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Climate

Africa's Contribution to Carbon Emissions to 2063

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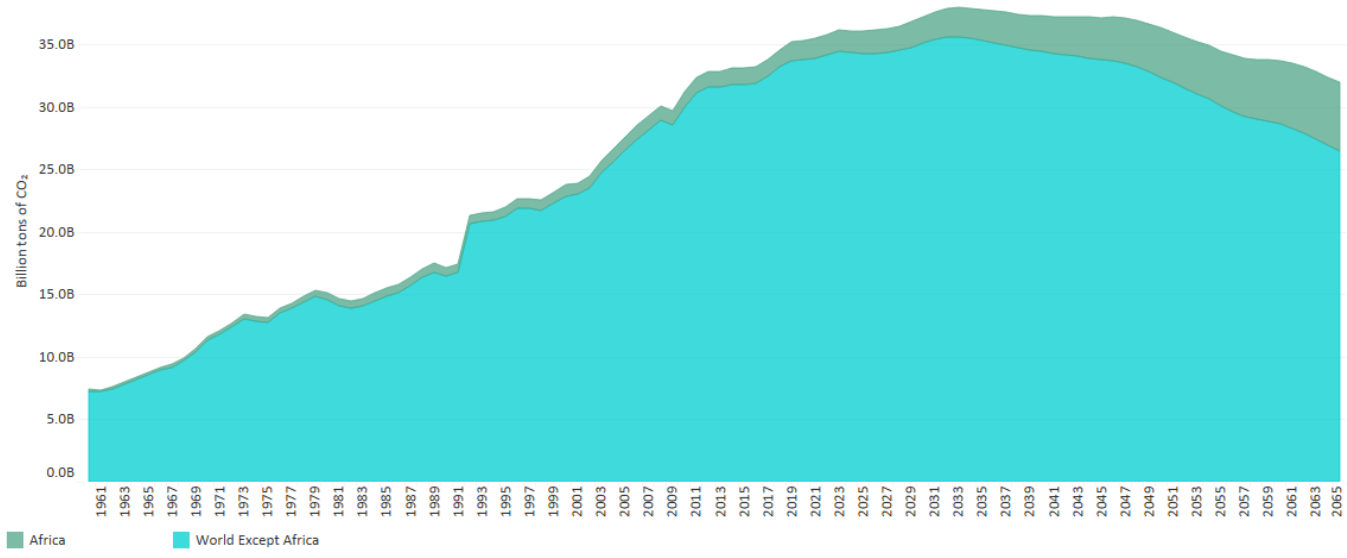
Africa is a minor carbon contributor, emitting less than 500 million tons of carbon emissions annually from fossil fuels (1.7 billion tons of CO_2 equivalent). This means the continent is responsible for less than 5% of global emissions from various sources. Yet, its fossil fuel dependency is growing 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 7 presents the growing contribution of Africa's carbon emissions from fossil fuels. In the Current Path forecast, its current fossil-fuel-dependent growth trajectory, Africa will become the region responsible for the most significant carbon emissions from fossil fuel use shortly after mid-century. As global emissions plateau and then decrease, Africa's contribution is forecasted to climb from less than 5% in 2023 to 11% in 2050 and eventually 16% in 2063. On the Current Path forecast, Africa will likely overtake the USA by 2050 and India's emissions by 2055. By 2063, Africa will noticeably contribute to global emissions from fossil fuels.

Chart 7: Africa's contribution to CO_2 emissions from fossil fuels, 1960-2050



Source: IFs 8.17 initialising from Appalachian State University data

Four countries are responsible for almost 70% of the continent's fossil fuel carbon emissions. In 2023, South Africa was the largest emitter with 27%, followed by Egypt (19%), Nigeria (11%) and Algeria (11%) (Chart 8).

By 2050, South Africa is forecasted to contribute only 7% of the continent's carbon emissions, while Algeria is forecasted to decline to 5%. Nigeria will take up a larger share of the continent's fossil fuel emissions, contributing 20%, while Egypt will contribute 14%. Other countries that will see rapid increases in carbon emissions are Ethiopia, DR Congo, Mozambique, Tanzania, Uganda, Cote d'Ivoire, Morocco and Sudan.

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 fourth largest fossil fuel carbon emitter (contributing 3.7% to global emissions from fossil fuels). 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, with the vast majority of its emissions originating from coal-fired electricity generation.

