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Managing Oil Price Uncertainty and the Energy Transition

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October 2022 Regional Economic Outlook: Sub-Saharan Africa Analytical Note

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Managing Oil Price Uncertainty and the Energy Transition

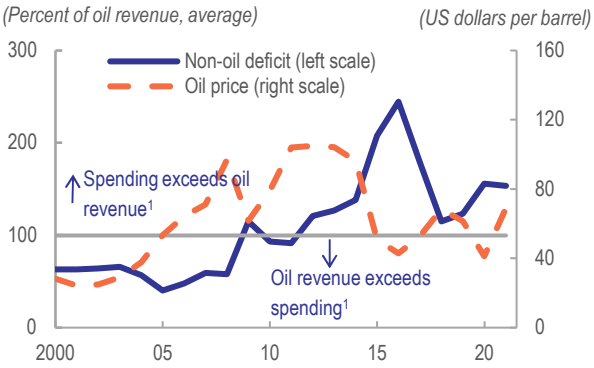
Commodity price volatility is a persistent challenge for fiscal policies in sub-Saharan Africa as revenue windfalls drive procyclical spending. Fiscal surpluses of up to 1 percent of GDP per year would allow oil exporters to accumulate sufficient buffers to insure against large price shocks. Moreover, global efforts to move away from fossil fuel dependence present a new challenge. The region will have to sequence the transition carefully and manage the costs of adjustment using robust medium-term fiscal frameworks and policies that encourage private sector development.

COMMODITY PRICE VOLATILITY COMPLICATES FISCAL POLICY SIGNIFICANTLY

Volatile oil prices drive pro-cyclical fiscal policies and insufficient savings. Over the past two years, oil prices have fluctuated from lows of $23 per barrel to a peak of $115 per barrel. With oil revenues historically averaging almost 60 percent of total fiscal revenues for oil exporters in the region (2000–21),[1] high prices and large windfalls have typically fueled large and hard-to-reverse expenditure increases. In fact, countries do not save sufficiently in good times to insure against future negative oil price shocks. Since 2011, oil exporters in the region have spent on average more than 100 percent of their oil revenues in the years they accrue, requiring greater borrowing or drawing down financial assets to sustain spending later in bad times (Figure 1). Staff projections suggest that such patterns are likely to continue through 2022 for almost half of sub-Saharan African oil exporters (Figure 2).

Oil price volatility can stunt growth and raise debt vulnerabilities. Partly because of stop-go policies and spending, oil exporters in sub-Saharan Africa have also historically faced slower growth dynamics, growing 2 percentage points slower per year than non-resource-intensive countries during 2011–20—and with almost twice the growth volatility. According to the World Bank, total debt service (as a percent of GNI) in oil exporters was also almost twice as high as for other sub-Saharan African countries during the latest decade, with three additional oil-exporting countries facing a high risk of debt distress or falling into debt distress since 2012. Similar issues plague other commodity exporters, although oil is probably the most striking example.

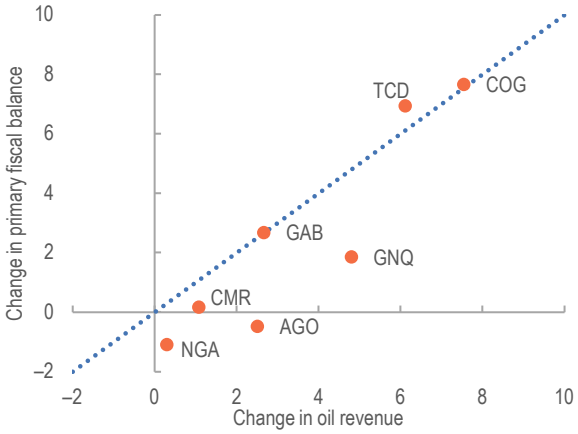
Figure 1. Sub-Saharan African Oil Exporters: Non-Oil Deficit and Oil Prices, 2000–21



Sources: IMF, World Economic Outlook database; IMF Primary Commodity System; and IMF staff calculations.

