.7 TWh) despite 2 GW of new gas capacity additions.

Figure 7

Sub-Saharan Africa's installed capacity



As of Jan. 23, 2023.
Others include nuclear, biomass, and battery additions.
Source: S&P Global Commodity Insights.
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Hydropower maintains a central role in the region and shows promise as a source of competitively priced cross-border power supply. A key milestone was reached in February 2022 when operations commenced at one of the 13 turbines of the Grand Ethiopian Renaissance Dam (GERD). With a total capacity of 5.15 GW, GERD is one of the largest hydropower generation projects in the region. At the end of 2022, Kenya began importing power from GERD under a power purchase agreement that was contracted in 2012 at a tariff that is lower than the country's current average generation cost. Although GERD is not expected to be fully operational before 2024, Ethiopia has also concluded supply agreements with Sudan, Djibouti, Somaliland, Tanzania, and South Sudan.

The adoption of renewable generation (solar photovoltaic [PV], onshore wind, and geothermal) across the region is trending upward, illustrating a long-term shift toward a more diversified generation mix. Regional governments continue to implement measures that align their power sectors with energy transition objectives. This includes fuel-switching in existing generation assets, decommissioning exclusively oil-fired and coal-fired plants, and increasing investment in renewables-based projects.

Furthermore, several countries have aimed to position themselves in the nascent global green hydrogen sector as key producers and exporters. South Africa and Namibia are regional leaders in this space, both having announced major green hydrogen infrastructure projects for domestic use and export. It is too early to accurately assess how important green hydrogen will be to the region. But local players, particularly large industrial companies, acknowledge that hydrogen will have a significant role in the

energy transition as a means to reduce the carbon footprint of hard-to-decarbonize sectors such as chemical, mining, and aviation, among others.

Investment in renewables continues despite high cost of technology and supply chain bottlenecks

In 2022, renewables capacity additions reached 2.4 GW compared with nearly 1.9 GW in 2021. Some growth, however, reflects the completion of projects that were delayed owing to the COVID-19 pandemic. Angola has the most solar PV capacity that entered operations in 2022, with two projects commissioned in August totaling 284 MWp. South Africa led the onshore wind segment with the completion of four projects totaling 543 MW that were procured under the country's Renewable Energy Independent Power Producer Procurement Programme (REIPPPP). In addition, small-scale solar PV systems have been installed across the region as a key solution to address limited electricity access in areas that are difficult for the grid to reach. In 2022, we estimate that nearly 1 GW of new sub-5 MW PV systems were installed. These numbers may be higher, however, since official figures for many off-grid installations are not available. But the region saw the completion of larger PV projects in, for example, Benin, Burkina Faso, and Malawi. Many of these projects have been public-private partnership arrangements whereby local governments collaborated with international companies with an established track record but limited knowledge of the local markets.

Global supply chain bottlenecks and higher technology costs have delayed the implementation of some of the most advanced PV and wind projects, including those awarded through public tenders. Consequently, investors are reconsidering their cost assumptions and may request the renegotiation of tariffs, which could further delay project implementation. South Africa has the largest project pipeline in the region, but uncertainties around the Risk Mitigation IPP Procurement Programme (RMIPPPP) and continuous delays to REIPPPP tenders have exposed the country to a growing gap in power supply.

On the positive side, in 2022 there was a marked increase in corporate renewables procurement activity. Driving this trend are grid reliability issues faced by large grid-connected consumers impaired by intermittent and unreliable power supplies, for example, chronic load shedding in South Africa. These disruptions add cost to industrial customers that need to complement grid power with self-generation assets, most of which are diesel-based, while remaining exposed to retail tariffs that can be increased by local utilities. Although mining companies and more generally energy-intensive industries are the most common offtakers of the largest self-generation projects, the number of smaller systems installed on the rooftops of corporate headquarters and warehouses has mushroomed. This trend is likely to continue into 2023 and beyond, as companies seek first and foremost to decouple their dependence on grid power while securing other sources of reliable and affordable energy, and to meet corporate targets to lower emissions.

References

For more information regarding well, field & basin summaries, please refer to EDIN.

For more information regarding asset evaluation, portfolio view, and production forecasts, please refer to Vantage.

For more information regarding our country activity report, please refer to GEPS.

For more information regarding E&P costs please refer to Que$tor.

For more information on country E&P terms and aboveground risks, please refer to PEPS.

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