



United Nations
Economic Commission for Africa



IRENA
International Renewable Energy Agency

TOWARDS A PROSPEROUS AND SUSTAINABLE AFRICA



TOWARDS A PROSPEROUS AND SUSTAINABLE AFRICA

**MAXIMISING THE SOCIO-ECONOMIC GAINS
OF AFRICA'S ENERGY TRANSITION**

RES4Africa Foundation Flagship Publication 4th Edition
in partnership with IRENA and UNECA

This document is a product of the staff of the three collaborating organisations, namely the RES4Africa Foundation, the International Renewable Energy Agency, the United Nations Economic Commission for Africa. The findings, interpretations, and conclusions expressed in this work do not necessarily reflect the views of these organisations, their governing bodies, members, or the governments they represent.

This publication and the material herein are provided “as is”. All reasonable precautions have been taken by the collaborating organisations to verify the reliability of the material in this publication. However, the collaborating organisations do not guarantee the accuracy, completeness, or currency of the data included in this work and do not assume responsibility for any errors, omissions, or discrepancies in the information, or liability with respect to the use of or failure to use the information, methods, processes, or conclusions set forth.

The information contained herein does not necessarily represent the views of all Members, or parties, or agents of the collaborating organisations. The mention of specific companies or certain projects or products does not imply that they are endorsed or recommended by the collaborating organisations in preference to others of a similar nature that are not mentioned.

The boundaries, colours, denominations, and other information shown on any map in this work do not imply any judgment on the part of the collaborating organisations concerning the legal status of or sovereignty over any territory or the endorsement or acceptance of such boundaries.

RIGHTS AND PERMISSION

Unless otherwise stated, material in this publication may be freely used, shared, copied, reproduced, printed and/or stored, provided that appropriate acknowledgement is given of the RES4Africa Foundation, the International Renewable Energy Agency, the United Nations Economic Commission for Africa. Material in this publication that is attributed to third parties may be subject to separate terms of use and restrictions, and appropriate permissions from these third parties may need to be secured before any use of such material.

You may not use this work for commercial purposes.

CITATION

RES4A, IRENA, and UNECA, 2022. Towards a prosperous and sustainable Africa: Maximising the socio-economic gains of Africa’s energy transition. RES4Africa Foundation, Rome.

© RES4Africa Foundation, 2022
Via Ticino, 14 - 00198 Rome - Italy
www.res4africa.org

ABOUT

ABOUT **RES4AFRICA FLAGSHIP REPORT**

Each year, RES4Africa Foundation releases a Flagship publication serving as a high-level resource and providing timely insights in support of dialogue and awareness-raising. The themes focus on key policy issues relevant to Africa's renewable energy market development. The publication seeks to:

- ▶ Shed light on specific issues to raise awareness and build consensus between, and within, the international development community and renewable energy business leaders;
- ▶ Convey high-level policy messages and calls for action to decision-makers on relevant and timely themes;
- ▶ Contribute to accelerating progress towards the achievement of universal electricity access in Africa by 2030, in line with Sustainable Development Goal #7 (SDG7).

ABOUT **RES4AFRICA FOUNDATION**

Founded in 2012, RES4Africa (Renewable Energy Solutions for Africa) is a Foundation with a vision to support Africa's just energy transition. Its mission is to work towards creating favourable conditions for scaling up investments in clean energy technologies across the continent. Functioning as a bridge between Europe and Africa, RES4Africa envisions a sustainable transformation of the continent's electricity systems to provide reliable and affordable electricity access and enable socio-economic progress.

ABOUT **IRENA**

The International Renewable Energy Agency (IRENA) serves as the principal platform for international cooperation, a centre of excellence, a repository of policy, technology, resource, and financial knowledge, and a driver of action on the ground to advance the transformation of the global energy system. A global intergovernmental organisation established in 2011, IRENA promotes the widespread adoption and sustainable use of all forms of renewable energy, including bioenergy, geothermal, hydropower, ocean, solar, and wind energy, in the pursuit of sustainable development, energy access, energy security, and low-carbon economic growth and prosperity.