Notes: Average of eight sub-Saharan African oil exporters. The non-oil deficit ratio is an indicator of the propensity of governments to spend oil revenues.
[1] Spending is net of non-oil revenue.

Figure 2. Sub-Saharan African Oil Exporters: Changes in Oil Revenue and Primary Balance, 2021–22
(Percent of GDP)



Sources: IMF, World Economic Outlook database; and IMF staff calculations.

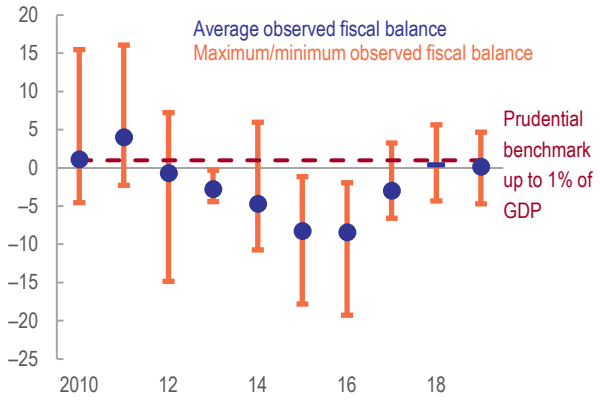
Notes: The dotted line indicates 45-degree line; South Sudan is not shown in the chart; data labels use International Organization for Standardization country codes.

[1] The eight sub-Saharan African oil exporters are Angola, Cameroon, Chad, the Republic of Congo, Equatorial Guinea, Gabon, Nigeria, and South Sudan.

SAVING HELPS GUARD AGAINST OIL PRICE VOLATILITY

How much should oil exporters look to save?[2] As of 2020, sovereign wealth funds in the region's oil exporters held assets of up to only 1.8 percent of GDP, well below the 72 percent found in the Middle East and North Africa. Accumulating greater financial buffers that allow for much smoother public spending, while insuring against extreme commodity price movements, would help governments achieve a less procyclical and more prudent fiscal policy. Analysis based on past revenue volatility and a value-at-risk (VaR) model suggests that, to insure against adverse price shocks and repeated revenue shortfalls over a three-year period, the average oil producer would need to accumulate buffers equivalent to 5–10 percent of GDP, which would require generating annual fiscal surpluses (in the range of 0–1 percent of GDP) over a 10-year period.[3] Although several oil exporters in sub-Saharan Africa were able to run fiscal surpluses over 2010-19, their fiscal balances have been too low, on average, to build sufficient buffers (Figure 3).

Figure 3. Sub-Saharan African Oil Exporters: Prudential Benchmark and Overall Fiscal Balances, 2010–19
(Percent of GDP)



Sources: IMF, World Economic Outlook database; and IMF staff calculations.

Note: Maximum/minimum refers to the country range for the fiscal balance.

How should savings be allocated: increase financial assets or lower debt? This is a complex question. Country-specific factors typically determine the optimal allocation of savings, including the gap between financial asset returns and borrowing costs and their respective responses to shocks. That said, for many countries in the region, lowering the stock of debt is perhaps the better option right now, given high debt distress vulnerabilities and other adverse effects posed by high debt (for example, sovereign-bank nexus, crowding out of private activity). Where debt risks are better contained, some accumulation of financial assets could be desirable, given that oil producers' budgets are very vulnerable to price shocks and market access often becomes more difficult in bad times.

MANAGING THE ENERGY TRANSITION AND INVESTING IN A GREENER FUTURE WILL REQUIRE CAREFUL POLICY CHOICES

Global policy actions to mitigate climate change will likely lead to new patterns of foreign investment and financing flows to commodity exporters in the region. The challenge for resource-intensive economies in the region has typically been how to harness their natural resource endowments to transform their economies and improve living standards. But as the global economy pivots toward green energy, these economies face a new challenge of how to reduce their fiscal dependence on revenues and windfalls from fossil fuels, which are likely to shrink over time as global energy demand is increasingly met by alternative sources.

