

22 Renewable energy and economic transformation in Africa

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Economic transformation can help reduce poverty and inequality in Africa, where strong growth over the last 30 years has failed to significantly increase household incomes, create jobs for its rapidly growing youth population and build resilience to shocks. This chapter discusses how the transition to green energy can accelerate and reinforce economic transformation in African countries, enabling them to diversify production and enhance export competitiveness, leverage their abundant renewable resources to fuel job creation, and use their massive carbon stocks to participate in carbon markets and increase the flow of climate finance. Recognising persistent capacity and other constraints, the paper concludes with recommended priority actions for OECD countries, African governments and the African Union.

Key messages

- Economic transformation processes that diversify and technologically upgrade economies can help reduce poverty and inequality through increased job creation and resilience to global shocks.
- Although costly, the net zero transition can be a critical part of Africa's economic transformation and offers opportunities to expand access to affordable electricity, diversify production, enhance export competitiveness, generate sustainable green jobs and reduce poverty.
- Access to quality affordable renewable energy is critical for the net zero transition in Africa. Regional integration is key to achieving this at scale.
- Priority actions for OECD countries include expanding loan guarantees on clean energy projects, supporting regional collaboration to help scale up renewable energy development on the continent, and helping to build local capacity to develop and manage large-scale renewable energy projects.

Introduction

African economies have registered strong economic growth over the past three decades. For example, in the 2000s, six of the world's ten fastest-growing economies were in Africa.¹ Growth between 2009 and 2017 averaged 3.8% per year compared to the world average of 2.5%. However, this growth has failed to transform African economies, create jobs or significantly improve people's living standards. Poverty in the region remains high, with 478 million people (about 40% of the population) living in extreme poverty in 2019. The COVID-19 pandemic is estimated to have increased this number to 490 million in 2021 (UNCTAD, 2021^[1]). Just as African countries were beginning to recover from the pandemic, the Russian Federation's invasion of Ukraine led to an increase in food and fuel prices. Given that most African countries are net importers of food and fuel, the war has had an impact on vulnerable households and increased inequality across the continent.

To reduce poverty and inequality, African countries must accelerate the transformation of their economies

Ten years ago, in the first edition of the *African Transformation Report*, the African Center for Economic Transformation (ACET) made the case that economic growth in Africa has been insufficient to sustain the continent's long-term development and build resilience to global shocks (ACET, 2014^[2]). The report argued that to achieve sustained and inclusive development, countries must transform and not just grow their economies. The report defined economic transformation in Africa as “growth with depth” – “d” for diversification of production and exports, “e” for an increase in export competitiveness, “p” for productivity increases across all sectors, “t” for use of medium- and high-technology content in production and exports, and “h” for improved human well-being through more productive and equitable employment and incomes.²

