Executive Summary

Minerals, oil, and gas account for a third or more of exports from most countries in Sub-Saharan Africa, and can reach similar shares of government revenues. The majority of countries in Sub-Saharan Africa can be categorized as resource rich, with more on the path to reaching this status given two decades of major new discoveries.

Sub-Saharan Africa has large reserves of resources such as oil, gas, and minerals, but has struggled to convert this wealth into sustainable prosperity. During the last commodity price boom, which lasted from 2004 to 2014, economic growth accelerated to record highs in the region’s resource-rich countries. But this prosperity proved to be precarious and dependent on high commodity prices, and few African countries shifted away from being resource-driven economies during this period. Since the decline in commodity prices in 2014, resource-rich Sub-Saharan Africa has grown more slowly than the region’s average growth rate, which is consistent with the “resource curse” hypothesis.

The previous boom and bust in commodity prices in Sub-Saharan Africa resulted in missed opportunities for the region’s resource-rich countries to convert their resource revenues into sustainable, diversified prosperity. This has led to slower economic growth and disappointing progress on poverty reduction. By 2030, it is projected that more than 80 percent of the world’s poor will be in the Africa region, and almost 75 percent of the world’s poor will live in resource-rich countries. As a result, global poverty eradication is becoming disproportionately a challenge faced mostly by resource-rich countries in Sub-Saharan Africa.

Africa’s natural resource wealth nonetheless harbors significant untapped economic potential. About one-third of the total stock of wealth in Sub-Saharan Africa is held in various forms of natural capital, including nonrenewable petroleum and mineral deposits (World Bank 2021). Sub-Saharan Africa has seen
more major petroleum discoveries since 2000 than any other region of the world, accounting for 50 percent of all giant discoveries in the 2010s (Cust, Rivera-Ballesteros, and Mihalyi 2021). Nevertheless, many mining and petroleum projects remain undeveloped. Buoyant commodity prices, if sustained, could be a major opportunity for new projects and thus for new sources of government revenues.

Harnessing natural resources to drive economic growth is critical to Africa’s future. Subsoil assets such as metals, minerals, oil, and gas remain important sources of government revenue, export earnings, and economic development potential in most African countries. Resource deposits could last decades, with new discoveries happening every year. Resource revenues continue to be a major source of government financing, and in most of Sub-Saharan Africa, resources make up a significant portion of the economy. To better mobilize these revenues for Africa’s economic transformation and achieve sustained growth, there are a series of policy choices that countries in the region should be considering for implementation (see box ES.1).

**BOX ES.1**

**Policy Recommendations**

*Capture the full value of resource rents, subject to fiscal terms that attract investment and are robust to changing conditions.* World Bank estimates put the rental value at 2.6 times the level of government revenues, on average, with wider variations in specific countries. This implies that citizens are missing out on significant untapped revenues consistent with the same levels of investment, resulting in a substantial subsidy to production. This failure to fully capture rents encourages more fossil fuel production, and therefore more emissions, than would otherwise occur. Mining also results in environmental and social externalities not always fully borne by producers. Better taxation of extractives therefore offers a “double dividend,” for both people and the planet. Much more could therefore be done to invest in fiscal administration and to capture a greater share of resource rents. The international community could also play a supporting role to governments in the region as part of their efforts to mitigate climate change as well as improve development outcomes.

*Manage structural challenges and prepare for the next boom-bust cycle.* Policy makers in resource-rich countries may have more success working toward asset diversification rather than export diversification. Asset portfolio diversification is an important step toward sustained growth and is more feasible for resource-rich countries to achieve than traditional export diversification because of pressure from Dutch disease (Cust and Rivera-Ballesteros 2021a). The Changing Wealth of Nations 2021 report (World Bank 2021) suggests that targeting asset portfolio diversification—investing in

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the expansion of human and physical capital—instead of export diversification may be a successful policy for sustainable economic growth. This recommendation builds on earlier work (Gill et al. 2014; Peszko et al. 2020) exploring the benefits of portfolio diversification. However, to achieve asset diversification, countries must successfully transform the proceeds from resource extraction into other kinds of productive assets.

_Beware the presource curse._ Countries need to be mindful of policies that are consistent with managing expectations and ensuring fiscal sustainability, tempering the pressure to borrow and spend ahead of revenues. Discoveries can leave countries exposed if they are not prepared for declining prices. This is especially true where global decarbonization may imply both declining fossil fuel prices in the future and higher variation of natural resource prices due to mismatched supply and demand. Debt distress and sharp resource-induced recessions can cause more economic reversal than the positive value of the boom.

