Scaling up renewables investments in Africa to accelerate its energy transition

Roberto Vigotti Secretary General RES4Africa

Who we are

Guided by strong values

Our Vision

Contribute to paving the road towards a **prosperous Africa**, grounded on the use of **renewable energy solutions and their integration in the energy systems** to power economies' rise, enabling the continent to achieve its full, **resilient and inclusive sustainable development**

Our Mission

Create an **enabling environment for scaling up investments in RE and grids to accelerate a just energy transition** (and transformation)

Our Areas of Action

- Accelerating Africa's RE transition, by supporting the **wider participation of private players**;
- Expanding access to energy in Africa, by supporting the creation of **innovative, sustainable solutions** built on **proactive and cross-sectorial approaches.**

RES4Africa Membership

As a private sector and member-driven organization, RES4Africa acts as a bridge among members, partners and African stakeholders to **gain insights** and **share perspectives & expertise** in defining our activities where we can **add value**

MEMBERS

PARTNERS

Workstreams

1

DIALOGUE AND STRATEGIC PARTNERSHIPS

Forge **public-private dialogues t**o share lessons learned and shape solutions and instruments

2

STRATEGIC ANALYSIS

Generate **market driven analysis** coupling/testing the experience of our members and of our African stakeholders

3

TRAINING AND CAPACITY BUILDING

Empower institutions, technical and finance experts, local people with competences and new skills, by sharing knowledge and best practices

4

ON-FIELD PROJECTS

Define, test and showcase **innovative RE business models in rural and peri-urban areas** as learning ground for scaling up

The way we act

Strategic Conferences

- High-level event gathering **the main representatives** of the renewable energy sector to provide an update on the latest trends of the sector.
- During the conference, the **Foundation's main activities** are presented, and the flagship publication is launched.

Business-to-government (B2G)

- Events aiming to create an occasion for **fruitful exchange** on a specific subject between the public and private sector.
- The discussion is often **supported by a study**, deliberately produced for the occasion, the findings of which are presented during the event.

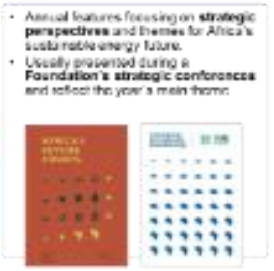
Executive seminars

- Events to **train middle-managers professionals** on specific topics, often specifically requested by ministries or other public agencies. Mainly addressed to middle-management.
- They are often requested by **ministries or other public agencies**

Focused events to connect **multiple public and private stakeholders** to accelerate deployment of RES and their grid integration

Providing the opportunity to gain updates, to deepen awareness and knowledge on **specific topics**, as well as to **establish new partnerships**

Flagship publication



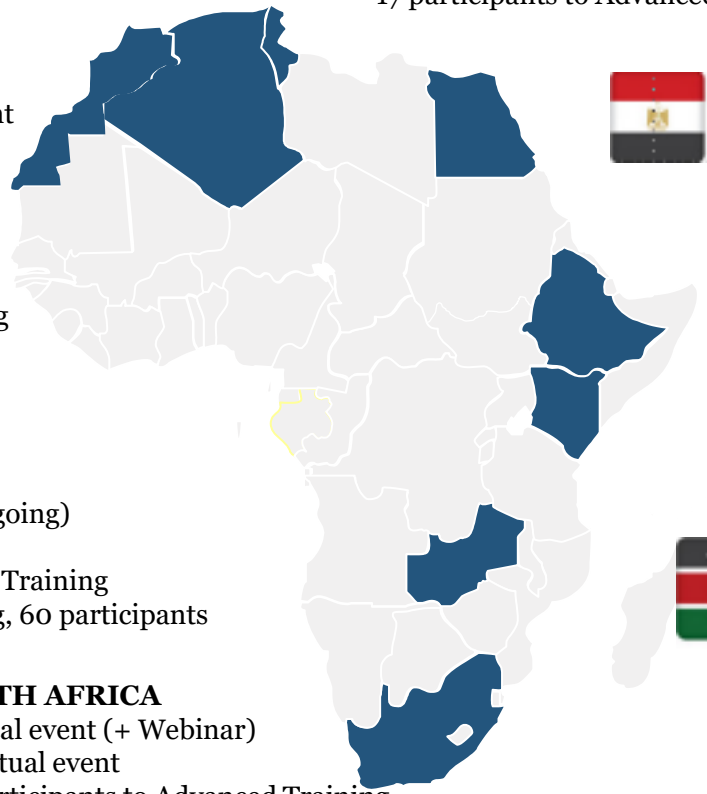
Advocacy studies

Grid-integration technical studies

Publications and Reports on a variety of topics agreed with local stakeholders to provide **technical support** and **market intelligence** to advance sustainable energy markets.

RES4Africa leads **capacity building trainings-*institutional and vocational*-and executive seminars** on **technical**, **economic**, **policy**, and **business-relates aspects** of large-scale and decentralized renewable energy technologies.

What we have done so far on a country basis



ALGERIA
- 2 Executive Seminar
- 1 special session within Italian event
- Job creation study
- Auction analysis
- Grid integration study
- 16 participants to Advanced Training

TUNISIA
- 1 local event
- 1 Executive seminar
- 1 special session within Italian event
- 1 Country profile
- Job creation study
- Auction analysis
- Survey on investment risks
- 17 participants to Advanced Training

JORDAN
- 1 B2G
- 1 Study:
- Scaling-up renewable energy development in Jordan
- 4 participants to Advanced Training

MOROCCO
- 3 Local events
- 1 B2G
- 2 special sessions within Italian event
- 1 Executive Seminar
- Energy transition roadmap 2030/50
- Liberalization Study
- 1 Country Report (and updates)
- Survey on investment risks
- 32 participants to Advanced Training

EGYPT
- 1 local event
- 1 B2G
- 1 special session within Italian event
- 1 Country Report (and updates)
- 1 Study:
- Project Finance study
- Survey on investment risks
- 27 participants to Advanced Training

ETHIOPIA
- 1 local event
- 1 B2G
- 1 Annual Conference
- 1 Position papers Book
- RE Grid Integration study
- 1 Executive Training
- 18 participants to Advanced Training
- 2 Micro-Grid Academy training, 85 participants

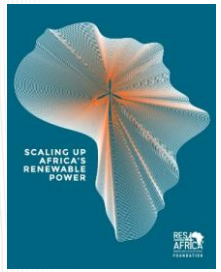
ZAMBIA
- 1 local event (+ Webinar)
- 1 Position papers Book
- RE Grid Integration study (ongoing)
- 1 Executive Training
- 14 participants to to Advanced Training
- 1 Micro-Grid Academy training, 60 participants

KENYA
- 2 local events
- 2 Position papers Book
- 1 Executive Seminar
- 1 Visit of Kenya Senate delegation to Italy
- RE Grid Integration study
- 22 participants to Advanced Training
- 5 Micro-Grid Academy trainings, over 200 participants

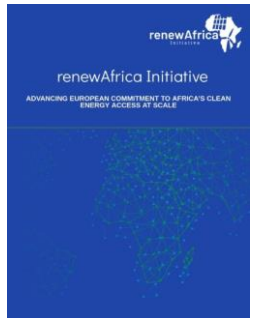
SOUTH AFRICA
- 1 local event (+ Webinar)
- 1 virtual event
- 2 participants to Advanced Training