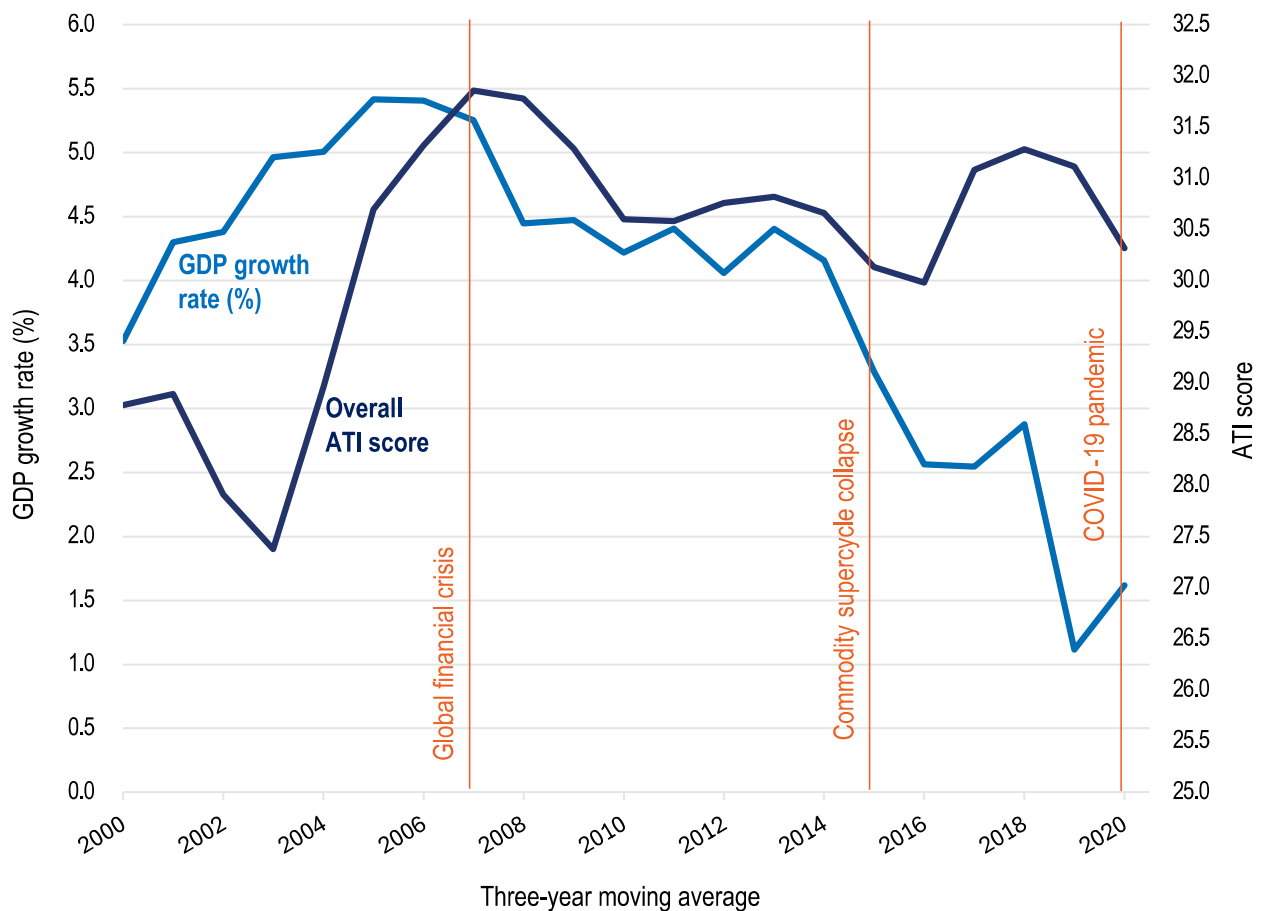
Improving productivity will require investments in infrastructure, skills and technology while enhancing access to quality education and skills training (especially for women and young people), which are crucial to reducing poverty and inequality and improving human well-being.

Productivity increases and technological upgrading increase total output, which leads to increased employment and household income and poverty reduction. Diversification focusing on high-value

manufacturing and services helps to increase job opportunities for Africans, thereby reducing inequalities in formal employment. Improving productivity will require investments in infrastructure, skills and technology while enhancing access to quality education and skills training (especially for women and young people), which are crucial to reducing poverty and inequality and improving human well-being.

To track progress in achieving growth with DEPTH, ACET created the African Transformation Index (ATI). The latest version of the index was released in 2023 and covers 30 African countries using 14 indicators to measure transformation progress between 2000 and 2020. The results show that despite some improvements in the early part of this century, progress on economic transformation has been slow, with a continental average overall ATI score of just 30.3 out of 100 (ACET, 2023^[3]) (Figure 22.1).

Figure 22.1. Economic transformation and external shocks, 2000-20



Source: ACET (2023^[4]), *African Transformation Index 2023: Tracking Africa's Economic Successes and Setbacks*, <https://acetforafrica.org/ati>.

While a few countries (e.g. Mauritius, Morocco, South Africa and Tunisia) have made progress in diversification and export competitiveness, many others continue to rely on the exports of raw materials. This reliance has diminished economies' resilience to global shocks. For example, the global financial crisis in 2007 and the COVID-19 pandemic beginning in 2020 adversely impacted growth and transformation trajectories. ACET's trend analysis showed that high-transformer countries suffered less growth loss from the financial crisis than low or medium transformers. To accelerate transformation, countries must reorient production and export structures and strengthen technology and industrial capabilities. They also need to modernise and improve agricultural and mining value chains.

Regional integration can help accelerate the energy transition and economic transformation

Africa's economic transformation must, over time, become net zero and not contribute adversely to climate change. The best way for countries across the continent to achieve this is to enhance their access to quality and affordable renewable energy; leverage their abundant renewable resources to build green industries that supply products to the world; and combine their carbon stocks with nature-based solutions. By taking these actions, Africa will create jobs for its rapidly growing youth population, increase household incomes and reduce poverty.

Improving energy access through a regional approach

Energy is critical for Africa's economic transformation. Robust access to energy services can increase productivity and support value addition across value chains in agriculture, industry and services. However, Africa has the lowest electricity coverage globally at just 42%, about half the global access rate of 87% (IEA, 2017^[5]). In sub-Saharan Africa, 57% of the population does not have access to electricity.

