



United Nations  
Economic Commission for Africa

# Africa's quarterly economic performance and outlook

economic performance of Africa and the role of carbon markets

**April–June 2023**

## 1. Introduction

African countries have ratified a number of international treaties and agreements and have issued laws at the national level to tackle the negative effects of climate change. Carbon markets have exhibited the potential to support developing countries in their efforts to tackle the twin goals of accelerating sustainable development by attracting more climate finance and curbing greenhouse gas emissions. Therefore, the aim of the present paper is to introduce the concept of carbon markets and explain how they could be beneficial for African Governments in reducing greenhouse gas emissions and augmenting funding of their development priorities for poverty reduction and overall economic development. Furthermore, the report contains an exploration of how countries could maximize the potential of carbon markets based on a consideration of the constraints preventing African countries from effectively participating in carbon markets, the issues governing carbon pricing and policy recommendations that could enhance the effective utilization of carbon markets.

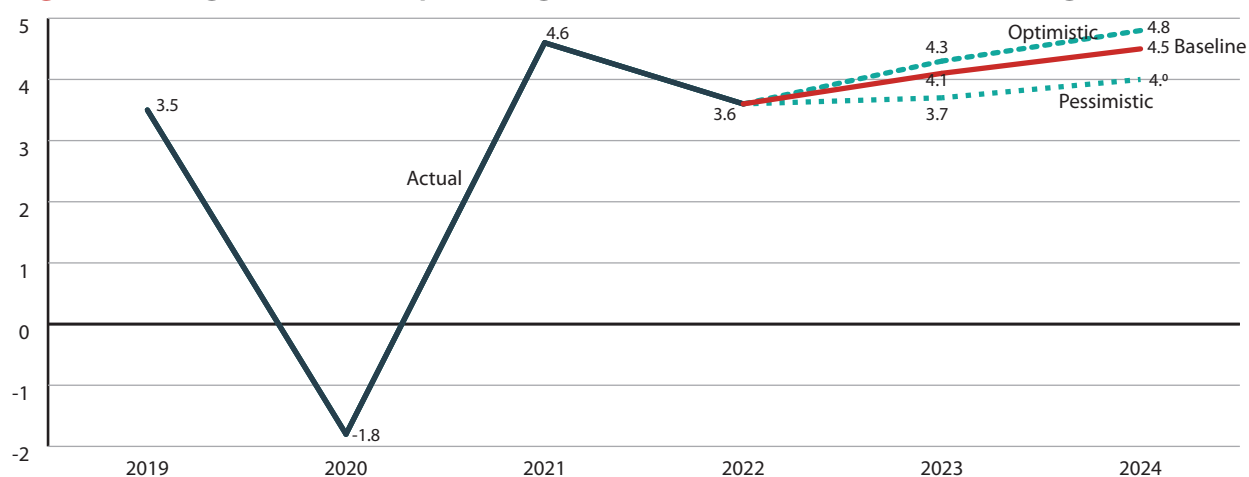
The following section is dedicated to the recent growth performance of Africa and the significance of the continent's industrialization agenda and the need to incorporate climate adaptation and mitigation measures into overall industrialization and development priorities. In section 3, the impact of climate change on African economies is considered, while in section 4, climate change mitigation measures and their effectiveness in African economies are addressed. In section 5, attention turns to the importance of carbon markets for African countries, followed by the main challenges affecting the growth of carbon markets in Africa in section 6 and the different types of carbon pricing mechanisms and their significance in section 7. Section 8 contains suggested policy recommendations to assist African countries in

their quest to fully exploit the potential that comes with credit markets.

## 2. Economic performance of Africa vis-à-vis the global economy

According to data retrieved in 2023 from the World Economic Outlook database of the International Monetary Fund (IMF), the gradual global economic recovery remains on track as growth bottoms out at 2.8 per cent in 2023 before it is predicted to rise slightly to 3.1 per cent in 2024 owing to resilience in advanced economies and a fast recovery in China in 2023 (IMF, 2023b). The continued effects of the coronavirus disease (COVID-19) pandemic and the war between the Russian Federation and Ukraine have been further exacerbated by the slowdown in the global economy, elevated inflationary pressures, climate change and worsening international economic and financial conditions, all of which have negatively affected growth in Africa, which declined from 4.6 per cent in 2021 to 3.6 per cent in 2022. However, growth is projected to rally to 4.1 per cent in 2023 and 4.5 per cent in 2024 (see figure I), owing to the rebound in global demand, higher crude oil prices (mostly benefiting oil exporters), the loosening of COVID-19 restrictions in most countries and especially China and the resulting increase in domestic consumption and investment.

If the current headwinds ease, growth may reach 4.3 per cent in 2023, but if they intensify, growth may be limited to 3.7 per cent in 2023. This growth trajectory and the associated challenges are also exacerbating the challenges for African countries of balancing the dual goals of accelerating growth while minimizing the adverse effects of economic activity on the environment and adapting to climate change (ECA, forthcoming).

**Figure I:** Real gross domestic product growth in Africa, 2019–2024 (Percentage)

Source: United Nations, Department of Economic and Social Affairs (2023) and ECA internal estimates and forecasts, 2023.