Publications- *download them no password-no registration*

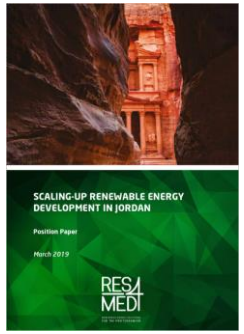
Flagship Publication

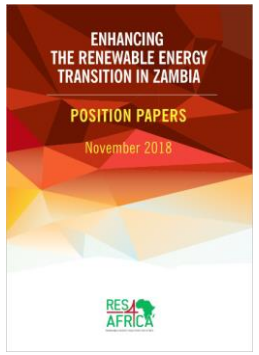


renewAfrica

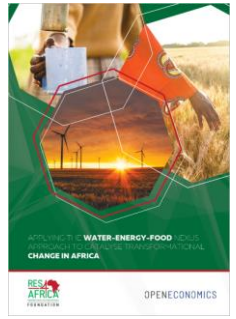


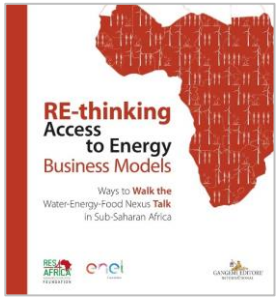
Investments and market analysis



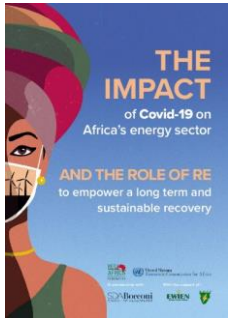


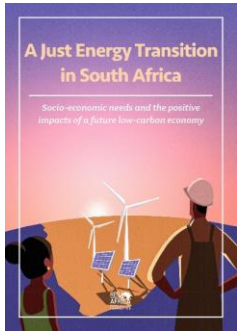
Access to energy





Socio-economic impact






International partnerships

UN and Intergovernmental Organization (IGO)

United Nations Economic Commission for Africa
UNIDO
UNDP
UNEP
Food and Agriculture Organization of the United Nations
IFAD Investing in rural people
International Labour Organization
African Union
IEA
IRENA International Renewable Energy Agency

Banks and International Financial Institutions (IFIs)

IFC International Finance Corporation WORLD BANK GROUP
Creating Markets, Creating Opportunities
NEDBANK
EDFI
FMO
COFIDES

Non-Governmental Organization (NGOs) and Cooperation Agencies

AGENZIA ITALIANA PER LA COOPERAZIONE ALLO SVILUPPO
giz
AVSI People for development
CEFA The seed of solidarity
COOPI COOPERAZIONE INTERNAZIONALE
Elettrici senza frontiere
AWEEF
EWIEn
TECNOLOGIE SOLIDALI onlus
InspiraFarms
PRACTICAL ACTION

Private Organizatons

Alliance for Rural Electrification
REN21 RENEWABLES NOW

Academia and Research Centres

Strathmore UNIVERSITY
MIT
CSIR
COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK
UNIVERSITY OF Southampton
SUNY
European Technology Chamber eutec.org
ENERGY4IMPACT

Why we do it

Context

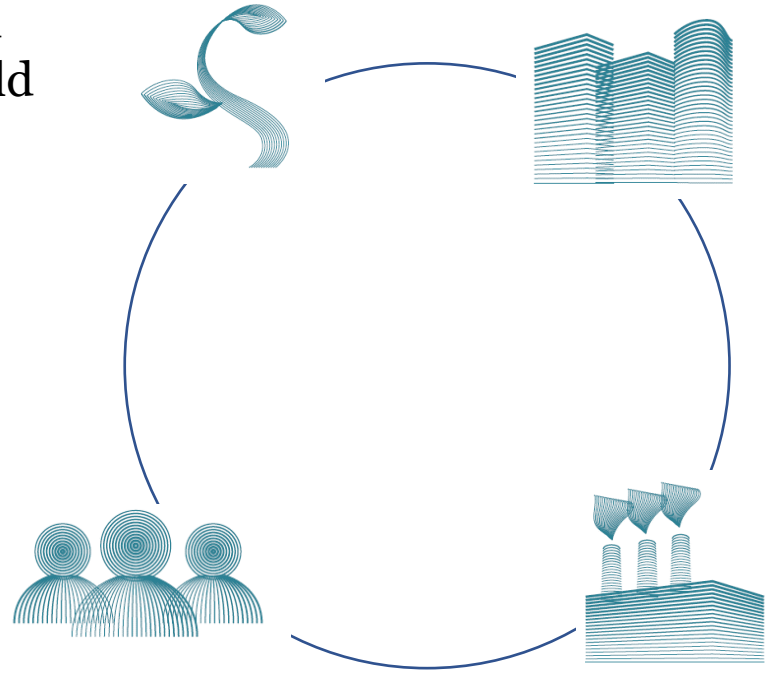
COUNTRY	AREA x 1000 km^2
China	9.597
USA	9.629
India	3.287
Mexico	1.964
Peru	1.285
France	633
Spain	506
Papua New Guinea	462
Sweden	441
Japan	378
Germany	357
Norway	324
Italy	301
New Zealand	270
United Kingdom	243
Nepal	147
Bangladesh	144
Greece	132
TOTAL	**30.102**
AFRICA	**30.221**

Our traditional world map is widely misleading, Africa is much bigger

Africa is the fastest-growing continent

Between 2000 and 2019, most African countries experienced **rapid and important economic growth**, and the continent boasted the second **highest GDP growth** in the world with an average of 4.6%.

Africa is the world's **fastest growing continent** in demographic terms.