To improve energy access, deeper regional collaboration on energy resource sharing and investment are key to maximising the benefits of Africa's renewable energy resources and also improving regional energy security, accelerating the development of the energy market, and speeding up progress towards Sustainable Development Goal 7 (ensuring access to affordable, dependable, sustainable and modern energy for all). Adopting a regional approach to the continent's energy crisis could save an estimated USD 63 billion, or 14% of the total investment needed to quadruple electricity usage by 2040 (Castellano et al., 2015^[6]). For example, power pooling and cross-border trade can accelerate electrification on the continent and create an incentive to invest in large-scale renewable projects. Additionally, a regional approach could potentially save the continent USD 860 billion between 2014 and 2040 (17% of the cost of electricity), representing an annual gain of USD 33 billion (African Development Bank, 2017^[7]).

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Furthermore, a regional approach to financing renewable energy investments will address the current challenge of small and widely dispersed markets. A harmonised regional approach to tariffs, technical standards, power purchase agreements and project approval guidelines can reduce transaction costs and accelerate project development in the region (IRENA, 2015^[8]). It is estimated that the returns on cross-border transmission investment could average 20-30% across the region, rising to 120% for southern Africa (Eberhard et al., 2011^[9]). Regional collaboration will also help scale up renewable energy development on the continent and equip African countries to participate in the global carbon market.

Many African countries have indicated in their nationally determined contributions that they intend to meet their emissions reduction targets by implementing policies such as carbon pricing mechanisms and emissions trading systems (ETS). Given the various institutional and capacity limitations at the national level, approaching these from a regional perspective can yield efficiency gains. For example, Africa could establish a regional ETS either separately or alongside the African Continental Free Trade Area. The ETS would support countries to amend and/or enhance national legal frameworks to facilitate the implementation and administration of the scheme.

Leveraging Africa's renewable resources and carbon stocks for transformation and poverty reduction

For African countries to transform successfully, they must strategically utilise their abundant renewable resources and massive carbon stocks. Africa holds about 60% of the world's best solar resources and 39% of global renewable energy potential (Ramalope et al., 2022^[10]). However, African countries have largely been unable to maximise the potential of these resources. In 2020, renewables accounted for only 14% of the total energy supply. In the electricity sector, they accounted for about 22.1% of generation in 2019, with fossil fuels accounting for 77.1% (IEA, 2021^[11]). The continent has attracted only 2% of global investments in renewable energy over the past decade (KfW Development Bank, GIZ and IRENA, 2021^[12]).

The transition to green energy will enable Africa to diversify its production and enhance export competitiveness, for example by establishing plants to process transition minerals, solar panels and batteries. These industries will, in turn, create jobs for the continent's rapidly growing youth population. Increasing access to renewable energy technologies can also help break the poverty cycle by increasing access to and reducing the cost of electricity for poor households, which currently spend a higher share of their income on energy than wealthy households with a grid connection. It is estimated that reducing energy costs could lift 16-26 million people from poverty (Africa Progress Panel, 2015^[13]). Additionally, replacing household biomass sources (firewood and charcoal) with modern energy sources (solar and gas) will reduce deforestation, land degradation and ecosystem damage.

Moreover, developing and implementing green transformation strategies – utilising clean energy sources and applying circular economy practices – can facilitate Africa's green industrialisation ambitions and make the continent a low-carbon production hub for the global economy.

To generate finance for its green industrialisation ambitions, Africa must exploit its carbon stocks to increase the flow of climate finance through participation in carbon markets. According to estimates, African carbon markets could mobilise USD 6 billion annually by 2030 and more than USD 100 billion annually by 2050 (Elusoji, 2023^[14]). However, countries face several challenges in participating in carbon markets. Private investors perceive Africa as risky because of limited infrastructure, poor governance, uncertain land tenure, and limited capacity and awareness (ACMI, 2022^[15]). Land tenure represents the most serious governance challenge given that more than 90% of rural land is generally undocumented (Byamugisha, 2013^[16]) and less than 2% of tropical forest land is legally owned or designated for use by forest communities or indigenous groups.

These challenges are compounded by numerous factors: lack of capacity on the part of Africa's private and public sectors to develop bankable carbon market projects; the high cost of finance and biased credit assessments; the requirement of many multilateral funders for countries to pre-finance projects that cash-strapped African governments often lack the fiscal space to meet; and the need for countries to have credible measurement, reporting and verification systems to participate in carbon markets to quantify emissions reductions and removals, which African countries often lack the technology and expertise to do.

African countries can enhance participation in international carbon markets by collaborating across the region, sharing limited skills, and growing the pool over time through capacity development in key areas such as developing and managing renewable energy projects. They can also learn from good practice on tenure reforms across the continent to enhance the participation of local communities and other private entities in carbon offset markets.