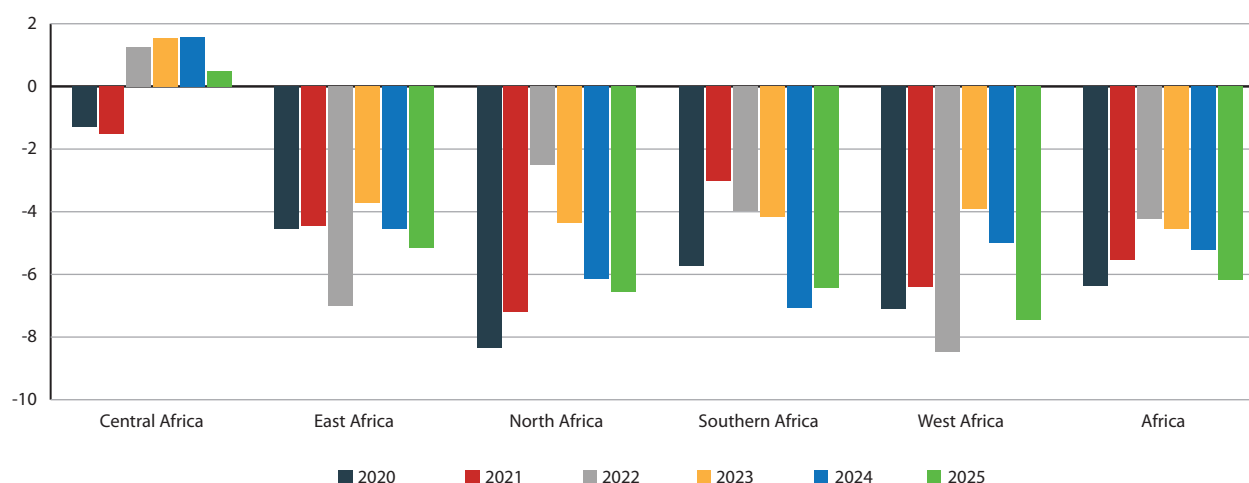
### Fiscal performance in Africa remains bleak

Average fiscal deficits remain high at an estimated 4.6 per cent in 2023, modestly higher than the pre-pandemic level of 4.4 per cent in 2019 and projected to widen to 5.2 per cent in 2024 (see figure II), reflecting increased net capital outflows and subdued export revenues, mainly in resource-intensive economies. North Africa is expected to experience the largest fiscal deficits in 2023, followed by Southern Africa. Low economic growth, high subsidies and loss-making State-owned enterprises, as well as adverse external developments, such as recent hikes in interest rates and food and fuel price surges, are putting public finances under pressure in many North African countries (Sayeh, Harb and Charaoui, 2023). While fiscal deficits are mainly driven by tax

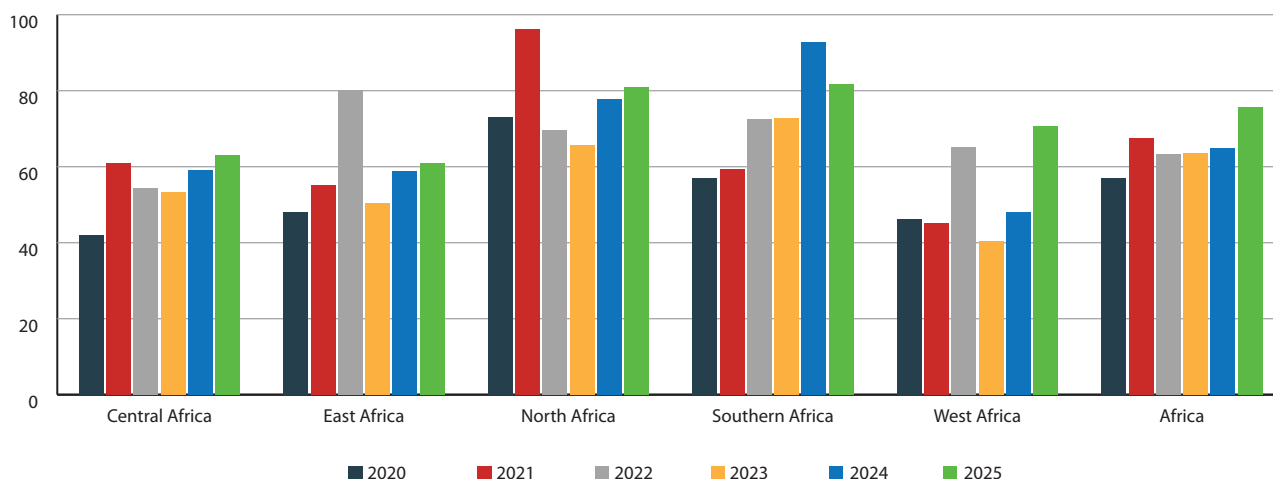
revenue shortfalls, cash transfers and subsidies to vulnerable households, targeted and temporary support to hard-hit sectors and increasing interest payments in the economies of the subregion all contribute to the deterioration of the fiscal situation (African Development Bank, 2023). Central Africa stands out as the only subregion on the continent that has had a budget surplus since 2022, largely because of higher oil revenues.

### Public debt is projected to remain high, increasing African debt vulnerabilities

High debt levels pose serious concerns of debt distress to many countries, especially those in low-income countries and emerging markets that are unable to invest in their economies, which is necessary in order to accelerate economic growth.

**Figure II:** Fiscal balances in Africa, by subregion, 2020–2025 (Percentage of gross domestic product)

Source: IMF (2023b).

