Chapter 1
Energy Diversification in Africa:
Status and Implications for the Clean Energy Transition

Mark M. Akrofi
https://orcid.org/0000-0003-2516-2172
United Nations University, Japan

Ilhem N. Rabehi
Zian Achoure University, Algeria

Donald C. Abonyi
Technical University of Munich, Germany

Niyonzima J. Damascene
Hydro Operation Great Lakes, Kigali, Rwanda

Olayinka S. Ohunakin
Covenant University, Nigeria

ABSTRACT

In this chapter, the authors establish and analyze the status of energy diversification in Africa from the year 2000 to 2017. Using the energy mix concentration index method, energy diversification indices were developed for 53 countries and territories for which data were available from the African Union Energy Commission's database. The researchers find that the electricity generation mix in Africa has moderately diversified between 2000 and 2017. While many countries have introduced renewable energy sources

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into their generation mix, the share of energy from these sources remains low compared to their fossil counterparts. More investment in renewable energy is essential to engender energy diversification, improve energy security, and foster clean energy transitions on the continent.

1. INTRODUCTION

Following the launch of the Sustainable Development Goals (SDGs) and the Paris Agreement in 2015, there has been increased international calls for countries to diversify their energy mix, essentially by phasing out fossil fuels and replacing them with renewable energy sources. This transition requires balancing the need for renewables with economic growth and energy security, given that most economies around the globe are heavily driven by fossil fuels. Africa has experienced immense economic growth over the past two decades, and it is expected to witness more growth over the coming ones. For a sustainable future, significant efforts are required to ensure that the continent's economic growth is driven by clean energy while advancing energy access and ensuring energy security. Energy diversification, especially through the development of renewable energy resources is an essential strategy and a precursor for decarbonization, clean energy transition, and energy security (Stirling, 2008). Countries and regions have set ambitious goals and targets to achieve this transition, with the European Union, for example aiming to achieve 32% of renewable energy in its energy mix by 2030 (De et al., 2019). Other advanced economies have set similar targets and are committing enormous resources towards this goal. Significant progress on improving energy access and transition has also been made in Africa; yet, its growing population and economic progress has sent energy demand soaring (IRENA, 2015).

Thus, there is an urgent need for a rapid increase in energy supply, to which all forms of energy must be included in production in the decades ahead. Africa is very rich with renewable energy sources. However, the continent still faces a reliance on gas, oil and traditional biomass. The African Union's Agenda 2063 aims to achieve high standards of living, quality of life and well-being for all citizens in a peaceful and stable Africa as well as to foster economic expansion accompanied by the full achievement of the Sustainable Development Goals (SDGs) by 2030 (IEA, 2019). It also aims to diversify energy resources, achieve full access to electricity and clean cooking and to reduce stigmatically premature deaths related to pollution (IEA, 2019). Electricity generation in Africa increased to 870 TWh in 2018 from 670 TWh