ABOUT **UNECA**

Established by the Economic and Social Council (ECOSOC) of the United Nations (UN) in 1958 as one of the UN's five regional commissions, UNECA's mandate is to promote the economic and social development of its member States, foster intra-regional integration, and promote international cooperation for Africa's development. Made up of 54 member States, and playing a dual role as a regional arm of the UN and as a key component of the African institutional landscape, UNECA is well-positioned to make unique contributions to address the Continent's development challenges. UNECA's mission is to deliver ideas and actions for an empowered and transformed Africa, informed by the 2030 Sustainable Development Agenda and Africa's Agenda 2063.

ACKNOWLEDGEMENTS

PARTNERSHIP

The 4th edition of the RES4Africa Flagship publication is a product of the close collaboration between the RES4Africa Foundation, the International Renewable Energy Agency, and the United Nations Economic Commission for Africa.

AUTHORSHIP

Technical leadership of this publication was the shared responsibility of Rabia Ferroukhi (IRENA), Roberto Vigotti (RES4Africa), and Robert Lisinge (UNECA).

- ▶ **Chapter 1** was developed by UNECA and authored by Yohannes G. Hailu.
- ▶ **Chapter 2** was developed by IRENA and authored by Carlos Guadarrama and Ulrike Lehr. The modelling and interpretation of results were provided by Xavier Casals and Álvaro López-Peña (consultants), as well as Ha Bui, Alistair Smith, and Jon Stenning (E3ME, Cambridge Econometrics).
- ▶ **Chapter 3** was developed by RES4Africa Foundation and authored by Iarina Ciceu, Andrea Renzulli, and Gus Schellekens.
- ▶ **Chapter 4** was jointly developed by the collaborating institutions.
- ▶ **The Visionary Statements** authored by Vera Songwe (UNECA), Francesco La Camera (IRENA), Salvatore Bernabei (RES4Africa), Koen Doens (European Commission), and Maria Shaw-Barragan (EIB), are gratefully acknowledged.

RES4Africa is grateful for the generous support of Enel Foundation, which made this publication possible.

Valuable inputs, support, and comments were provided by the following persons and entities:

- ▶ Chapter 1: Dr. John Kioli (Green Africa Foundation); Anne Songole (ACCESS Coalition), Ruse Moleshe (Energy Solutions Consulting), Tayeb Amegroud (GPower Consultants), Adey Getachew Robele, Linda Lapiso Dilebo, Sinafikish Lemma Anbesse, and Yemisrach Sisay Tebeje (EWiEn).
- ▶ Chapter 3: EDPR (António Ribeiro Da Cunha and Rocio Garcia Alvarez); Enel Group (Nicole Della Vedova and Giovanni Niero); Nedbank (Amith Singh and Hlatse Nkune); Schneider Electric (Amr Kandil and Zanelle Dalglish); Vestas (John Wawer).

The valuable comments and insights provided by David Lecoque (Alliance for Rural Electrification), Amy Todd and Colm Fay (Clean Cooking Alliance), Amith Singh and Hlatse Nkune (Nedbank), Amr Kandil (Schneider Electric), Kristian Heydenreich (Vestas) through interviews are also gratefully acknowledged.

Editorial support was provided by: Rence Events

The report was designed by: Gate44

The cover was designed by: Charles Crouzat

FOREWORD

By Francesco Starace, CEO Enel Group and Chairman, Enel Foundation

Dear Reader,

Africa is the greatest development frontier. A continent endowed with vast natural resources, arable lands, a young and thriving population and a basin of growing innovation. But Africa is also confronted with a historic challenge. For the first time, African countries are meant to avoid carbon intensive growth paths that could undermine the global fight against climate change and endanger local socio-economic development in the long term. Sustainable technologies, in particular renewable energy solutions have the potential to help Africa solve this challenge and to allow its economies to leapfrog towards a prosperous and sustainable future.

Indeed, all international agencies' long-term energy forecasts show a massive growth of renewables across Africa over the next three decades: according to the International Energy Agency's estimates, the installed renewable capacity will increase about 12 times by 2040, from the current 50 GW to more than 530 GW; both solar PV and wind energy will experience even greater growth, moving from 5 GW to 340 GW and from 6 GW to 90 GW, respectively. The benefits of accelerating the sustainable transformation of African energy systems are not only restricted to climate but are widely spread across the socio-economic realities of African countries.