Applying nature-based solutions for job creation

The net zero transition also offers opportunities to create new and improve livelihoods while mitigating CO₂ emissions. Applying nature-based solutions such as tree planting, applying biochar from crop residue and

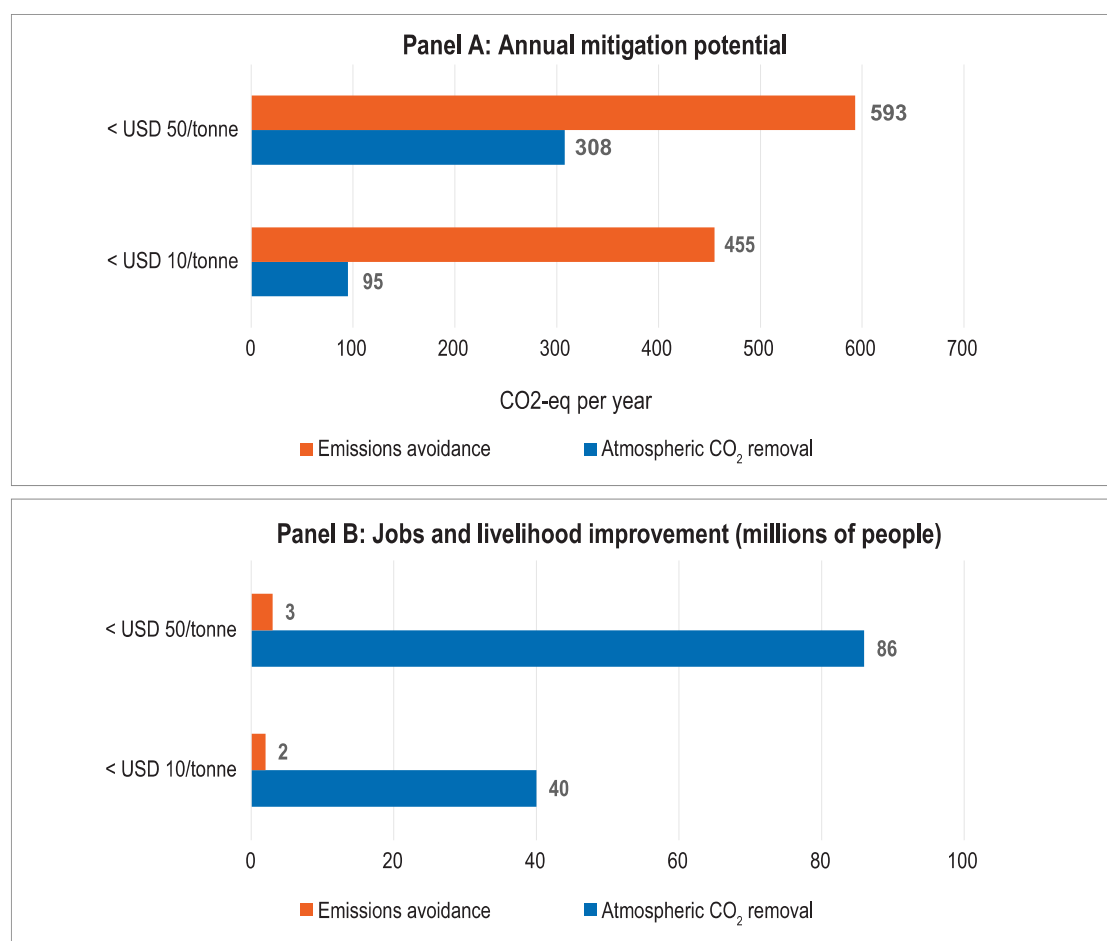
improving grazing practices can help create green jobs, increase access to carbon finance and reduce CO₂ emissions.

A recent study estimates the cost of the energy transition to be equivalent to 6.8% of global gross domestic product (GDP) in 2021, rising to 8.8% from 2026 to 2030 (McKinsey Global Institute, 2022^[17]). The study indicates that to support economic development and build the low-carbon infrastructure needed to shift to net zero greenhouse gases, sub-Saharan African countries must invest at least 1.5 times as much (as a share of GDP) as developed economies.

At a carbon price of USD 10 per tonne, nature-based solutions could remove 95 metric tonnes of CO₂ equivalent (Mt CO₂-eq) through atmospheric CO₂ removal and 455 Mt CO₂-eq through emissions avoidance³ (Figure 22.2, panel A). At a higher carbon price of USD 50 per tonne, however, these solutions could remove 308 Mt CO₂-eq through atmospheric CO₂ removal and 593 Mt CO₂-eq through emissions avoidance.