_Improve the sustainability of the economy using revenues from the resource sector._ To move from negative to positive adjusted net savings, governments need to invest in human capital, including education and health; produced capital, particularly infrastructure; and natural capital such as forests, cropland, and nature-based tourism. Revenues generated from the mining and petroleum sectors can be used to finance these forms of capital.

_Support the transition to automation and mechanization._ Given the expected decline in mining jobs resulting from mechanization, identifying new ways to increase employment opportunities is critical. The demographic dividend will translate into a sharp increase in the size of the workforce, and harnessing this workforce within the mining sector will require strengthening the foundation of basic education. Creating and implementing skills-development programs aligned with both mechanization and diversified economic activities to absorb the decline in labor demand resulting from mechanization is important. Although mechanization results in substantially higher productivity and revenue, it has a strong impact on local labor dynamics. Governments need to improve educational outcomes for communities around mines and develop a strong foundation in math and the sciences to ensure students are better prepared for a technology-intensive world.

_Reconsider plans to implement or increase tariffs related to extractives regional value chains._ Under the African Continental Free Trade Area, members must phase out 90 percent of tariff lines over the next 5–10 years, while another 7 percent deemed to be sensitive will get some additional time. As a first point of implementation, this means that no new tariffs should be erected. Countries can go further and seek to minimize new tariffs and reduce existing ones relating to promoting the development of extractives-linked value chains at the regional level across Africa. Unfortunately, much extractive sector policy today is formulated in national rather than regional terms.
**Box ES.1 (continued)**

*Undertake regional harmonization of mining taxes and royalties.* Tax harmonization has three components: an equalization of tax rates, a common definition of national tax bases, and uniform application of agreed-on rules (Mansour and Rota-Graziosi 2013). The lack of harmonized tax policy can undermine regional integration, even with the establishment of a customs union, a common market, and a monetary union (IMF 2015). Harmonized tax rates remove tax distortions and prevent competition for capital. Tax competition can foment a race to the bottom, which does not benefit any country given the reduction in tax revenue. Harmonizing tariffs and royalties requires rigid implementation, including coordination and surveillance. A powerful first step would be the creation of a common floor rate.

**Main Findings**

**Sub-Saharan Africa has experienced increasing, not declining, resource abundance.** Today there are markedly more resource-rich countries in Sub-Saharan Africa than there were at the turn of the twenty-first century, and the number is trending even higher because of new discoveries every year. By one definition (IMF 2012), the number of resource-rich countries rose from 18 out of 48 before the boom to 26 out of 48 countries by the end of the boom. Map ES.1 shows the countries categorized as resource rich—a majority of Sub-Saharan Africa countries. This trend was caused by a combination of new discoveries, new production, and rising resource prices that pushed up levels of resource abundance and resource dependence and pulled more countries into this resource-rich grouping. Multiple discoveries in the past four decades have more than doubled the existing oil and gas reserves in the region. In the opposite direction, limited success in diversifying their economies away from resource dependence resulted in few countries exiting this grouping.

**Climate change will shift the resource paradigm.** Estimates suggest that 80 percent of proven fossil fuel reserves must remain under the ground to meet carbon-reduction targets (Bos and Gupta 2019). The transition from fossil fuels to clean energy is likely to create demand for 3 billion tons of minerals and metals needed to deploy solar, wind, and geothermal energy by 2050 (World Bank 2020a). This low-carbon energy transition will increase demand for many of the resources found in abundance across the region. Lithium, cobalt, and vanadium, for example, are critical for energy storage, and copper, indium, selenium, and neodymium are essential for the production of wind and solar power generators.

**Nonetheless, significant untapped potential remains.** Africa’s natural resource wealth remains an important part of its economic recovery given its
deep reserves and untapped investment potential. About one-third of Sub-Saharan Africa’s stock of wealth is held in various forms of natural capital, including nonrenewable petroleum and mineral deposits, which reached more than US$5 trillion during the boom years (World Bank 2021). Furthermore, resource rents are estimated to account for 9 percent of resource-rich Sub-Saharan Africa’s GDP (World Bank 2021). However, this figure far exceeds revenues captured by governments, with rents on average 2.6 times higher than revenues. This finding implies that countries may be failing to capture their full share of rents.
Although still relatively underexplored, the African continent already hosts a large proportion of the world’s mineral resources. These endowments place Africa at the center of the clean energy transition, given that resources such as cobalt, manganese, graphite, and lithium are central to clean energy technology.

The legacy from Africa’s commodity price boom and bust was one of missed opportunity. Countries squandered the opportunity available during the boom years, and therefore were poorly prepared for the drop in commodity prices. Many had failed to save and invest a sufficient proportion of resource revenues to grow national wealth via the accumulation of offsetting assets during the boom. As a consequence, the bust period saw collapsing growth and a reversal of economic gains made during the boom. Several resource-rich countries even entered debt crises after 2014. During this bust period (2015–20), there was also a more general pattern of resource-rich countries experiencing slumps in GDP growth, with rates falling below those of the rest of Africa (figure ES.1).