**Figure III: Gross government debt in Africa by subregion, 2020–2023 (Percentage of gross domestic product)**

Source: IMF (2023a).

According to IMF (2023b), as of April 2023, 8 African countries were in debt distress and 13 countries were at a high risk of debt distress.

Over the past decades, between 2000 and 2020 alone, external debt in Africa has increased more than fivefold and accounted for almost 65 per cent of its gross domestic product (GDP) in 2022. Even though the debt-to-GDP ratio of Africa is expected to decrease to 63.4 per cent (IMF, 2023a) in 2023 (although many individual countries have much higher rates) and then stabilize at slightly above 60 per cent in 2024, Africa faces an escalating debt crisis.

Average government gross debt will be the highest in North Africa in 2023, followed by Southern Africa, with West Africa recording the lowest debt-to-GDP ratio in 2023 (see figure III). Notably, Cabo Verde, the Congo, Egypt, Eritrea, Ghana, Mozambique, Sierra Leone, the Sudan, Tunisia and Zimbabwe are among the countries with relatively higher levels of public debt in Africa in 2023 (IMF, 2023a).

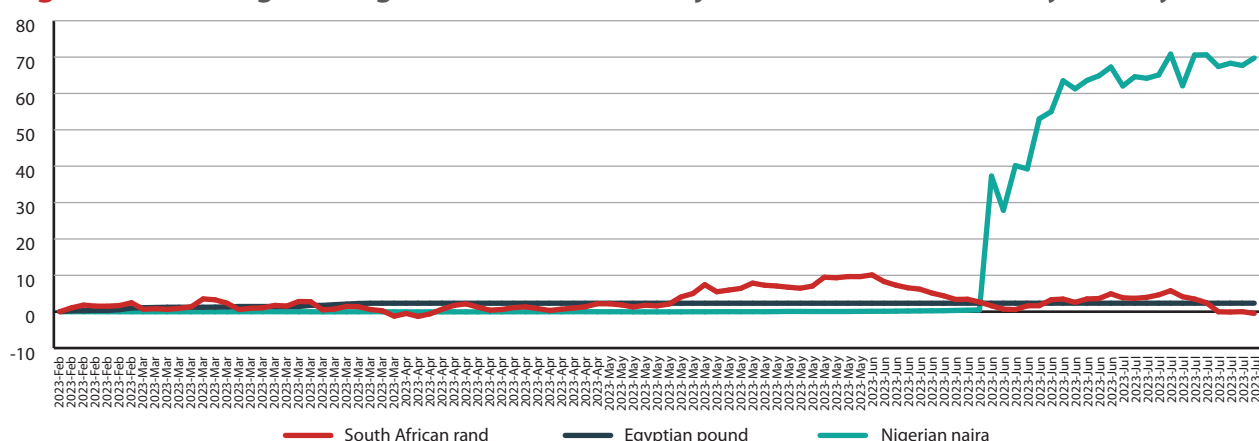
The combination of high debt levels, as a result of the pandemic, lower growth, higher borrowing costs and the weakness of currencies against the dollar, exacerbate the vulnerability of African economies, especially those with significant dollar financing needs in the near term. ECA (2022) estimates that African countries owe at least \$2.7 billion in principal on Eurobonds that will come

due in 2023. Debt restructuring, therefore, should be part of the negotiations for the resolution of public debt crises in countries facing heightened risks.

### **Inflation remains high despite easing food and fuel prices**

Despite the gradual decline in world food prices and fuel price pressures, inflation remains relatively high in Africa, with many countries registering double-digit headline inflation in 2023. Owing to relatively high food prices reflecting weaker domestic currencies and higher input costs (high costs of fuels and fertilizers), as well as the phasing out of food and fuel subsidies (in such countries as the Central African Republic, Ethiopia and Senegal), many African countries are facing pressures to raise public wages (in such countries as Cameroon, the Gambia, Mali and Rwanda), and climate shocks, especially in the Horn of Africa, are adding inflationary pressures from the supply side (IMF, 2023c; World Bank, 2023).

Inflation is set to remain high and above central bank target bands for all countries, with an explicit nominal anchor in 2023, such as those in the West African Economic and Monetary Union, where inflation has surpassed the central bank target of 3 per cent. This is despite the early and sizeable interest rate increases implemented by African central banks, such as in Nigeria, South Africa

**Figure IV: Exchange rate against the dollar for major currencies, 20 February–18 July 2023**

Source: Central Bank of Egypt, Bank of Ghana, Central Bank of Nigeria, South African Reserve Bank. Accessed on 17 July 2023.

and Uganda (Economist Intelligence Unit, 2023). According to ECA internal estimates and forecasts, it is anticipated that central banks will maintain their tight policy stance in an effort to curb inflation amid the slowdown in economic growth, leading to a decline in inflation from 12.8 per cent in 2022 to 11.8 per cent in 2023 before decelerating further to 9.7 per cent in 2024. However, even though most developing countries are experiencing falling inflation rates as a result of the global easing of supply restrictions and devaluation pressures, annual inflation across Africa will remain well above the long-term norm owing to issues with local supply and production and continuing high import prices (United Nations, Department of Economic and Social Affairs, 2023). This may even push inflation above 2022 levels. Persistently high inflation adds an additional obstacle to the elimination of poverty in many African countries.

