ISS | AFRICAN FUTURES

# Energy

## Towards a Sustainable Africa

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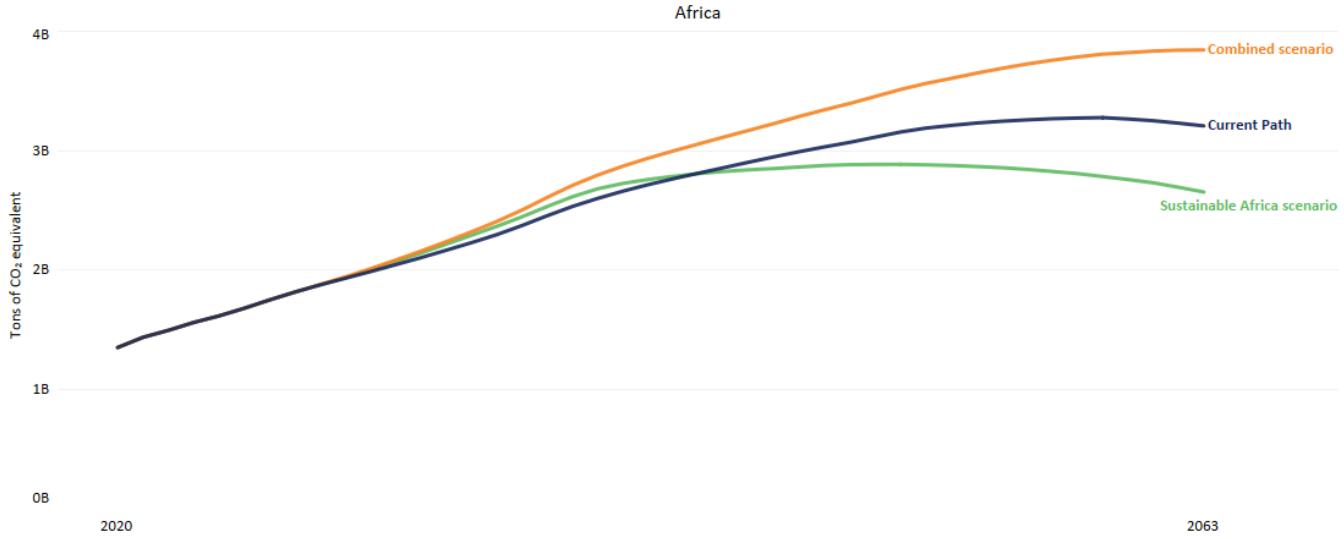
## Towards a Sustainable Africa

Our Climate theme explores the impact of four alternative global carbon taxes ranging from a universal tax (Everyone Pays scenario) to a tax on high emitters only (Polluters Pay scenario). The scenario that has the largest effect on reducing emissions is the Differentiated Pay scenario in which a country's income classification determines the associated carbon tax. In this scenario, high-income countries pay US$100 per ton of carbon equivalent (1 ton of carbon equates to 3.57 tons of $CO_2$) while upper-middle-income countries pay US$75/ton, which is phased in over ten years. Lower-middle-income countries pay US$50/ton, and low-income countries pay US$25/ton, both of which are then phased in over 15 years. In 2024, Africa had one high-income country, eight upper-middle-income countries, 23 lower-middle-income countries and 22 low-income countries.

At a global level, the Differentiated Pay scenario reduces carbon emission from fossil fuels by 14% (or 4.57 billion tons of $CO_2$ equivalent) and by 26% (by 6.7 billion tons) in 2063 compared to the Current Path. The most significant reductions are by China, the US, India, Russia, Canada, Japan, Nigeria, Mexico, Brazil and Turkey, given their ranking among the world's top polluters. However, implementing such a differentiated carbon tax requires careful management due to its varying impacts. The impact on each country under a carbon tax regime hinges on its ability to navigate the transition effectively, invest in clean energy alternatives and implement policies that foster economic resilience and sustainability.