Poverty concentration in resource-rich Sub-Saharan Africa has substantially increased, a trend likely to continue; meanwhile, inequality remains persistent. Despite the increase in revenue that resulted from the boom, extreme poverty is increasingly concentrated among resource-rich Sub-Saharan African countries. Because of the backsliding since the fall in commodity prices beginning in 2015, poverty has been rising again in resource-rich countries. By 2030, more than 80 percent of the world’s poor are forecast to live in the Sub-Saharan

**Figure ES.1** Decline in per Capita GDP Growth Following the Resource Boom

![Graph showing per capita GDP growth](image)

*Source: Based on World Bank data 2022.*

*Note: GDP per capita growth by group. RR = resource rich; SSA = Sub-Saharan Africa. Rest of the world RR = countries outside Sub-Saharan Africa that meet the same threshold for resource richness.*
African region, and almost 75 percent of the poor in Sub-Saharan Africa will be located in resource-rich countries (Cust, Rivera-Ballesteros, and Zeufack 2022). In absolute terms, by 2030 the poverty headcount in resource-rich Africa is projected to rise to about 379 million, whereas the count in non-resource-rich Africa is set to fall to less than 120 million. Taken together, a staggering 62 percent of the world’s poor are projected to be found in Sub-Saharan African resource-rich economies, up from 13 percent in 2000. In comparison, by 2030, only 20 percent will be in non-resource-rich African countries (Cust, Rivera-Ballesteros, and Zeufack 2022).

There has been a failure to facilitate economic diversification. Headline economic performance during the boom was strong but proved unsustainable. This result reflects the overall dominance of the resource sector as a driver of growth, but also implies a failure to translate the boom into broader-based economic prosperity. The starkest evidence for an unsustainable and narrow economic boom was seen in the slump in growth rates following the fall in commodity prices. In the postboom period, annual GDP per capita growth in resource-rich countries was, on average, 2.5 percentage points lower than during the boom, and 1.5 percentage points lower than in non-resource-rich countries in the region (Cust, Rivera-Ballesteros, and Zeufack 2022). Many countries “consumed” the boom.

Unlocking the mining value chain’s economic potential from regional integration and the African Continental Free Trade Area (AfCFTA) is a huge opportunity. The AfCFTA brings together 54 African countries with a total population of more than 1 billion people and a combined GDP of more than US$3.4 trillion (World Bank 2020b). If successfully implemented, it will enable countries to deepen their linkages to regional and global value chains. The AfCFTA established the world’s largest free trade zone and has the potential to unlock an estimated US$3.2 trillion in intra-Africa trade. The AfCFTA offers an unprecedented opportunity to develop the mine-to-market value chain within the continent. Although many countries have prioritized local beneficiation, few have the capacity to wholly undertake it domestically. If implemented effectively, the AfCFTA would allow various countries to specialize in select parts of the value chain, and parts of the value chain could move between participating countries free of tariffs.

Tariff barriers in the extractive sector impeded implementation of the AfCFTA. As countries seek to increase their benefits from the mining sector amid mounting fiscal pressure and high levels of unemployment, many have turned to mineral-based industrialization strategies that include an increase in tariffs or that are at odds with a single-market approach.

Nontariff barriers are adversely affecting the competitiveness of regional mining value chains. Nontariff barriers (NTBs) remain a key roadblock to
actualizing the benefits of the AfCFTA. NTBs are restrictive regulations and procedures, other than tariffs, that increase the difficulty and cost of importing and exporting products. Research by UNCTAD shows that NTBs are at least three times as restrictive as standard customs duties and suggests that African countries would increase GDP by US$20 billion by tackling these NTBs at a continental level. Although article 4 of the AfCFTA Agreement states that “The State Parties shall progressively eliminate tariffs and non-tariff barriers to trade in goods,” research published by Fitch Ratings in 2021 suggests that the removal of NTBs under the AfCFTA is likely to lag behind the agreement’s ambitions, limiting its impact. Transportation and logistics costs are disproportionately high compared with those in other developing countries. According to the UNCTAD (1999) report, in 31 out of 43 Sub-Saharan Africa countries, freight costs on imports are 50 percent higher than the average for developing countries. Likewise, improving access to, and the cost of, electricity infrastructure can strengthen linkage development. Affordable and reliable energy is critical for developing a comparative advantage in manufacturing inputs or processing ores.

