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# Climate

## Africa's Contribution to Carbon Emissions to 2063: Current Path vs Combined Scenario

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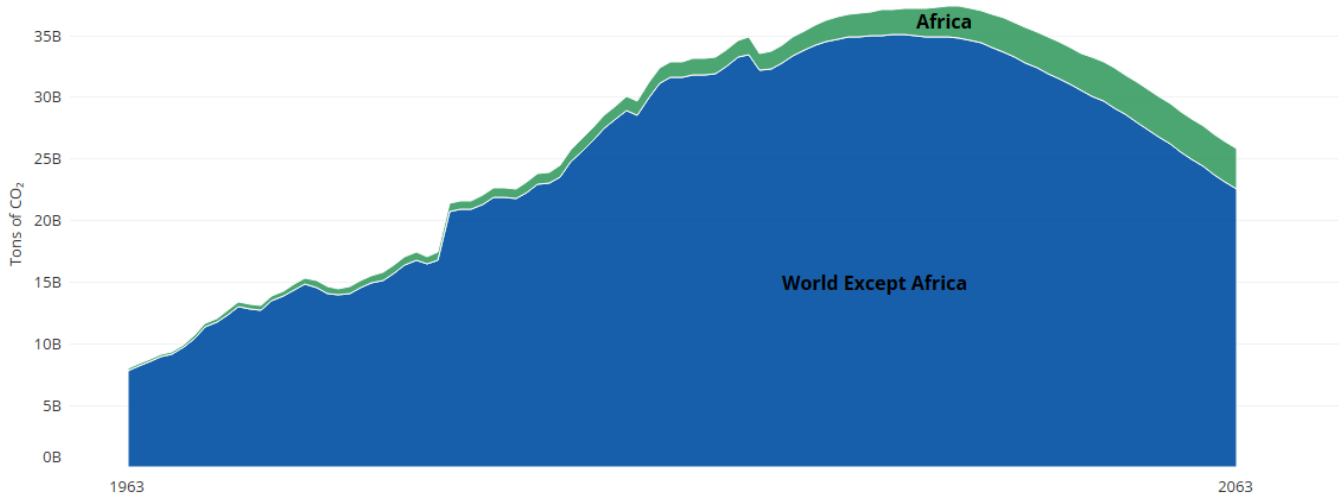
Africa is currently a minor carbon contributor, emitting less than 1.6 billion tons of $CO_2$ equivalent from fossil fuel use constituting less than 5% of the associated global emissions. Yet, its fossil fuel dependency is growing rapidly, given efforts at electrification of a growing urbanising population, energy inefficiencies such as the lack of national grids and pipelines, and reliance on generators for electricity production.

Chart 8 presents the growing contribution of Africa's carbon emissions from fossil fuels in the Current Path. As global emissions plateau and then decline, Africa's contribution will climb from less than 5% in 2023 to 9% in 2050 and 12.5% in 2063. According to the Current Path, Africa will overtake fossil fuel-related emissions from the EU in 2034, India in 2052, and the US by 2061.

The picture changes when considering Africa's development prospects in the Combined scenario, which combines ambitious improvements in development across eight sectors. The continent's contribution increases to 10.5% of the world's total in 2050 and 15% by 2063. The difference between the Current Path and the Combined scenario in 2050 is 341 million tons of $CO_2$ equivalent, and the difference in 2061 is 638 million. The user can also select to display emissions from the Combined scenario.

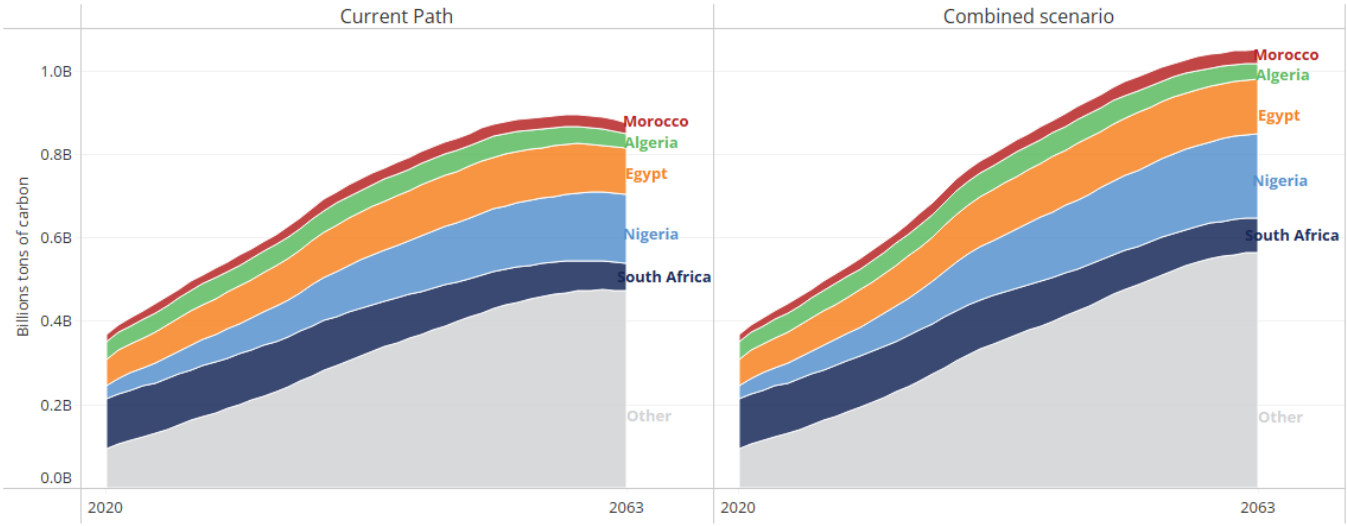
Chart 8: Africa's contribution to $CO_2$ emissions from fossil fuels, 1963-2063