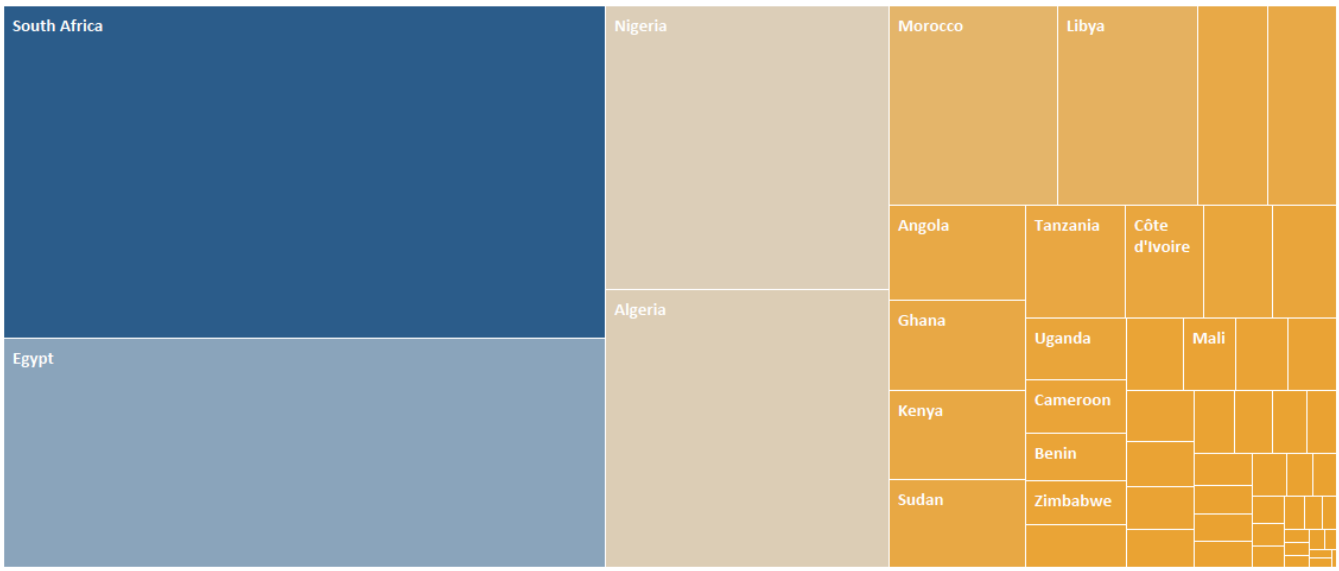
South Africa has committed to decarbonising its industry, aligning with its Nationally Determined Contributions (NDC). In line with these commitments, the Current Path forecast suggests a gradual decrease from 125 million tons of carbon from fossil fuels in 2023 to 78 million by 2050. South Africa will then have dropped from being Africa's largest fossil fuel carbon emitter to the third largest, and by 2063, it will have fallen to the 9th spot.

North Africa has faced challenges in decoupling economic growth from carbon emissions. The region is characterised by a growing dependence on natural gas, an essential resource in its energy landscape and transition. Despite endeavours to diversify and embrace cleaner energy sources, finding the proper equilibrium between economic development and environmental sustainability is a substantial obstacle 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 gas 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. On the Current Path forecast, Egypt will emerge as Africa's 2nd most extensive and the world's 9th largest fossil fuel carbon emitter. The country is forecasted to emit 1.8% of global fossil fuel emissions by 2063.

Conversely, Morocco has implemented policies and actions that align with a 1.5°C world, and its NDC targets are almost sufficient after making commitments to halt the development of new coal-fired power plants while ramping up renewable investment. All other African countries will contribute less than 1% to global carbon emissions from fossil fuels. 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.

Looking to the future, the success of reducing carbon emissions from the growing African continent hinges on only a few countries. These countries, notably Nigeria, Egypt, DR Congo, Ethiopia, Algeria, Tanzania, Uganda, South Africa and Angola, will determine how much Africa contributes to global emissions. These countries must take mitigation measures and their NDCs seriously. Most other African countries would contribute very little to global emissions and should instead invest resources in sustainable adaptation efforts.

Chart 8: African CO_2 emissions, 2023-2063



Source: IFs 8.17 initialising from Appalachian State University data

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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 of the ISS. 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 ISS. 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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