Panel B of Figure 22.2 shows estimates of Africa's job creation potential of atmospheric CO₂ removal, which range from 40 million jobs annually at a carbon price of USD 10 per tonne to about 86 million jobs annually at a carbon price of USD 50 per tonne. These estimates are conservative and focus on direct jobs, including upstream jobs. Because of the complexities in accurately estimating indirect jobs, the estimates in the figure do not include indirect jobs and thus underestimate the extent of job creation.

Figure 22.2. Mitigation and job creation potential of nature-based carbon removal in Africa



Source: Climate Action Platform-Africa (2022^[18]), "Nature-based climate change mitigation" (web page), <https://capa.earthrise.media>.

Priority actions for international, national and regional policy makers

Transforming African economies can create green jobs and reduce poverty and inequality. However, this requires policy makers and their partners to think locally but act regionally.

OECD countries should consider the following priority actions:

- Shift their singular focus on country support to more strategic collaboration with regional hubs and cross-country support, where necessary, to support economic transformation through regional integration.
- Expand loan guarantees on clean energy projects and prioritise utilities, strategically allocating development assistance and climate finance.
- Accelerate reforms to address African countries' constraints in accessing finance, such as requirements for co-financing, lack of support for developing concept notes, long timelines and delays in processing funding applications.
- Provide technical assistance to build capacity in project management, business development skills and the management of large-scale renewable energy projects.

African governments could consider the following priority actions:

In terms of energy access:

- Rehabilitate and/or expand national transmission networks.
- Expand off-grid and stand-alone solar systems, especially in rural areas, to help meet the goal of universal access to electricity.
- Improve regional integrated electricity markets by increasing the efficiency of regional power pools and ramping up investments.

In terms of renewable energy technologies:

- Provide incentives, such as subsidies or tax rebates, to households and small and medium-sized enterprises.
- Promote the participation of women and young people in the renewable energy value chain by providing them with financial resources and capacity building.
- Reduce subsidies significantly for fossil fuel-based energy technologies.
- Reform power utilities to make them efficient and financially viable entities.

In terms of participation in international carbon markets:

- Invest in capacity building and skills training in developing and managing renewable energy projects.
- Introduce land tenure reforms to enhance the participation of local communities and other private entities in carbon offset markets.

In terms of transformative growth:

- Develop and implement green industrialisation strategies to enable the private sector to build green industries that will diversify production and enhance export competitiveness.
- Increase productivity through investments in technology, innovation and human capital.

The African Union could consider the following priority actions:

- Use its G20 membership strategically to advance Africa’s regional integration agenda and lobby for more strategic partnerships with G20 countries.
- Support cross-border investments to take advantage of African Continental Free Trade Area opportunities.
- Encourage stronger collaboration among members to address challenges such as inadequate infrastructure, poor governance, and inconsistent and uncertain policy and regulatory frameworks.
- Facilitate cross-learning across members to foster and boost good practice across the continent.

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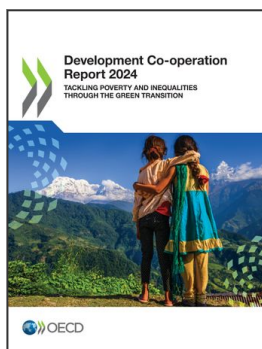
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Notes

¹ The countries were Ethiopia (7.5% growth rate), Côte d'Ivoire (7.4%), Rwanda (7.2%), Senegal (7%), Ghana (6.3%) and Benin (6%). See: <https://www.imf.org/en/Publications/WEO/Issues/2018/09/24/world-economic-outlook-october-2018>.

² Diversification is based on the shares of manufacturing and services value added in gross domestic product and exports; export competitiveness measures countries' non-extractive exports; productivity increases measure labour productivity in the agriculture, manufacturing, construction and services sectors; technology upgrading measures the medium- and high-technology content in production and exports; and human well-being is measured by income, income inequality, and total and female formal employment.

³ Emissions avoidance includes emissions that would be associated with the amount of carbon sink at risk of being destroyed every year. This comes from carbon sink protection and optimal agricultural practices.



From:

Development Co-operation Report 2024

Tackling Poverty and Inequalities through the Green Transition

Access the complete publication at:

<https://doi.org/10.1787/357b63f7-en>

Please cite this chapter as:

Owusu-Gyamfi, Mavis and John Asafu-Adjaye (2024), "Renewable energy and economic transformation in Africa", in OECD, *Development Co-operation Report 2024: Tackling Poverty and Inequalities through the Green Transition*, OECD Publishing, Paris.

DOI: <https://doi.org/10.1787/f1459d0c-en>

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