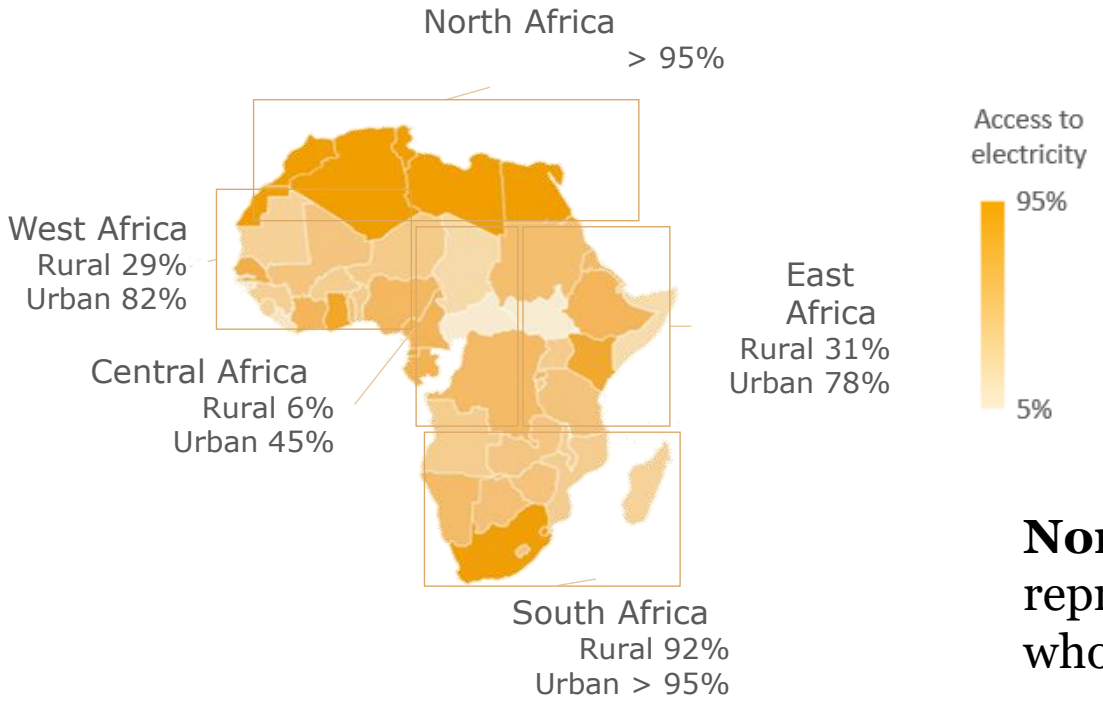


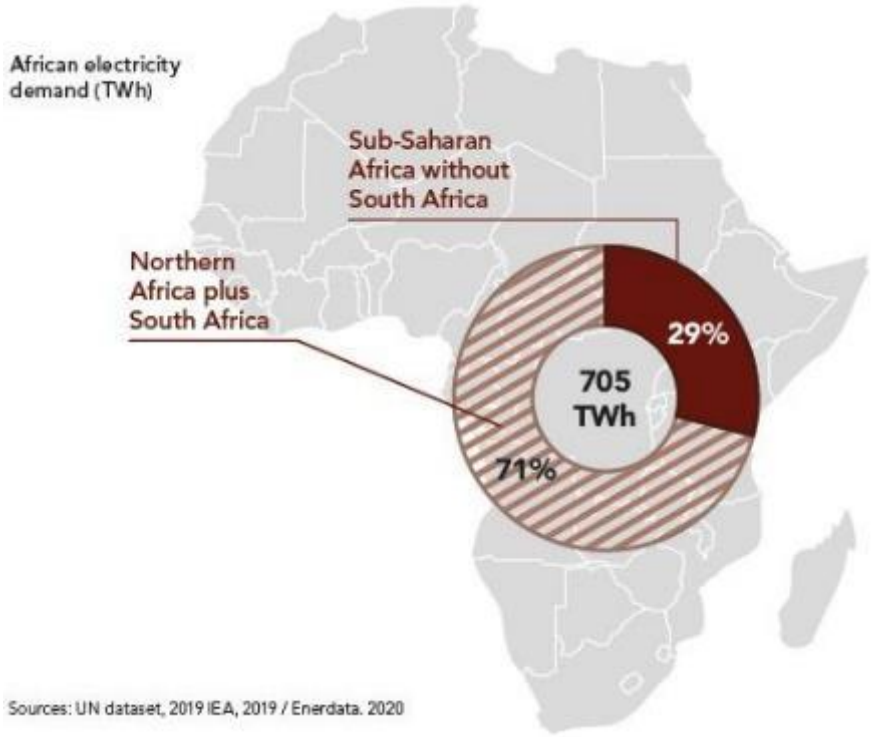
By 2030, **more than 50%** of the population **will be living in cities.**

Energy demand is expected to increase faster than anywhere.

Still, Africa's growth is hampered by the lack of reliable energy

In Sub-Saharan Africa, 600 million people still lack access to electricity, and the **electrification pace** is not keeping up with **population growth.**

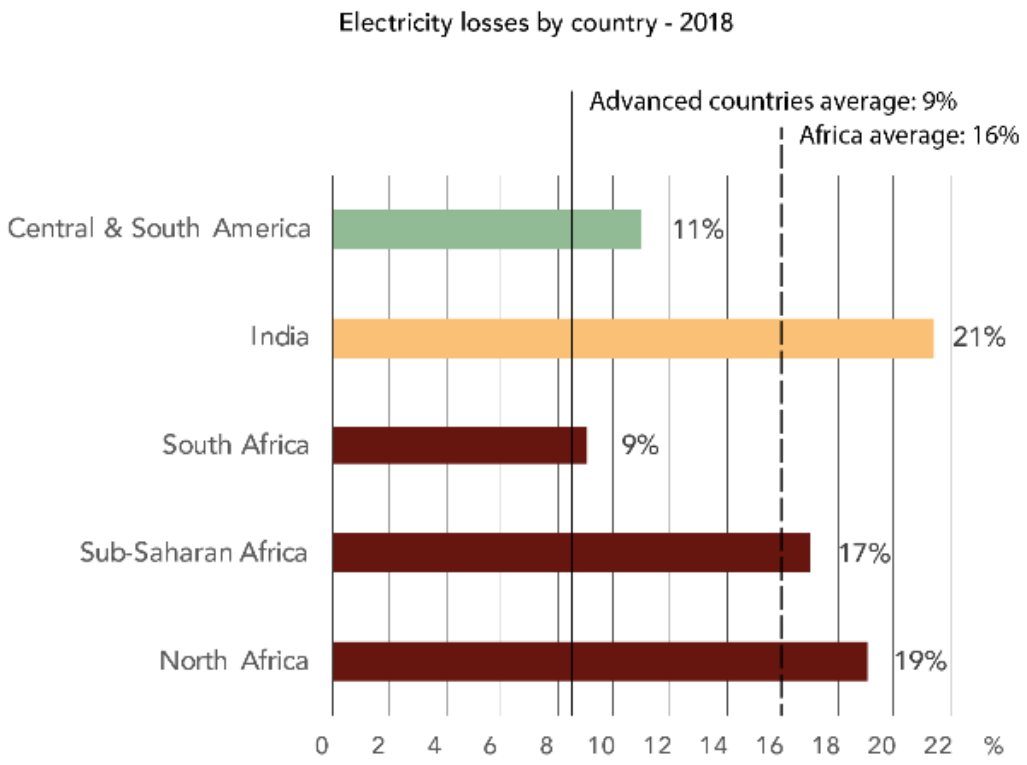




North Africa and South Africa's electricity demand represents nearly **three-quarters** of the continent's whole demand.

Most countries suffer from a low-quality and unreliable grid

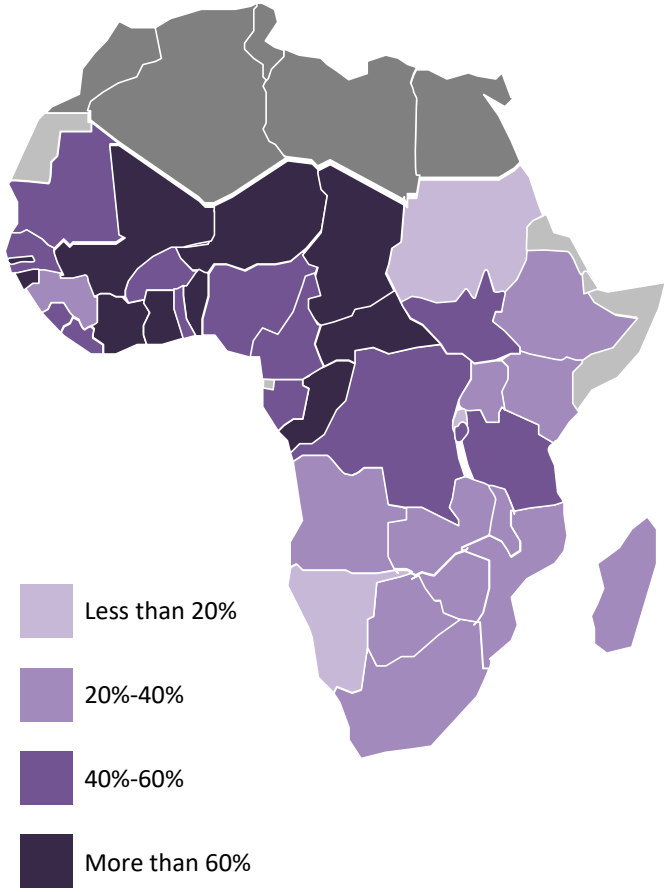
Transmission and distribution lines are insufficient in terms of quality and quantity in Sub-Saharan Africa.