Many African currencies have lost ground against the dollar, contributing to rising import prices and fuelling inflationary pressures across the region. With GDP growth slowing, officials face a balancing act between containing inflation and supporting the recovery of their economies, which is still weak. Following the shift to a flexible exchange rate regime, the Egyptian pound witnessed a gradual depreciation against the dollar beginning in October 2022, with stabilization in 2023, while in Nigeria, the naira was allowed to float freely in June 2023 and recorded a depreciation of more than 70 per cent against the dollar (see figure IV). On the heels of high petrol prices brought

on by reductions in Nigerian subsidies and the devaluation of the naira, annual inflation in Nigeria quickened from 22.8 per cent in June 2023 to 24.1 per cent in July. One of the first things that will happen as a result of the flotation of the naira is that foreign exchange reserves in Nigeria will be quickly depleted; on the other hand, the Government can strengthen its reliance on non-oil exports, such as services and technology, while also stimulating export-oriented businesses and increasing foreign exchange revenues.

The South African rand fell to a historic low on 30 May 2023 as the dollar strengthened, and the country is plagued by electricity shortages that weigh heavily on its potential. This situation has also harmed local investor sentiment, which has resulted in capital outflows from the country. In June, the rand dropped by more than 1 per cent immediately after the June meeting of the United States Federal Reserve, as investors shied away from riskier assets.

### **African industrialization and climate change**

Industrialization is an indispensable path towards sustained productivity-driven long-term growth, and over the years, African leaders have restated their determination to seize emerging opportunities to foster industrialization as a way to move towards economic transformation. In this vein, the recent session of the Assembly of Heads of State and Government of the African Union, held in Niamey from 20 to 25 November 2022,

carried the theme “Industrializing Africa: renewed commitment towards an inclusive and sustainable industrialization and economic diversification”. Industrialization is indispensable for development in Africa for three reasons. First, inclusive and sustainable industrial development is believed to be associated with job creation, sustainable livelihoods, innovation, technology and skills development, food security and equitable growth. Second, it is widely accepted that for a country to evolve from poor to rich, it must undergo sustained structural transformation from an agrarian or resource-based economy to an industrial or service-based economy. This transformation is important to ensure wealth creation through increased economic integration and productivity. Third, millions of young people enter the job market in Africa and the least developed countries every year, and industry can boost capacity for much-needed inclusive development by providing decent jobs and expanding the fiscal revenues needed for social investments.<sup>1</sup>

However, industrialization carries costs in terms of damage to the environment, notably greenhouse gas emissions and other adverse effects on the environment (Sanchez and Stern, 2016). The linkages between industrialization and greenhouse gas emissions are particularly strong in the early stages of development, mostly because, in those stages, industrialization typically has low-technology content and is based on natural resources, with a so-called inverted-U relationship between industrialization and greenhouse gas emissions (Appiah, Yeboah and Appiah, 2019; Roberts and Grimes, 1997).

These historical patterns suggest that the structure of the economy and its evolution over time are important determinants of the relationship between greenhouse gas emissions and economic activity. As economies transition from extractive industries to manufacturing and on to services, greenhouse gas emissions decline for each dollar of output produced. Thus, the higher the share of industry in GDP, the higher the rate of greenhouse gas emissions in a country. Emissions then decline

as services account for a larger part of the economy, which is the traditional structural transformation path (Herrendorf, Rogerson and Valentinyi, 2022).

### **3. Impact of climate change on African economies**

#### **Impact on growth**

Africa is considered the continent that is the most vulnerable and the least equipped to cope with the effects of climate change, despite contributing the least to the Earth's environmental changes (Sy, 2016; Walker, 2021; Trisos and others, 2022; ECA, forthcoming). Indeed, these environmental challenges continue to threaten social and economic developments in Africa, pushing a greater percentage of its already poor population into poverty and hampering its development efforts. The stakes of climate change are extremely high in Africa, as most of its economies are based on agriculture, with significant implications for food security, health, biodiversity, water access and migration, in particular through water stress, reduced food production, increased frequency of extreme weather events and lower economic growth, all of which are fuelling mass migration and regional instability (International Energy Agency, 2022).

Africa accounts for the smallest share of global greenhouse gas emissions, at just 3.8 per cent, compared with 23.0 per cent in China, 19.0 per cent in the United States of America and 13.0 per cent in the European Union (CDP Worldwide (Europe), 2020). The overall contribution of Africa to global warming is low; about two thirds of that contribution comes from land use, in particular forest degradation and deforestation. However, the continent remains the most vulnerable to climate change as it is highly dependent on low-productivity agriculture for food, income and employment. Agriculture accounts for 30–40 per cent of its GDP, and about 80 per cent of

<sup>1</sup> See United Nations Industrial Development Organization (2020) for more details.

its population depends on low-yield, rain-fed agriculture (Sy, 2016), which makes the continent and its people the most vulnerable to climate change.

Global warming increases the risk of drought and flooding in different parts of the continent, leading to lower yields and higher food inflation. It is estimated that, by 2050, warming of less than 2 per cent could reduce total crop production by as much as 10 per cent, with dire consequences for human development, especially through increased poverty levels and increased mortality and morbidity due to extreme heat and flooding as well as conflicts (Sy, 2016). Estimates suggest that GDP per capita fell by 13.6 per cent between 1991 and 2010 because of climate change, mainly owing to losses in agriculture as well as tourism, manufacturing and infrastructure (Trisos and others, 2022). Across nearly all African countries, GDP per capita is projected to be at least 5 per cent higher by 2050 if global warming is held at 1.5°C compared with 2.0°C.