Exporters with the highest extraction costs will be amongst the first to be hit as weaker demand and commodity price declines over time lead to lower investment, less exploration, and stranded reserves. Countries that depend heavily on oil revenues and whose oil production exceeds 30 percent of GDP (Angola, Equatorial Guinea, South Sudan) will find the transition challenging if they are not adequately prepared.

[2] Market instruments for insuring against commodity price fluctuations (such as derivatives or state-contingent debt) are not discussed in this note, as they may not be the best first line of defense for countries with shallower financial markets and low risk management capacity.

[3] The VaR model is used to estimate the buffer needed to cover three consecutive years of revenue shortfalls caused by large commodity price shocks at the 5 and 10 percent significance levels. The prudential benchmark is the overall fiscal balance that needs to be maintained over a 10-year period to eventually accumulate a buffer of 5–10 percent of GDP. For more details on the methodology, see IMF (2012).

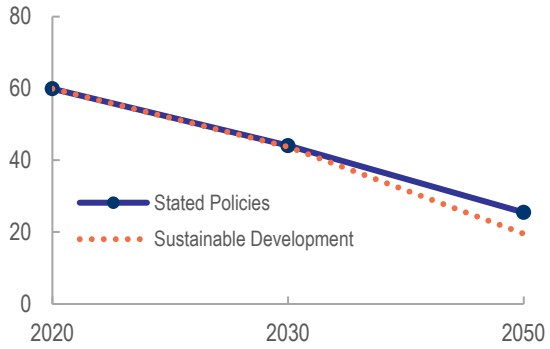
Under a conservative scenario, oil exporters in the region will see their oil revenues, as a percentage of total revenues, falling by a quarter of their current level by 2030 and by more than a half by 2050 (Figure 4).[4]

The energy transition will require integrated policies to address short-term challenges while laying the foundation for greater diversification:

- First, improving public spending efficiency, mobilizing better domestic revenue and reforming energy subsidies remain a top priority for resource-intensive economies to compensate for the expected revenue shortfalls. Infrastructure quality remains among the lowest in the world. Despite revenue windfalls, the poorest 20 percent of the population in oil exporters have historically received only 6 percent of social benefits, compared to 12 percent in the rest of the region, according to the World Bank (ASPIRE). Energy subsidies, which amount on average to 2½ percent of GDP in sub-Saharan African oil exporters and support higher-income groups, should also be eliminated to relieve fiscal pressures.[5]
- Second, implementing robust medium-term budget frameworks and asset allocation strategies can help ensure prudent management of commodity-based wealth to avoid boom-bust cycles triggered by price volatility, including how much to save and how to use such savings.
- Third, committing to medium-term reforms that focus on economic diversification and structural transformation through identifying comparative advantages will entail improving the regulatory and business environment to support trade, incentivizing private sector activities, and developing non–fossil fuel sectors, including renewable energy production.[6]
- Fourth, continuous improvements to governance and institutions (for example, improving business practices in resource and non-resource sectors) could help attract investment to the private sector to finance the transition.

Figure 4. Sub-Saharan African Oil Exporters: Fiscal Revenue Scenarios

(Percent of total revenue, weighted averages)



Source: IMF staff estimates based on 2021 International Energy Agency World Energy Outlook global oil production scenarios.

Note: The conservative "stated policies" scenario assumes that governments may not achieve all announced emissions reduction goals. In the "sustainable development" scenario, advanced economies reach net zero emissions by 2050.

- Fifth, countries rich in minerals needed for green technologies (such as copper in Gabon and manganese in the Republic of Congo) and with large natural gas reserves (such as Mozambique and Nigeria) should exploit the new opportunities the energy transition offers.
- Sixth, fostering intra-regional collaboration and trade in energy could facilitate the transition, given the uneven distribution of natural endowments needed for renewable energy production, such as hydropower and wind.