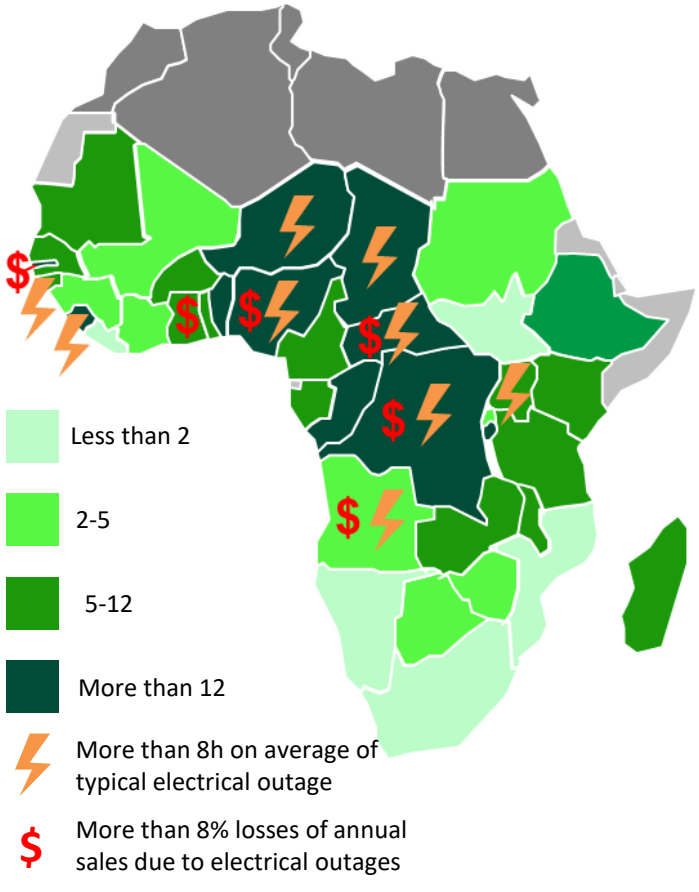
- With **16% of transmission and distribution (T&D) losses**, Africa's average is 7 percentage points higher compared to the average of advanced countries.
- Losses also vary by region, with a difference of ten percentage points between South and North Africa.
- **High T&D losses** strongly affect the economy of sub-Saharan utilities, leading to **losses equivalent to the 0.3% of annual GDP** (median value).
- **Poor power integration** limits the access to new markets and new sources of supply, preventing countries for taking advantage of economies of scale.

Grid reliability and impact on businesses in SSA

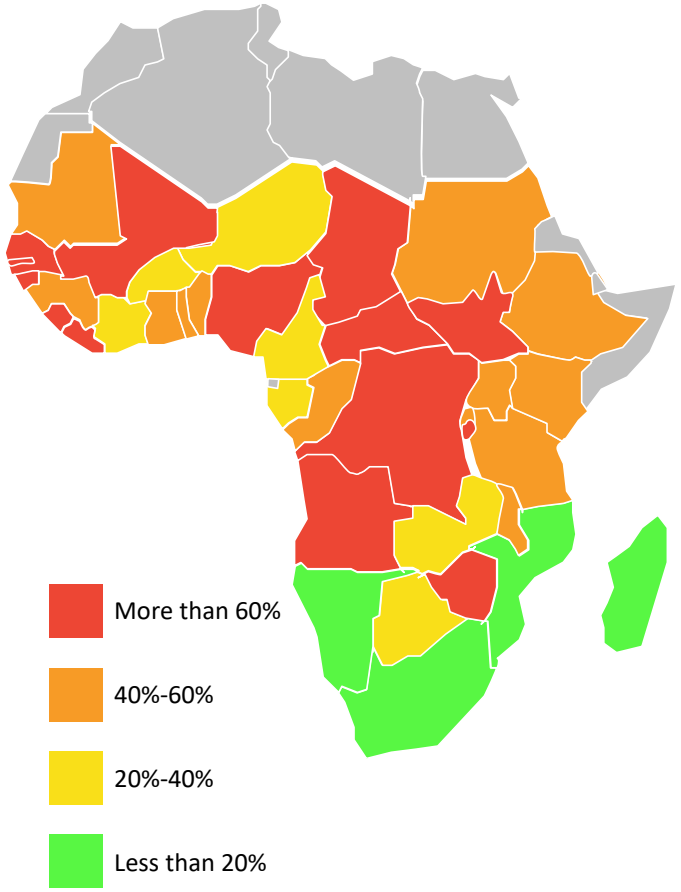
Firms considering electricity as a major constraint