**Africa’s resource future depends on navigating key megatrends, including the low-carbon transition.** Although fully phasing out global oil, gas, and coal markets is likely to take decades, the transition period poses significant, but uncertain, risks for fossil fuel exporters in Africa. On the other hand, demand for metals and minerals could rise to supply the low-carbon economy. For those countries rich in certain metals and minerals, the prospects may be rosier (IEA 2021).

**The demand for fossil fuels is expected to significantly decline over the coming decades.** Depending on the pace of technological and policy changes, this decline could put permanent downward pressure on fossil fuel prices and threaten African countries’ ability to benefit from their carbon-based resource wealth; they run the risk of becoming stranded nations (Cust, Manley, and Cecchinato 2017). However, price signals from the oil and gas market still support development of many new assets. For the governments and citizens of Africa, the imperative is to be prepared for a range of futures, assuming both more drastic climate action and the curbing of fossil fuel demand in keeping with net-zero commitments called for by the Paris Agreement, but also a more gradual phasing out of oil consumption at the global level. Although little can be done to reduce the “belowground” risk contained in undeveloped and unextracted fossil fuels, many policy choices can increase or decrease the “aboveground” risk exposure. Examples explored in this report include how much state capital is to be invested in nationally owned fossil fuel companies, fossil fuel–linked jobs and industries, or sovereign wealth funds holding fossil fuel company stocks.

**The medium- to long-term outlook for mineral exploration and mining on the African continent appears positive.** Renewed foreign direct investment
in mineral exploration and development is likely to be boosted by the projected significant growth in demand for minerals from energy technology (World Bank 2020a), fueled by the metal-intensive transition to green energy. Indeed, the mineral demand projections under a 1.5- to 2-degree Celsius temperature constraint scenario represent highly significant increments above an already-substantial projected increase in demand due to continuing growth in world population and its migration to urban areas, seeking ever-increasing living and environmental standards.

**Mechanization and digitalization will have profound impacts on productivity and labor.** The speed of digital technology adoption in the mining sector is accelerating. Four categories of technologies will play a crucial role in the digital transformation of mining and metals: automation, robotics, and operational hardware; a digitally enabled workforce; integrated enterprise, platforms, and ecosystems; and next-generation analytics and decision support. Firms are choosing to mechanize to maintain profitability amid supply and demand shocks (Baskaran 2021). Mechanization improves cost-competitiveness by increasing productivity, but also reduces jobs. Levels of automation in the region vary. For example, in Southern Africa, Botswana and South Africa have a higher degree of mechanization, whereas Zambia and Zimbabwe still largely rely on labor-intensive mines.

**Environmental degradation is accelerating and could get worse.** The depletion of natural resources in Sub-Saharan Africa increased by approximately 150 percent during the boom, and in the region’s resource-rich countries, depletion of natural resources increased by more than 190 percent. Total forest area fell by 2 percent, declining from an area of about 6.9 million square kilometers in 2004 to 6.5 million square kilometers in 2014. Nonetheless, Sub-Saharan Africa countries’ per capita contribution to global climate change remains the smallest of any region. African governments can take steps to leverage global decarbonization to accelerate the diversification of their economies, building resilience to external shocks, and anticipating the eventual decline in fossil fuel markets.

**The link between resource extraction and forest loss is more complex than clearance that can occur around extraction sites.** New research suggests that the amount of resource exports, and consequently the degree of Dutch disease a country experiences, can affect the amount of deforestation. Increased deforestation is driven by the impact on relative prices of resources and agricultural goods in countries where agricultural expansion may encroach on the forest. This mechanism, dubbed “Amazonian disease” by Cust, Harding, and Rivera-Ballesteros (forthcoming) because it was first measured in Brazil, suggests that falling oil exports or falling oil prices can increase the competitiveness of agriculture in the same country and thus increase the amount of forest loss, as seen, for example, in the period following falling oil prices beginning in 2015. This implies that global decarbonization could weaken the forces of Dutch disease
in oil-exporting countries, and because many countries in Africa are abundant in forests, forest clearance may be accelerated via improving agricultural competitiveness. Given the significant overlap between oil-exporting countries and tropical forests across Sub-Saharan Africa, this could have major unintended consequences as the region decarbonizes without carefully configured policy interventions.

**Managing structural challenges will require new policy approaches.** The future of African economic transformation depends on the ability to increase productivity and generate jobs and income, including in export-oriented sectors beyond commodity exports. However, achieving these increases under the condition of resource richness has proved to be challenging. There are three primary human capital distortions in resource-rich countries. First, the resource sector reallocates human capital away from some high-productivity sectors. Second, the distribution of human capital between men and women is more unequal in these nonrenewable-resource-rich countries compared with other countries. Third, human capital is skewed toward the public sector in resource-rich countries. These characteristics may contribute to, and be associated with, lower overall worker productivity arising from resource dependence.

**References**