According to recent estimates, warming of 2.2°C by 2050 has the potential to shrink global output by 20 per cent by 2050, while 5.0°C of global warming would result in economic annihilation by 2100 (Winter and Kiehl, 2022). This is consistent with the work of Song and others (2021), which finds that a temperature increase of 5.2°C above pre-industrial levels at the present rates of increase would likely result in mass extinction. In its recent study on the impact of climate change, ECA found that a temperature increase beyond a threshold of 0.7°C above pre-industrial levels would start to reduce real GDP growth. With a 1.8°C rise, which is expected to be met in 2023 if current trends persist, real GDP in Africa would fall by 2 percentage points (ECA, forthcoming). The results are in line with its earlier study, which showed that, with an increase in temperature of between 1°C and 4°C relative to pre-industrial levels, the continent's overall GDP would decrease by between 2.25 and 12.12 per cent by 2030 (ECA, 2021).

## **Other macroeconomic impacts of climate change**

Climate change-induced shocks directly affect public finance as they deplete government financial resources in response to catastrophic events and other less acute hazards, such as pollution. In addition, climate change-related shocks erode government revenue by disrupting economic activity, shrinking fiscal space.

According to preliminary results from ECA (forthcoming), a unit increase in the frequency of natural disasters could lead to a 0.25 percentage point increase in the ratio of net public debt to GDP. There is a strong positive correlation between CO<sub>2</sub> emissions and the number of extreme natural disasters, indicating that a 1 per cent increase in CO<sub>2</sub> emissions could increase the occurrence of natural disasters in a year by about 0.17 units.

Natural disasters significantly affect the balance sheets of Governments, and businesses and households are also affected by disruptions to the supply and demand of goods and services, which in turn have a significant impact on consumer prices. It is estimated that a single natural disaster in a country can lead to a 5 per cent increase in inflation in the long term (ECA, forthcoming).

## **Impact on sectoral activities**

According to the Intergovernmental Panel on Climate Change (2022), climate change has also led to a 34 per cent reduction in agricultural productivity growth in Africa since 1961, more than in any other region. In sub-Saharan Africa, maize and wheat yields are found to have decreased, on average, by 5.8 per cent and 2.3 per cent, respectively, between 1974 and 2008 as a result of climate change. Further global warming would increase mortality and morbidity, placing additional strain on already weak health systems and associated economies. More than 2°C of global warming is estimated to increase the distribution and seasonal transmission of vector-borne diseases, exposing millions more people in Africa.

Low rainfall in rural areas has led to increased urbanization, with over 2.6 million and 3.4 million new weather-related displacements in sub-Saharan Africa in 2018 and 2019, respectively. With 1.7°C global warming by 2050, 17–40 million people could migrate internally in sub-Saharan Africa owing to water stress, reduced crop productivity and rising sea levels. This figure would increase to 56 million–86 million people if temperatures rose by 2.5°C in the same time frame. Rapidly growing African cities will be hotspots of risks from climate change and climate-induced in-migration, which could amplify existing stresses related to poverty, informality, social and economic exclusion, and governance.

Climate-related infrastructure damage and repairs have also been increasing in many African countries, leading to significant increases in financial requirements. Potential costs of \$183.6 billion may be incurred by the end of the twenty-first century to maintain existing road networks that have been damaged as a result of temperature and precipitation changes caused by climate change. Increased rainfall variability is expected to upset electricity prices in countries that are highly dependent on hydroelectric power. Furthermore, by 2030, 108 million–116 million people in Africa are expected to be exposed to high sea levels, compared with 54 million people in 2000 (Intergovernmental Panel on Climate Change, 2022).

## 4. Climate change mitigation measures and their effectiveness in African economies

According to the Intergovernmental Panel on Climate Change (2022), the world will face severe climate risks before the end of the century, even under low-emission scenarios. Africa will bear the brunt of global warming, which will be caused mainly by developed and emerging economies; however, it has limited bargaining power in international negotiations.

Rapid economic growth and demographic and urbanization trends will increase African emissions of greenhouse gases unless mitigation actions are taken, such as the widespread use of renewable energy for power generation. Carbon markets could play a major role in addressing the root causes of climate change and helping societies to adapt to it.

It is estimated that power generation in Africa could quadruple by 2040, with the region's share of global CO<sub>2</sub> emissions increasing from 2 per cent to 3 per cent, which would require countries to widely implement renewable technologies in order to reduce emissions (International Energy Agency, 2022). However, countries will not have sufficient financial resources to both meet their development needs and address the impacts of climate change despite putting in place measures to increase their domestic revenues. It is estimated that, under a 2°C temperature rise scenario, annual expenditures on adaptation would need to increase by 10–20 per cent (International Energy Agency, 2022). However, the present trends in funding will not be able to meet these needs, as there is no clear pathway that has been agreed upon or identified sources of funding through which such a rapid scaling up can be achieved by African countries.