Source: IFs 8.34 initialising from Appalachian State University data

Four countries are responsible for 66% of the continent's fossil fuel carbon emissions. In 2023, South Africa was the largest emitter with 28% of Africa's total emissions, followed by Egypt (17%), Algeria (11%) and Nigeria (11%) (Chart 9).

Chart 9: African $CO_2$ emissions, 2020-2063




Source: IFs 8.34 initialising from Appalachian State University data

By 2050, South Africa will contribute only 11% of the continent's carbon emissions on the Current Path having reduced its reliance on coal for electricity, while Egypt's share will decline to 15%. Nigeria will then be the continent's largest fossil fuel emitter, contributing 17%, while Algeria will contribute 6%. Other countries that will see rapid increases in carbon emissions are Ethiopia, DR Congo, Mozambique, Tanzania, Uganda, Cote d'Ivoire, Morocco and Sudan. These portions are unchanged when compared to emissions in the Combined scenario.

Nigeria, characterised by its rapid population growth and abundant oil and gas resources, has struggled to fulfil its NDC commitments and, by 2063, will have emerged as the continent's most extensive and the world's fifth-largest fossil fuel carbon emitter, contributing 2.4% to global emissions from fossil fuels. It moves to the fourth spot in the Combined scenario, contributing 2.8% to global emissions from fossil fuel use. Instead of being responsible for 17% of Africa's emissions, its share will be 20%. The country will then significantly challenge regional and international efforts to combat climate change.

South Africa, currently the largest emitter of carbon from fossil fuel use on the continent, is also one of the most coal-dependent countries globally. South Africa has committed to decarbonising its industry, reflected in its Nationally Determined Contributions (NDC). In line with these commitments, the Current Path suggests a gradual decrease from 125 million tons of carbon from fossil fuels in 2023 to 34 million by 2050 on the Current Path, and 354 million in the Combined scenario. South Africa will then have dropped from Africa's largest fossil fuel carbon emitter to the third largest. It will be at the same ranking in 2063.

A growing dependence on natural gas characterises North Africa and the region struggles in decoupling economic growth from that dependence. Despite endeavours to diversify and embrace cleaner energy sources, finding the proper equilibrium between economic development and environmental sustainability is a challenge in Egypt, Algeria and Libya. The Ukraine-Russia war has heightened the importance of gas, with the EU turning to these countries, amongst others, for additional supplies. The Climate Action Tracker (CAT) also shows that to date, Egypt's NDC targets, climate policies and actions are wholly insufficient and akin to a 4°C global trajectory. Its expanding fossil gas production overshadows its recent investments in renewable energy. In the Combined scenario, Egypt will emerge as Africa's 2nd most extensive and the world's 8th-largest fossil fuel carbon emitter, responsible for 1.8% of global fossil fuel emissions by 2063. All other African countries except South Africa will contribute less than 1% to global carbon emissions from fossil fuels.

Conversely, Morocco NDC targets associated policies align with a 1.5°C world after making commitments to halt the development of new coal-fired power plants while ramping up renewable investment. There are smaller countries, such as Seychelles, with a high per capita dependency on imported fossil fuels. Still, their annual emissions come from a shallow base, and these countries are amongst the smallest emitters globally.

Therefore, the success of reducing carbon emissions from the growing African continent hinges on only a few countries, notably Nigeria, Egypt, South Africa, Algeria, Ethiopia, Tanzania, Morocco, Côte d'Ivoire, DR Congo and Uganda. Their actions will determine how much Africa contributes to global emissions. Most other African countries would contribute very little to global emissions and will probably primarily invest resources in sustainable adaptation efforts.

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## About the authors

**Ms Alize le Roux** joined the AFI in May 2021 as a senior researcher. Before joining the ISS, she worked as a principal geo-informatics researcher at the CSIR, supporting various local and national policy- and decision-makers with long-term planning support. Alize has 14 years of experience in spatial data analysis, disaster risk reduction and urban and regional modelling. She has a master's degree in geographical sciences from the University of Utrecht, specialising in multi-hazard risk assessments and spatial decision support systems.

**Dr Jakkie Cilliers** is the ISS's founder and former executive director. He currently serves as chair of the ISS Board of Trustees and head of the African Futures and Innovation (AFI) programme at the Pretoria oce of the Institute. His 2017 best-seller Fate of the Nation addresses South Africa's futures from political, economic and social perspectives. His three most recent books, Africa First! Igniting a Growth Revolution (March 2020), The Future of Africa: Challenges and Opportunities (April 2021), and Africa Tomorrow: Pathways to Prosperity (June 2022) take a rigorous look at the continent as a whole.

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