In a final scenario, the Sustainable Africa scenario, we now add the Differentiated global carbon tax to the Combined scenario. Chart 8 presents carbon emissions from fossil fuels for Africa on the Current Path, the Combined scenario and the Sustainable Africa scenario. The impact is to reduce carbon dioxide in the atmosphere in 2063 by 3%. Africa's carbon emissions from fossil fuels in the Sustainable Africa scenario are actually below the Current Path in spite of the fact that the African economy is much larger—an amazing testimony to the potential impact of a reasonable carbon tax.

**Chart 11: $CO_2$ equivalent emissions: Current Path, Combined and Sustainable Africa scenario, 2020-2063**
Emissions from fossil fuels




Source: IFs 8.34 initialising from Appalachian State University data

By 2050, much will have changed compared to 2023. On the Current Path, Africa would have 2.6 billion people but only 2.4 billion in the Combined or Sustainable Africa scenarios given the reductions in fertility rates associated with greater prosperity. Instead of GDP per capita at US$9 872 on the Current Path, GDP per capita could be US$18 620 and only 139 million Africans would still be living in extreme poverty compared to 351 million on the Current Path.

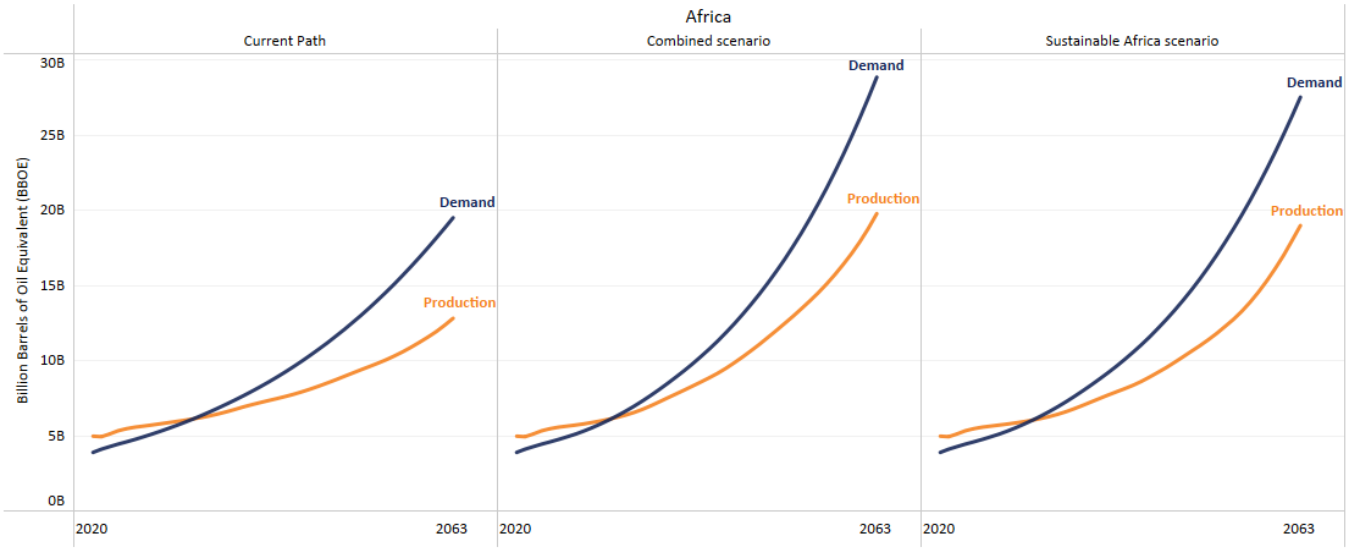
The progress is reflected in the degree to which Africa will achieve almost total electricity access by 2050, although a

handful of countries—DR Congo, Guinea Bissau, Malawi, Burundi, Central African Republic, Chad and South Sudan—still have less than 60% access, making rapid progress.

The fulfilment of the Sustainable Africa scenario would see a 2050 African economy that is 58% larger than the Current Path. GDP per capita would be 45% higher. African countries would, on average, grow about two percentage points more than in the Current Path to 2050.