Power outages in a typical month and impact on firm sales



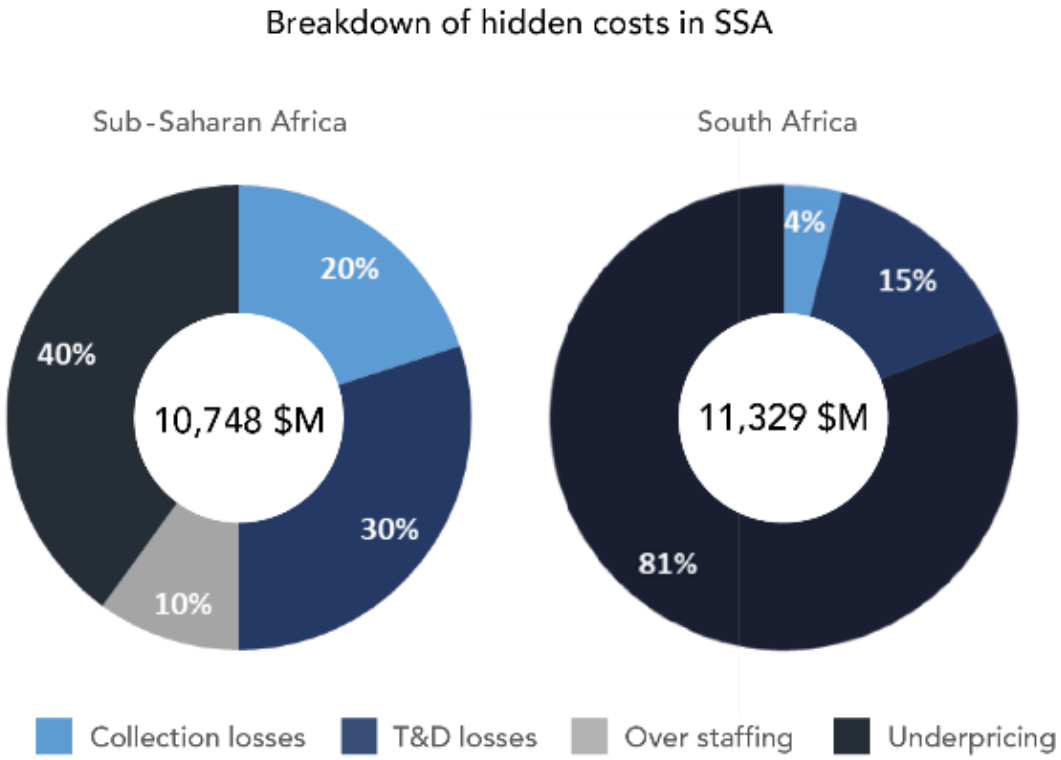
Firms owing or sharing a generator



Source: Bloomberg New Energy Finance, World Bank

Utilities are challenged by underpricing and operational inefficiencies

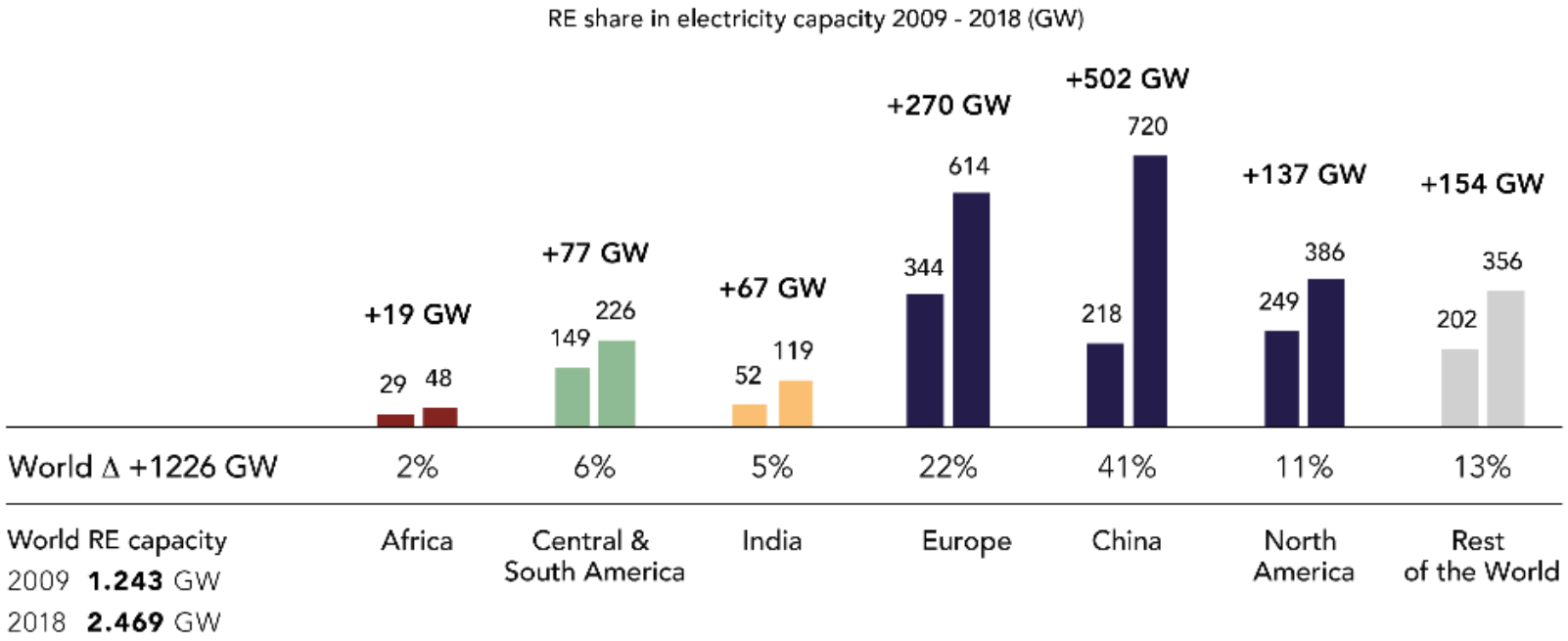
- **In only 2 out of 39 (5%) countries in sub-Saharan Africa utilities are able to cover their capital and operating cost of service** (Seychelles and Uganda), *while operating costs are covered by only 49% of them.*
- **Underpricing, transmission and distribution losses, under-collection of bills and overstaffing** are the hidden costs responsible for the fiscal deficit of sub-Saharan Utilities, with underpricing counting for more than 40%.
- This strongly affects the **ability of utilities to make investments**, braking the development of necessary transmission and distribution grids across the continent.



*The QFD is the difference between the net revenue of an efficient electricity sector covering operational and capital costs and the net cash collected by the utilities.

Just 2% of global RE capacity are installed in the continent

Africa accounts for only 2% of global RE capacity, while population accounts for a 16%. Despite the global growth of renewables, **only 2% of global RE have been installed in Africa in the last 10 years.**



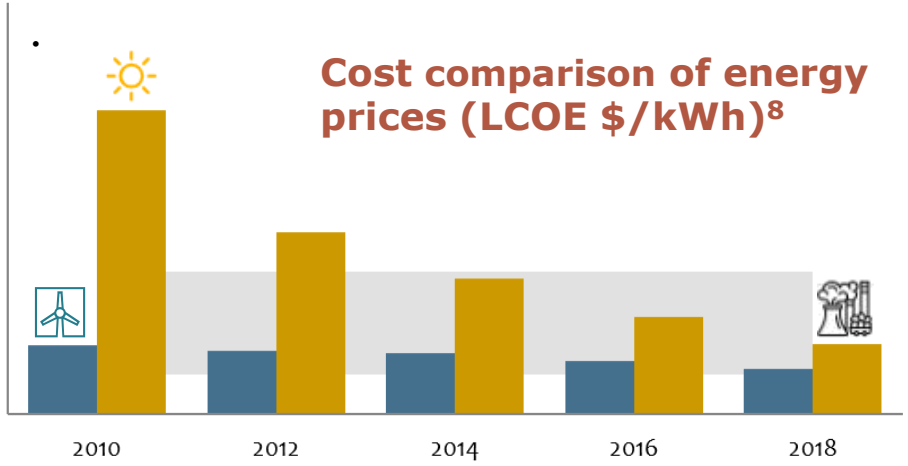
To pursue universal access to energy, a **mix of grid extension and off-grid solutions** should be properly combined in the country's electrification masterplan.

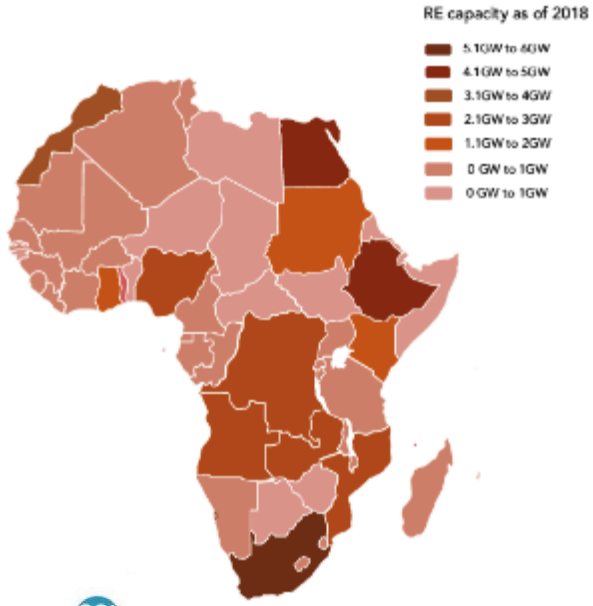
Africa's RE potential could meet the growing demand in the cheapest way

Renewables are today **the lowest-cost source of power generation** available on the market, even **without public subsidies.**

RE are also the **fastest in terms of time to market,** with **construction time much shorter** and a **modular approach**

Africa's RE potential capacity could generate **up to 24 000 TWh of electricity per year.**