The green transition presents enormous opportunities but will require international support. Sub-Saharan Africa's contribution to greenhouse gas emissions is minimal (about 2–3 percent of the world CO_2 cumulative emissions). Yet, it bears a disproportionate cost because of the higher frequency of natural disasters. Adapting to climate change will entail greater social assistance and investment. And the development of green technologies and the structural transformation of the economy are also likely to exacerbate spending needs. All this will require significant financing, and support from the international community (such as greater concessional climate financing) will be essential.

[4] The estimated decline is consistent with results presented in the October 2019 *Fiscal Monitor* (Annex 1.10). In that exercise, oil exporters would see their oil revenues halved by 2040.

[5] Data refer to implicit and explicit subsidies for 2021 from the IMF Database on Fossil Fuel Subsidies.

[6] According to the Global Competitiveness Index, sub-Saharan African oil exporters rank 125th on average, while other sub-Saharan African countries rank at 109th, on average. Compared with other regions, sub-Saharan Africa lags on multiple fronts including the enabling environment for businesses (institutions, infrastructure, information and communication technology adoption, macroeconomic stability), human capital, and the innovation ecosystem (business dynamism, innovation capability).

MANAGING OIL PRICE UNCERTAINTY AND THE ENERGY TRANSITION

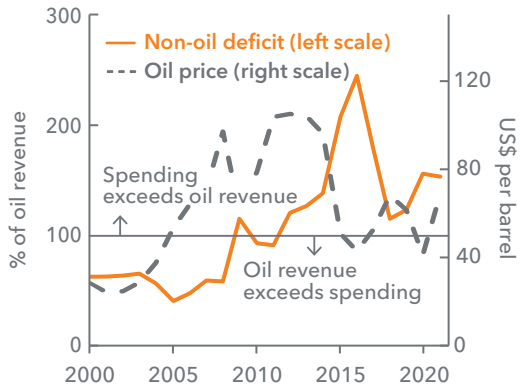
Commodity price volatility is a challenge for fiscal policy

Sub-Saharan African oil exporters since 2011

60% of fiscal revenue from **oil**

2% **lower** growth than in SSA non-oil exporting countries

100% of oil revenues was spent

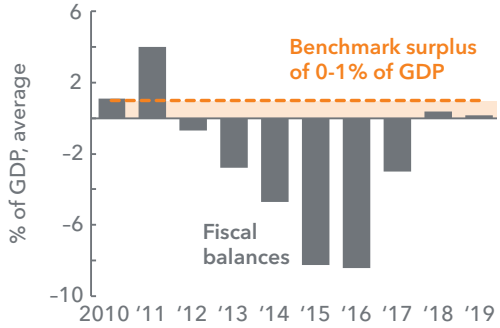


Sub-Saharan African oil exporters tend to spend more when oil prices are high...

How much to save today...

A **3-year insurance** against future price shocks requires a **financial buffer about 5-10% of GDP...**

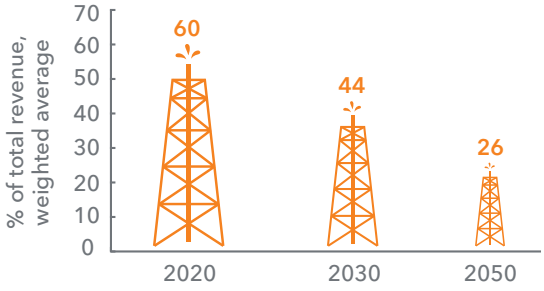
...equivalent to an annual **fiscal surpluses up to 1% of GDP** over 10 years



...leading to insufficient savings to insure against oil price shocks...

...to invest in a greener tomorrow

- More **efficient spending** + social safety nets + subsidy reforms
- The **transition** to clean energy will **halve oil revenue by 2050**, requiring international support to adapt



...while oil revenues are projected to fall.

Short-Term: Insure Against Oil Price Shocks Through...

- Reducing debt
- Building financial buffers

Long-Term: Adapt to Permanent Decline in Oil Revenues

- Structural transformation away from fossil fuels
- Incentives to renewable energy production
- Improvements in governance, institutions and business environment

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