The United Nations-backed payment plan was first agreed upon in 2009 as an annual commitment each year until 2020 to help poorer countries adapt to the effects of climate change and reduce emissions. However, this pledge has never been fulfilled. Richer countries failed to keep a \$100 billion-a-year pledge to developing countries to help them to achieve their climate goals. According to an analysis by the Organisation for Economic Co-operation and Development (OECD), only \$83.3 billion in climate financing was given to poorer countries in 2020, a 4 per cent increase from the previous year, but still short of the proposed goal. However, in 2021, just 27.6 per cent of bilateral allocable official development assistance was targeted towards climate objectives, returning to 2015–2019 levels after a high of 33.7 per cent in 2020 (OECD, 2023). The climate change-related



finance flowing to Africa includes climate change adaptation and climate change mitigation-related development financing.

With poverty alleviation being a prime goal of low-income countries and agricultural development being an essential part of their development strategies, transformational policy strategies are needed, with elements of modern agricultural techniques, increased market access and enhanced social safety nets, among others, to tackle poverty through climate-resilient development (United Nations Environment Programme, 2022).

The potential for climate change mitigation through agriculture in the African region has been estimated at 970 million tons of carbon dioxide equivalent (tCO<sub>2</sub>e) per year by 2030, 17 per cent of the global total; the economic potential, which allows for carbon trading, is estimated to be 265 million tCO<sub>2</sub>e, which is 10 per cent of the total global mitigation potential (assuming carbon prices of up to \$20 per tCO<sub>2</sub>e) (Smith and others, 2008). Similarly, estimates suggest that Africa could potentially contribute to greenhouse gas reductions of 265 million tCO<sub>2</sub>e per year at carbon prices of up to \$20 through agricultural measures and 1.925 billion tCO<sub>2</sub>e per year at carbon prices of up to \$100/tCO<sub>2</sub>e by 2030 through changes in the forestry sector. These amounts represent 17 and 14 per cent, respectively, of the global total potential for mitigation in these sectors. Even more important, the African avoided-deforestation potential of 1.160 billion tCO<sub>2</sub>e per year accounts for 29 per cent of the global total (Nabuurs and others, 2007). However, countries in Africa are marginalized in global carbon markets.

## 5. Why carbon markets are a viable option for Africa

Carbon markets can play a broader role in creating jobs, expanding energy access, improving livelihoods and protecting biodiversity (Africa Carbon Markets Initiative, 2022). Carbon markets are essentially trading mechanisms in which carbon credits are sold and purchased. By purchasing

carbon credits from entities that remove or reduce greenhouse gas emissions, businesses and individuals can use carbon markets to offset their greenhouse gas emissions. One carbon credit is equivalent to one ton of carbon dioxide or the equivalent quantity of another greenhouse gas reduced, sequestered or avoided. When credits are used to reduce, sequester or avoid emissions, they become offsets and are no longer tradable (United Nations Development Programme, 2022).

Demand for African-origin carbon credits grew at a compounded annual rate of 36 per cent between 2016 and 2021, at a slightly faster pace than global markets (31 per cent). However, this growth is from a low base, and with a final value of only \$123 million, well below the potential. Of all the credits issued globally, only about 11 per cent stemmed from African countries, with the bulk coming from a few large projects, which indicates that there is a latent transformational economic and development opportunity for Africa. Only five countries account for 65 per cent of the credits issued over the period: Democratic Republic of the Congo, Ethiopia, Kenya, Uganda and Zimbabwe. This reveals the underutilization of the opportunity to deliver climate finance through carbon markets, although there are a good number of countries with very high carbon credit potential (Africa Carbon Markets Initiative, 2022). Most of the carbon credits have been issued in forestry and land use, renewable energy and household devices.

Carbon markets could not only reduce emissions, but they also offer an immense opportunity to drive development priorities, such as expanding energy access, improving health through clean cooking and creating jobs. They are also gaining traction as a crucial way of transferring finance to developing countries, as they allow for the large natural capital endowment of Africa to be monetized.

However, the African Carbon Markets Initiative aims to address these challenges and to be able to build the foundation for a thriving carbon market system in Africa by 2030. This is expected to be achieved by increasing African carbon retirements

19-fold per annum, creating or supporting 30 million jobs through carbon market development, execution, certification and monitoring; raising the quality and integrity of African credits to mobilize up to \$6 billion; and ensuring an equitable and transparent distribution of carbon credit revenue, with a significant portion of revenue going to local communities (Africa Carbon Markets Initiative, 2022).

Nigeria has demonstrated its ambitions to be a regional climate leader with its 2021 Climate Change Act and its commitment to achieve net-zero emissions by 2060. In September 2022, the President of the country, Muhammadu Buhari, inaugurated the National Council on Climate Change, and the Government is committed to using carbon credits as a tool for achieving its climate and sustainable development goals. It is estimated that Nigeria could produce more than 30 million tons worth of carbon credits annually by 2030, worth more than \$500 million per year.<sup>2</sup>

In Malawi, recognizing the role that carbon markets could play in supporting the country's development priorities, the President, Lazarus Chakwera, launched the Malawi Carbon Markets Initiative in June 2023 to oversee the trade and marketing of carbon emission offsets. With more than 1 million hectares of designated forest reserves and 1 million hectares of land under wildlife conservation parks and reserves, Malawi has a huge potential for carbon trading and could generate carbon credits corresponding to an estimated 19.9 million metric tons of carbon per annum, valued at \$600 million (Jomo and Sguazzin, 2023).