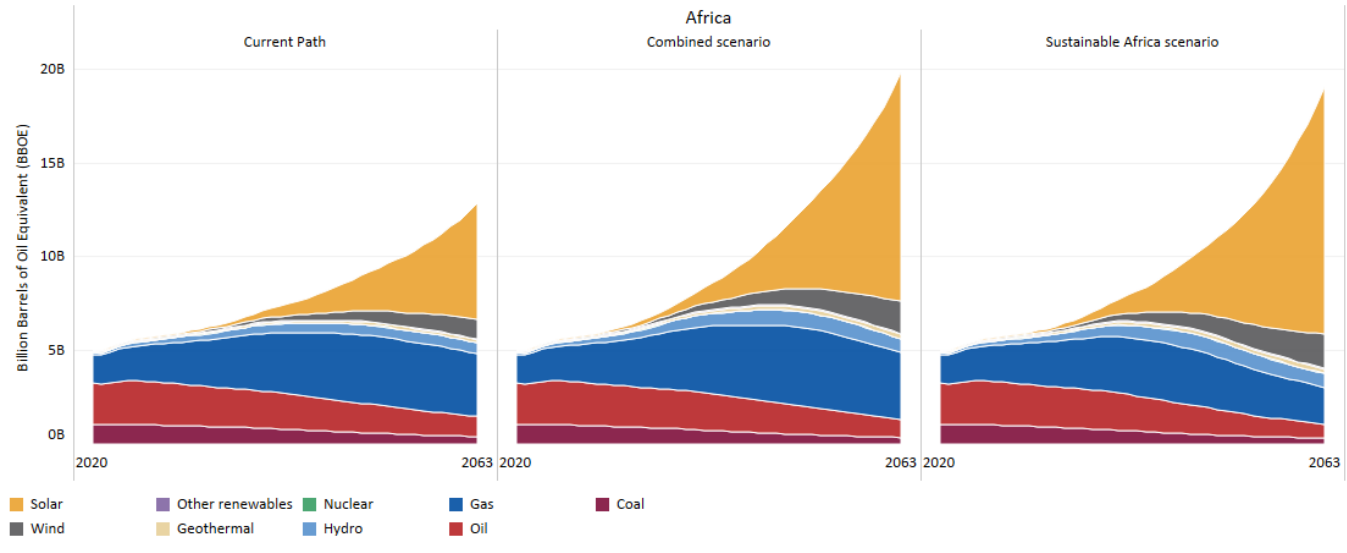
Chart 9 compares Africa's total energy demand with production and allows the user to select the data for any African group or country from the drop-down menu to compare the Current Path with the Combined and/or Sustainable Africa scenario. Because the Sustainable Africa scenario reduces demand and production globally, demand and production for Africa is below the Combined scenario.

**Chart 12: Energy demand vs production: Current Path, Combined and Sustainable Africa scenario, 2020-2063**
Measured in billion barrels of oil equivalent




Source: IFs 8.34 initialising IEA World Energy Balances

**Chart 13: Energy production by type: Current Path, Combined and Sustainable Africa scenario, 2020-2063**
Measured in billion barrels of oil equivalent




Source: IFs 8.34 initialising IEA World Energy Balances

In addition to a rapid transition to renewables, thus constraining emissions from fossil fuel use, Africa can make a significant contribution to a sustainable future as a carbon sink through the application of policies on reforestation, improved land management and associated measures, discussed in more detail as part of the Climate theme. This could serve as an essential incentive for investment and the purchase of carbon credits. In the Current Path, global carbon emissions from deforestation will decline from 278 million tons in 2023 to 15 million tons in 2050. In the Sustainable Africa scenario, global reforestation increases carbon absorption to 227 million tons.

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## Cite this research

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## About the authors

**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.

**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.

## About African Futures & Innovation

Scenarios and forecasting can help Africa identify and respond to opportunities and threats. The work of the African Futures & Innovation (AFI) program at the Institute for Security Studies aims to understand and address a widening gap between indices of wellbeing in Africa and elsewhere in the world. The AFI helps stakeholders understand likely future developments. Research findings and their policy implications are widely disseminated, often in collaboration with in-country partners. Forecasting tools inspire debate and provide insights into possible trajectories that inform planning, prioritisation and effective resource allocation. Africa's future depends on today's choices and actions by governments and their non-governmental and international partners. The AFI provides empirical data that informs short- and medium-term decisions with long-term implications. The AFI enhances Africa's capacity to prepare for and respond to future challenges. The program is headed by Dr Jakkie Cilliers.