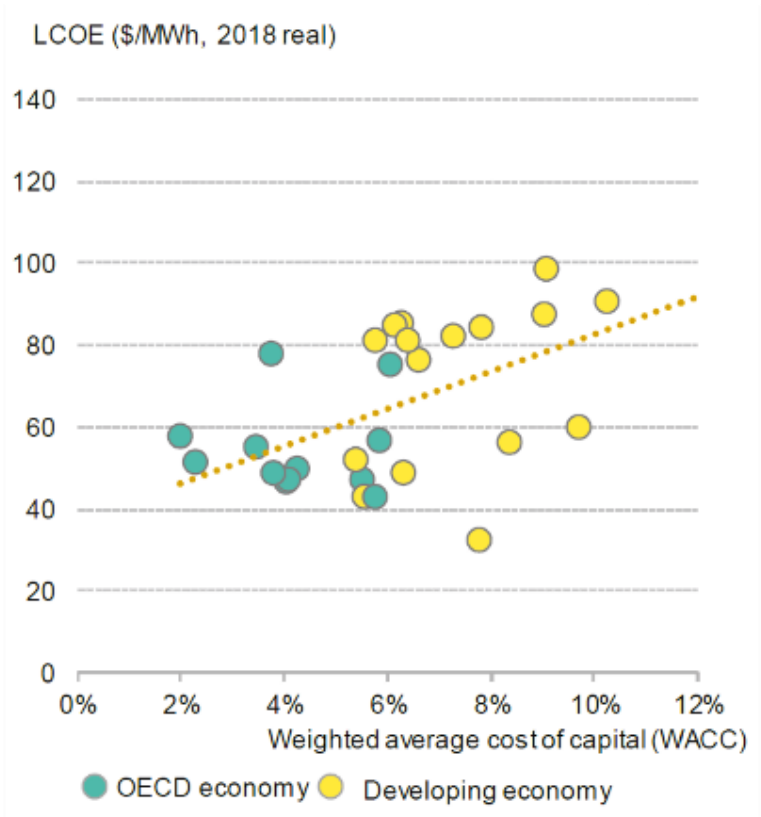




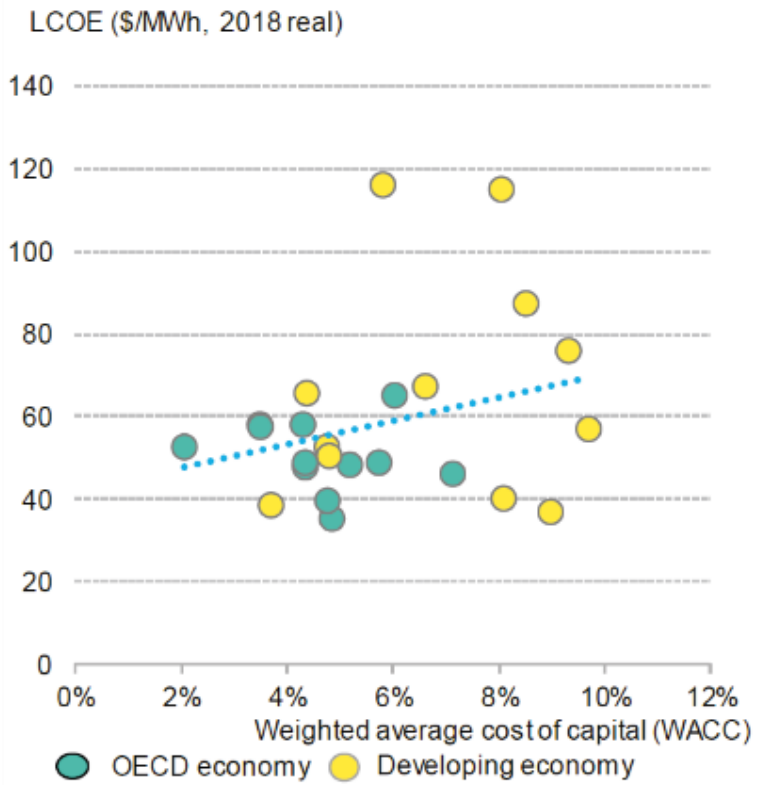
Perceived high-risk environment pushes up project financing costs and LCOE

Despite the global fall of RE generation costs, given the scarcity of bankable sub-Saharan African utilities, special measures are required to **address risks**, **increasing project financing costs across emerging markets**.

The effect of financing costs on levelized costs of electricity, utility-scale PV, 2019

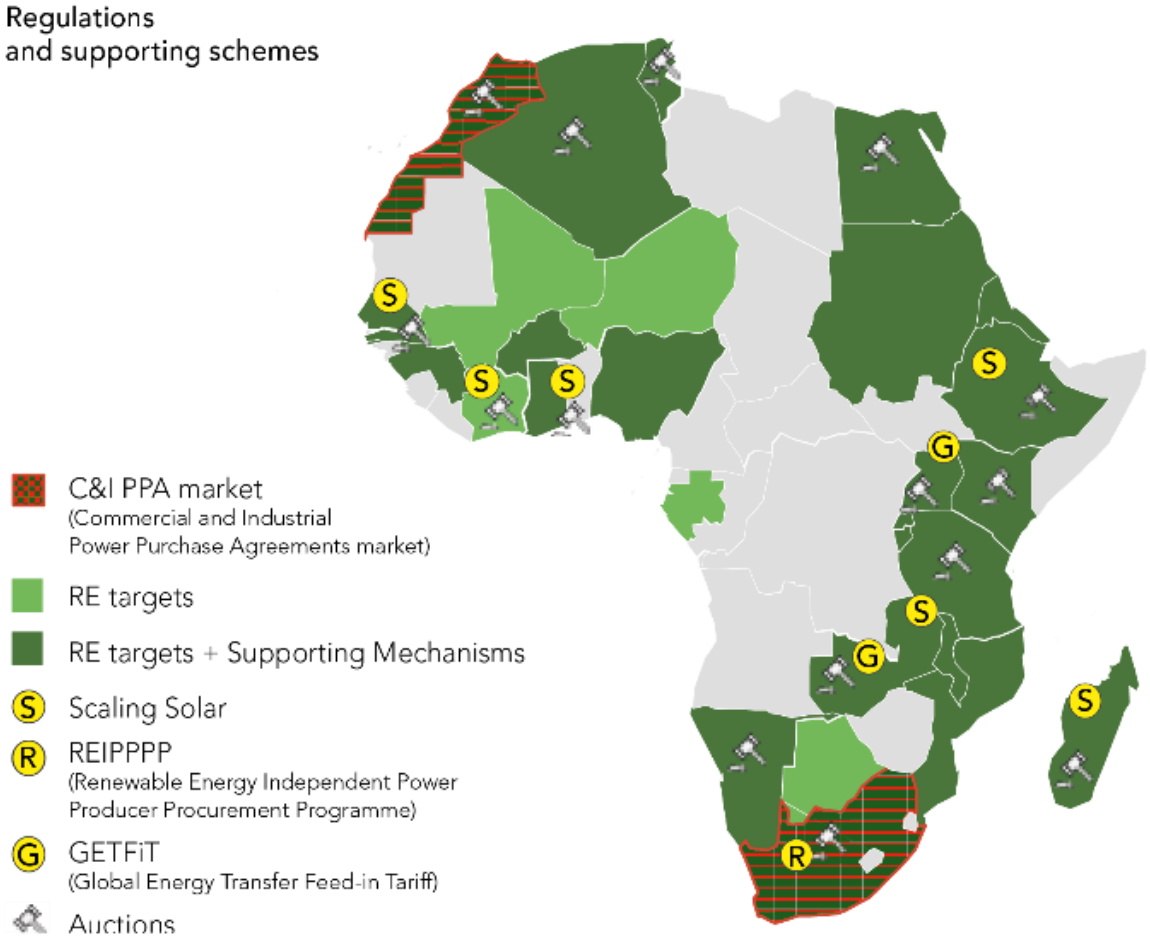


The effect of financing cost on levelized costs of electricity, onshore wind, 2019



Source: Bloomberg NEF, 2020

Few countries have adopted regulations and supporting schemes



- **Regulation and supporting schemes vary across African countries**.
- **Central Africa's** regulation systems remains the **less attractive for Renewables**.
- Additional incentive measures have been adopted, like **feed-in-tariffs** in Algeria, Kenya, Uganda, Ghana and Tanzania.
- In sub-Saharan Africa, **more than 60% of IPP capacity** was awarded through a **competitive process in 2018**.

Note: for RE targets we refer to capacity targets (MW)

WHY ONLY 2%?