## **6. Major challenges affecting the growth of carbon markets in Africa**

As indicated in the previous section, carbon markets present a major opportunity to accelerate sustainable development by attracting more

climate finance to the continent and by curbing greenhouse gas emissions. Boosting the supply of carbon credits would enable much-needed sustainable investment in sectors ranging from renewable energy and clean stoves to agriculture and forestry. However, the nascent carbon credit markets in Africa face numerous obstacles to growth in many parts of the continent, owing to a lack of project developers that are capable of operating at scale, a complex regulatory landscape, inadequate methodologies for valuing and certifying credits and concerns about integrity (Osinbajo and Duque Márquez, 2022).

According to the Africa Carbon Markets Initiative (2022), there are very few carbon credit project developers in Africa, with limited diversification, as significant amounts of upfront capital are often required to start a carbon credit project. Carbon credit projects often face complex and uncertain regulatory environments, which may vary from country to country, especially when it comes to such critical issues as land rights and ownership of credits. For instance, in some countries, all carbon rights are owned by the State, and private developers need permission credits before reporting transactions. Also, many landowners do not have formal land titles, making it difficult to guarantee that a project could preserve carbon sinks for many years, as required. As a result, they may lack the right to sell carbon credits (Africa Carbon Markets Initiative, 2022). It has also been observed that many of the methodologies laid out by standards organizations in the design of carbon credit projects do not fit the African context, as assets there are more fragmented, with poor infrastructure and technological challenges complicating the measurement and monitoring of projects. Furthermore, Africa has decarbonization opportunities and carbon sinks that are not currently well captured by existing methodologies.

Most African countries lack the capacity and capabilities, including technical expertise, required to validate and verify projects in order to ensure effective collaboration with third-party validation and verification bodies and compliance with

<sup>2</sup> For additional details, see <https://energytransition.gov.ng/>.

methodologies set out by standards organizations (Rachmaniar and others, 2020). Furthermore, there are high costs and long lead times for validation and verification of carbon credit projects. A project may take, on average, 2–7 years before the first credit is issued, which entails a significant amount of investment prior to receiving returns (Africa Carbon Markets Initiative, 2022).

The high reliance on intermediaries in bringing credits to market and identifying buyers comes with high markup costs that significantly eat into returns. Intermediaries are also associated with a lack of transparency, in many instances. This situation could be exacerbated by the lack of local demand on the continent, since most of the largest buyers (except Nedbank in South Africa) are international organizations. The lack of transparency may also affect the pricing of African credits, as prices may not always reflect the actual value of the credits.

There are a number of project management risks, such as counterparty, country, physical and market risks, associated with carbon credit markets. However, Africa has limited active mechanisms to de-risk investment in project management and supply. Furthermore, project developers do not have the capacity to hold credits in order to delay their sales for higher prices, as they often rely on continuous cash flow.

### **Contribution of the Economic Commission for Africa to tackling challenges**

Despite huge carbon sequestration opportunities, carbon markets in the region remain poorly financed and fragmented and lack effective coordination mechanisms, leading to low carbon prices, limited market demand and a low number of investors. Some of the main reasons for the continent's failure to attract financing to support its carbon sequestration efforts are the limited institutional capacity in African countries to manage vibrant carbon markets that can stimulate

public and private sector investment, low prices paid for forest carbon sequestration and weak carbon market integrity (ECA, forthcoming). Recognizing these challenges, ECA, in collaboration with the Blue Fund for the Congo Basin of the Congo Basin Climate Commission, developed a model regional carbon registry and harmonized protocol. The protocol standardizes carbon emission accounting, verification and reporting mechanisms to support the integrity of carbon markets, enhance institutional capacity and boost private investment in inclusive green and blue economies in Congo Basin Climate Commission countries (ECA, forthcoming).<sup>3</sup>

## **7. Carbon pricing and its implications**

Carbon pricing is increasingly playing a fundamental role in the transition to a low-carbon economy. It is a mechanism aimed at reducing greenhouse gas emissions and encouraging investment in low-carbon technology and development (Konrad-Adenauer-Stiftung, 2020). There is no universally agreed upon definition of carbon pricing. However, two different forms of carbon pricing are often considered: carbon taxes, where a price is set on carbon by defining a tax rate on greenhouse gas emissions, or cap-and-trade systems or emissions trading systems, in which a cap on the total level of greenhouse gas emissions is set and companies and Governments with low emissions are allowed to sell their extra allowances to larger emitters (Konrad, 2020).

In order to achieve the long-term goals of holding the increase in global average temperature to well below 2°C above pre-industrial levels and developing estimates of the price of mechanisms aimed at limiting the temperature increase to 1.5°C above pre-industrial levels, many Governments have put in place energy and renewable policies and implemented carbon pricing in the form of carbon taxation or emissions trading systems. A

<sup>3</sup> There are 16 State member countries of the Congo Basin Climate Commission: Angola, Burundi, Cameroon, Central African Republic, Chad, Congo, Democratic Republic of the Congo, Equatorial Guinea, Gabon, Kenya, Rwanda, Sao Tome and Principe, South Sudan, Uganda, United Republic of Tanzania and Zambia.

price on carbon helps to internalize externalities and shift the burden for the damage back to those who are responsible for it and who need to reduce it. It is a powerful incentive to reduce emissions and foster investment in clean energies and low-carbon practices (Konrad-Adenauer-Stiftung, 2020). However, focusing on these approaches runs the risk of neglecting the importance of other approaches, in particular those that may be more appropriate for developing countries, including those in Africa. Arguably, such approaches include mechanisms or instruments that indirectly price greenhouse gas emissions, such as the removal of fossil fuel subsidies and fossil fuel taxes, support for renewable energy and energy efficiency certificate trading (Konrad-Adenauer-Stiftung, 2020). They also include policies or instruments that impose a compliance cost or an indirect or implicit price on activities that result in greenhouse gas emissions. However, these implicit carbon pricing mechanisms have mostly been excluded from carbon pricing, as they do not place an explicit price on carbon and therefore do not always fall under definitions of carbon pricing (Konrad-Adenauer-Stiftung 2020).