This report sheds light on the benefits embedded in pursuing climate-friendly energy scenarios and their positive impact on Africa's

GDP growth, employment, access to health, schooling, telecommunication and digital infrastructure, the sustainability of cities and megacities and local development of rural areas, and mobility. At the same time, the green energy revolution in Africa will create millions of new jobs. Indeed, eradicating poverty goes hand in hand with ending energy poverty, and achieving climate goals requires closing the energy access gap in a sustainable way. This is why achieving SDG7 is instrumental to accomplishing the entire Sustainable Development Agenda.

Acknowledging the social and economic spheres of a sustainable energy transition is therefore pivotal to its success and, indeed, the energy transition must be just and fair. This is a concept often reiterated by governments, international institutions and development partners and restated in the main conclusions of the UN High Level Dialogue on Energy, held in September 2021. In the African context this means no one should be left behind with regards to the opportunities embedded within the development of sustainable technologies but also that economies and societies relying on unsustainable technologies and polluting resources for their prosperity need to be supported in transitioning towards new economic opportunities, new production models, new consumption behaviours. Women and young people will be a driving force of these changes as their greater involvement in politics and the economy will be a main pillar of Africa's future prosperity.

Of course, it must always be noted that Africa is composed of 54 countries, all with different histories, cultures, societies, economies, ecosystems, and natural resources. There is no silver bullet that can solve Africa's socio-economic development challenges. Strategies adapted to each country's reality must be conceived, adopted, and implemented. Although there is no single path or solution for succeeding in the sustainable transformation of Africa's socio-economic systems, clean energy technologies and renewable energy can be the protagonists of every solution. These technologies already offer the most competitive, reliable, and sustainable option to generate and supply electricity to all African populations and businesses. Their decentralised and scalable nature make them the best technologies to solve energy access challenges for both the rural population and the fast-growing urban and peri-urban populations. Indeed, it is in cities and megacities where the bulk of Africa's future population will live and where defining sustainable growth paths will be key to ensuring the next generation's prosperity.

A set of other technologies will also be needed to ensure a smooth and successful energy transition in Africa. First, the extension, reinforcement, and digitalisation of grids are indispensable for the expansion of access to electricity, the improvement of service quality, and the enhancement of economic and industrial activities. Second, electricity storage solutions will be needed to increase system flexibility. Third, electrification of energy end uses must progress towards the deployment of electric heating and cooling systems, electric transport, and last but not least, electric cooking.

To achieve these goals and maximise the socio-economic gains embedded in the sustainable transformation of Africa's energy systems, electricity infrastructure expansion must be aligned with socio-economic development agendas. This report suggests actions to be taken at three fundamental levels: (i) at the macro-environment level, African countries need to address the challenges and constraints emerging from the instability of their macroeconomic and governance frameworks; (ii) at the industry value chain level, building competitive national economic capabilities requires addressing constraints stemming from a lack of integration in global value chains, limited research and development, restrictions on trade and limited availability of technical skills; (iii) at the business environment level, African countries must define fit-for-purpose measures that ensure a fair and attractive business environment to accelerate project implementation.

A strong cooperation between the public and private sectors, businesses and institutions is required. These collaborations will also aid the mobilisation of the required financial resources to support the investment effort. Here again, international cooperation and effective public-private partnerships represent the only path to success. This report is intended as a first sign of shared intent and common goals between African and international institutions, as well as renewable industry players in successfully advancing the sustainable transition of Africa's economies and building the road towards sustainable, resilient prosperity for all.

It is a generational challenge but the opportunity is unique. And we must all work together to make it happen.



TABLE OF CONTENTS

Table of Figures \ 10

Abbreviations \ 12

1.0

Understanding the socio-economic benefits of sustainable energy access in Africa \ 14

- 1.1 Introduction \ 18
- 1.2 The sustainable energy-development nexus \ 22
- 1.3 The socio-economic impacts of sustainable energy development \ 25
- 1.4 Maximising socio-economic and environmental benefits from the energy transition \ 36
- 1.5 Conclusions \ 42

2.0

Measuring the socio-economic footprint of Africa's energy transition \ 44

- 2.1 Introduction \ 48
- 2.2 The 1.5°C Scenario and the climate policy basket \ 52

预览已结束，完整报告链接和二维码如下：

https://www.yunbaogao.cn/report/index/report?reportId=5_17