Inadequate de-risking instruments

Unrealistic eye-catching targets

High sovereign credit risk

Weak regulatory frameworks

Low share of productive uses of energy

Lengthy tender to construction processes

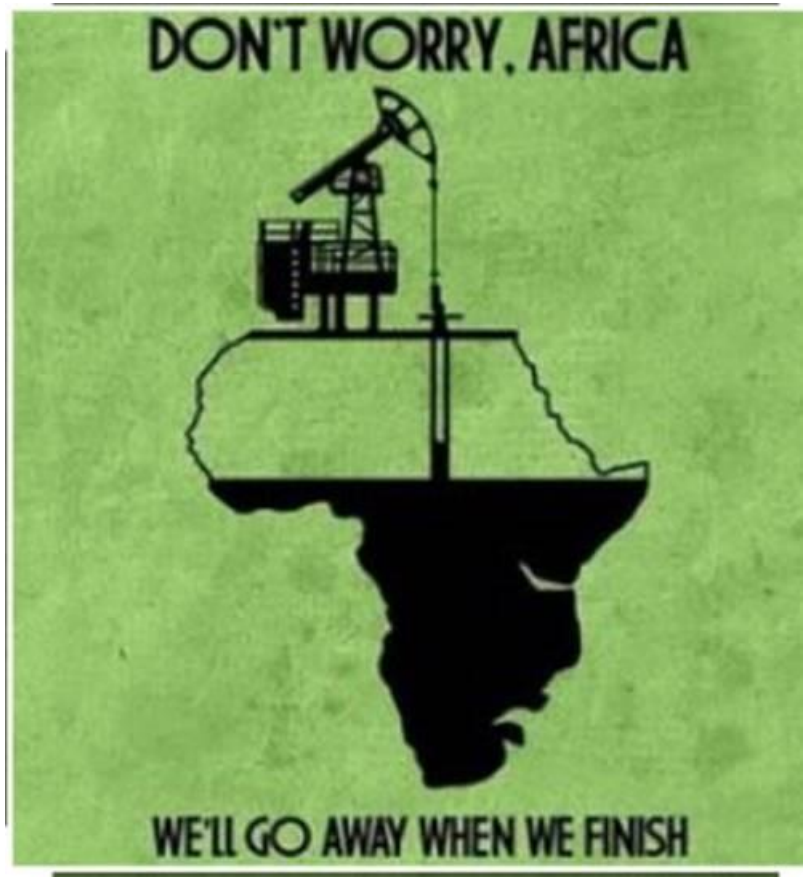
Poor power trading in interconnected regions

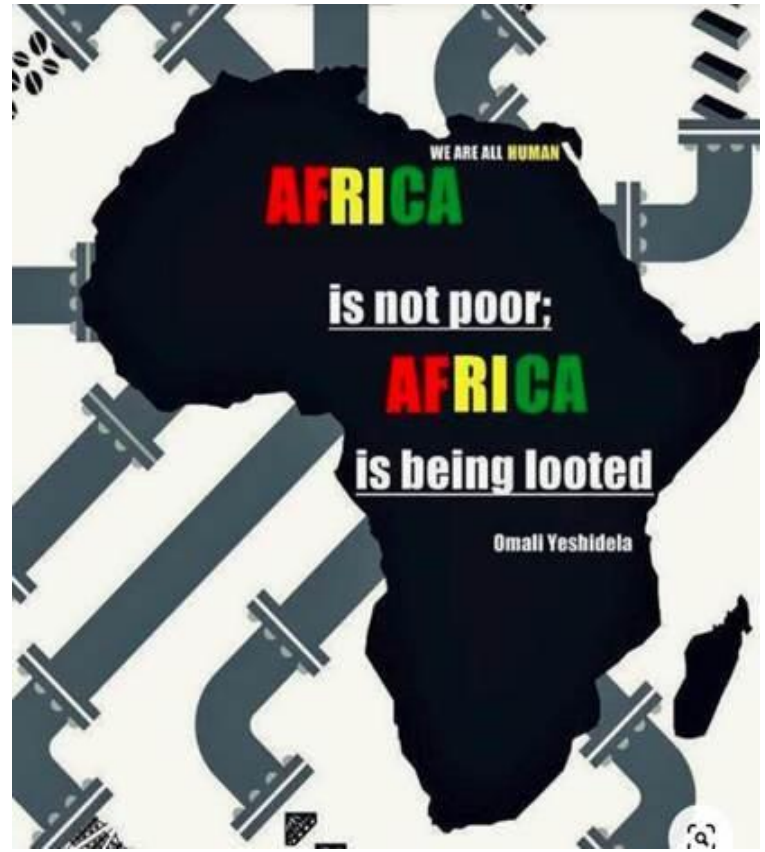
Uncertain utilities' financial viability

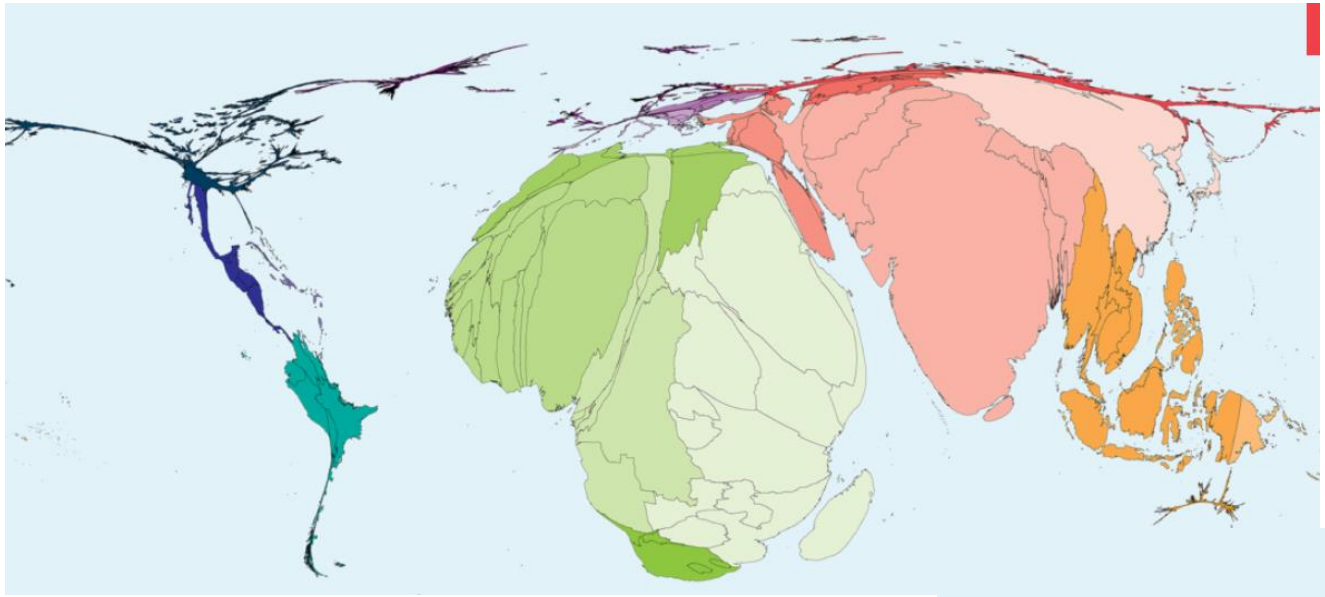
Limited reliability and development of the grid