Carbon taxation imposes a specific tax rate per tCO<sub>2</sub>e for greenhouse gas emissions from installations covered by a given scheme. The extent of tax reliability is informed by the volume of greenhouse gases emitted through installation-level and associated activities, as determined by the application of a prescribed measuring and reporting methodology for calculating taxable emissions. Traditional carbon pricing mechanisms are considered appropriate for countries with industrial-scale sources of greenhouse gas emissions, such as from fuels and industrial processes. However, carbon taxation and emissions trading schemes may be inappropriate for reducing greenhouse gas emissions and may be inefficient compared with other instruments in countries with low fossil fuel reliance or low emission profiles, but

with high levels of greenhouse gas sequestration potential, such as forestry.

Offset mechanisms include the clean development mechanism, a scheme under which an explicit price is placed on greenhouse gas emissions, expressed as a monetary unit per tCO<sub>2</sub>e.<sup>4</sup> Explicit carbon pricing can be outcomes-focused, with the source of revenue derived from a party that is not necessarily resident in the implementing country. Such pricing can include results-based climate finance and reducing emissions from deforestation and forest degradation (REDD+), where the provider of climate finance releases funds to the recipient upon implementation of a pre-agreed set of climate change actions, especially for areas with high forest coverage (in terms of REDD+).<sup>5</sup>

Carbon markets remain volatile, and prices can range from less than \$10 to more than \$100 per tCO<sub>2</sub>e. Changing climate goals and policies, economic hardships and uncertainty fuelled by recent crises, such as the COVID-19 pandemic and the war between the Russian Federation and Ukraine, rising oil and gas prices and growing speculation play a significant role in setting prices on carbon markets. However, this price volatility makes it difficult for developing countries, which have limited funds and technical capacity, to participate in carbon markets on fair terms. As a result, there is relatively low participation on the African continent in global carbon markets (Eziakonwa and Gomera, 2022).

While most countries in the world have implemented carbon pricing policies as part of their efforts to combat climate change, Africa has not taken part in this trend. Only in 2019 did South Africa adopt a policy to tax greenhouse gas emissions, and only a limited number of African countries, such as Botswana, Côte d'Ivoire, Gabon, Malawi, Morocco, Nigeria and Senegal, have designed

4 Under the clean development mechanism, countries with emission targets finance emission reduction projects in developing countries in exchange for certified emission reduction credits, which count towards meeting targets under the Kyoto Protocol. The mechanism includes a wide variety of project types, including fuel switching, afforestation and methane reduction, but notably does not include avoided deforestation (Africa Carbon Markets Initiative, 2022).

5 REDD+ is a framework for emission limitation programmes focused on preventing deforestation that was negotiated under the United Nations Framework Convention on Climate Change. REDD+ credits are not allowed in CDM the clean development mechanism but are common in voluntary carbon markets.

carbon pricing policies (Katholieke Universiteit Leuven, 2023). However, it is encouraging to note that 45 out of 54 African countries have mentioned the international carbon market in their nationally determined contributions to the United Nations Framework Convention on Climate Change (Greiner and others, 2016).

## 8. Conclusion and policy implications

Development strategies in African countries must leverage their natural resource endowments so as to stimulate economic growth while gradually reducing the intensity of carbonization associated with economic activity, especially production, transport and consumption. This requires embracing green industrial policy as the core of the design and implementation of their national development strategies. Carbon credit markets can play an important role in achieving the twin objectives of accelerating sustainable development by attracting more climate finance to the continent and curbing greenhouse gas emissions. Carbon markets should be a priority for policymakers and may need extensive coordination across society, including coordination with financial institutions.

The participation of countries in international carbon markets and offset schemes (for example, REDD+ and the clean development mechanism) as part of their climate change mitigation measures requires a credible system for measuring, reporting

and verifying emissions. Many African countries do not have the capacity to accurately measure and report the carbon sequestered in their forests, hence the need for capacity-building and technical assistance to ensure effective deliberation in global policy forums, including the Conference of the Parties to the United Nations Framework Convention on Climate Change.

With its vast forestry resources, Africa needs to have the capacity to improve its forest governance and land tenure practices, as the continent suffers from poor institutional capacity and performance and insecure or weak land and forest tenure by local communities. It has been observed that less than 2 per cent of African forests are estimated to be legally owned or designated for use by local communities (ECA, forthcoming). Land tenure reforms are therefore needed to enable indigenous and local communities to claim property rights in forest lands so that they can benefit from payments from carbon trading and offset schemes. Capacity and expertise in the assessment and implementation of carbon pricing options are also needed. African countries also need adequate systems for calculating emission reductions, as well as the necessary policy instruments and institutional set-ups to regulate carbon credits. This will require strong collaboration at the national, regional and international levels, and reforms to amend and enhance legal frameworks in order to facilitate the implementation and administration of carbon pricing initiatives and schemes.

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