Non cost-reflective tariff

Perception of EU approach to energy in/from Africa

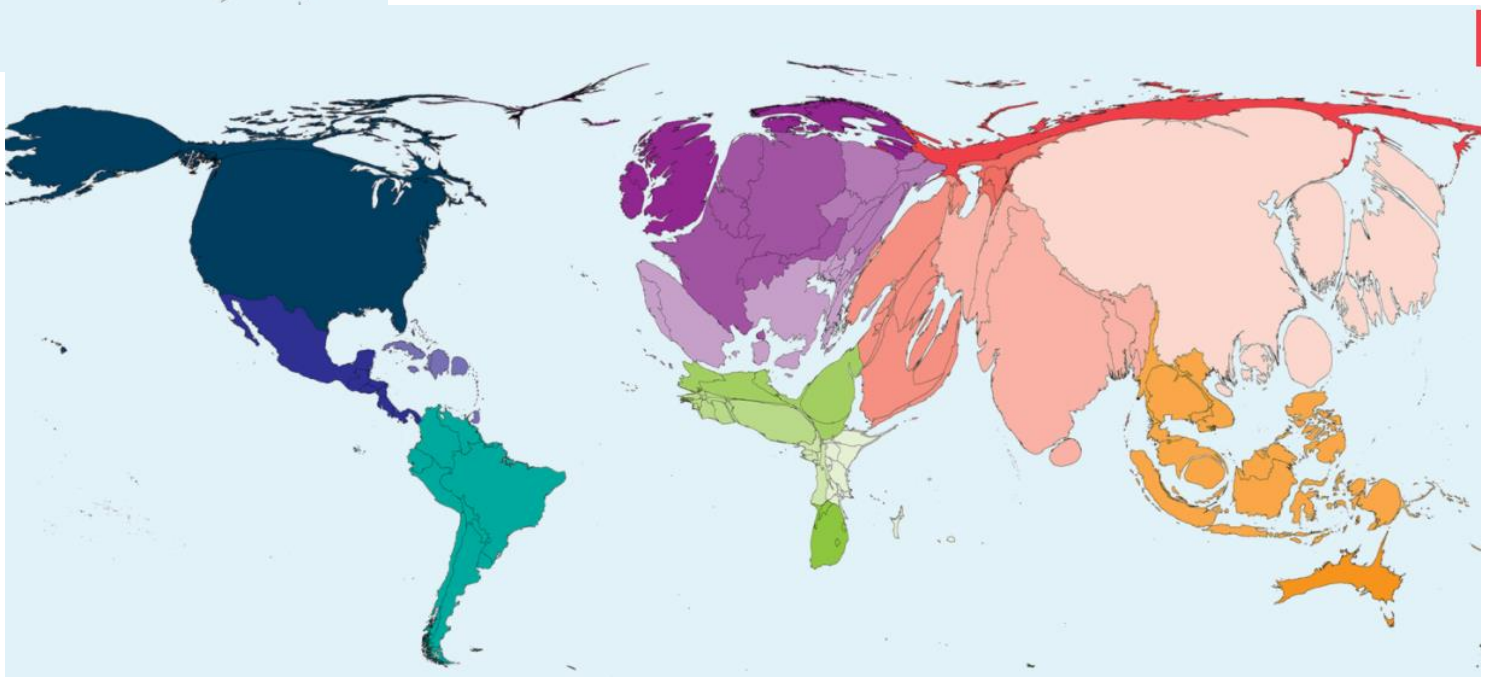






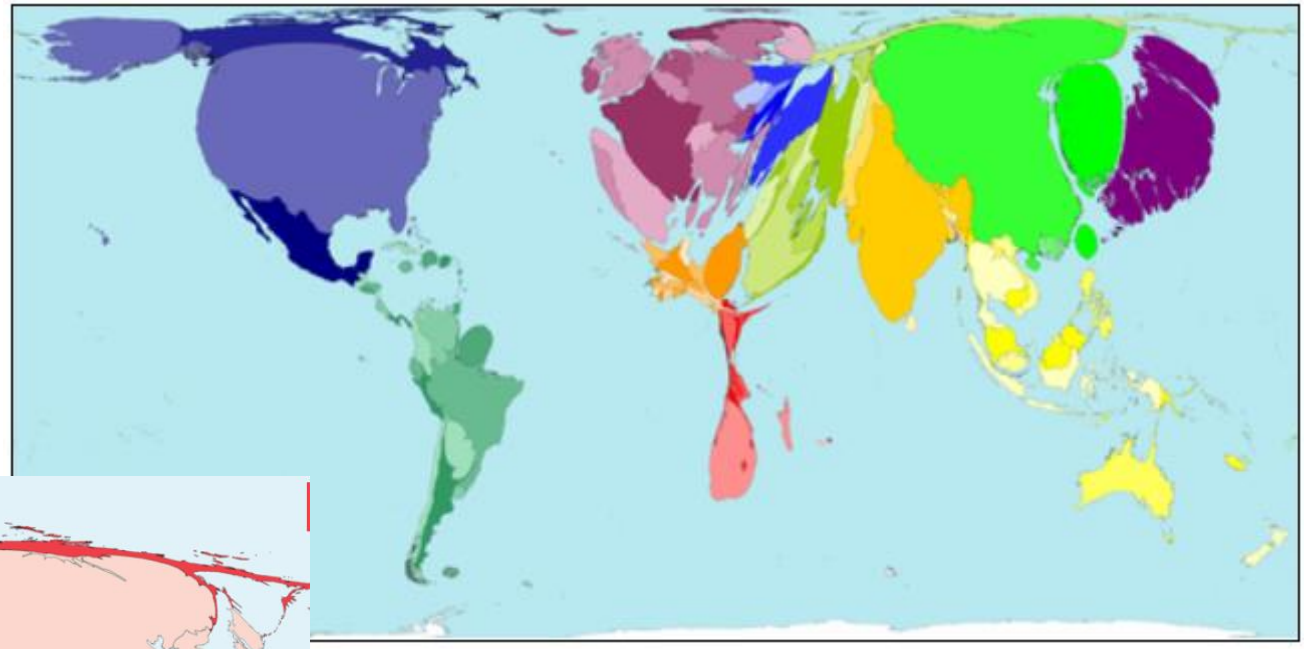
Lack of water

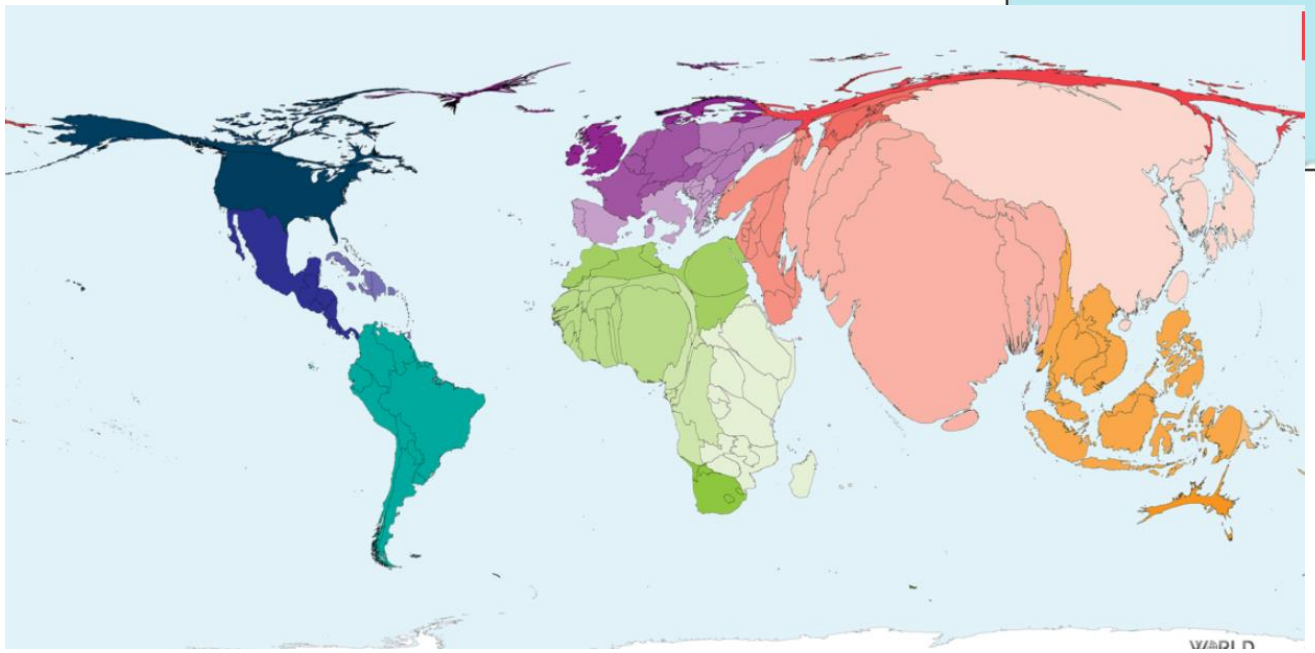
GDP wealth



Electricity production

worldmapper.com





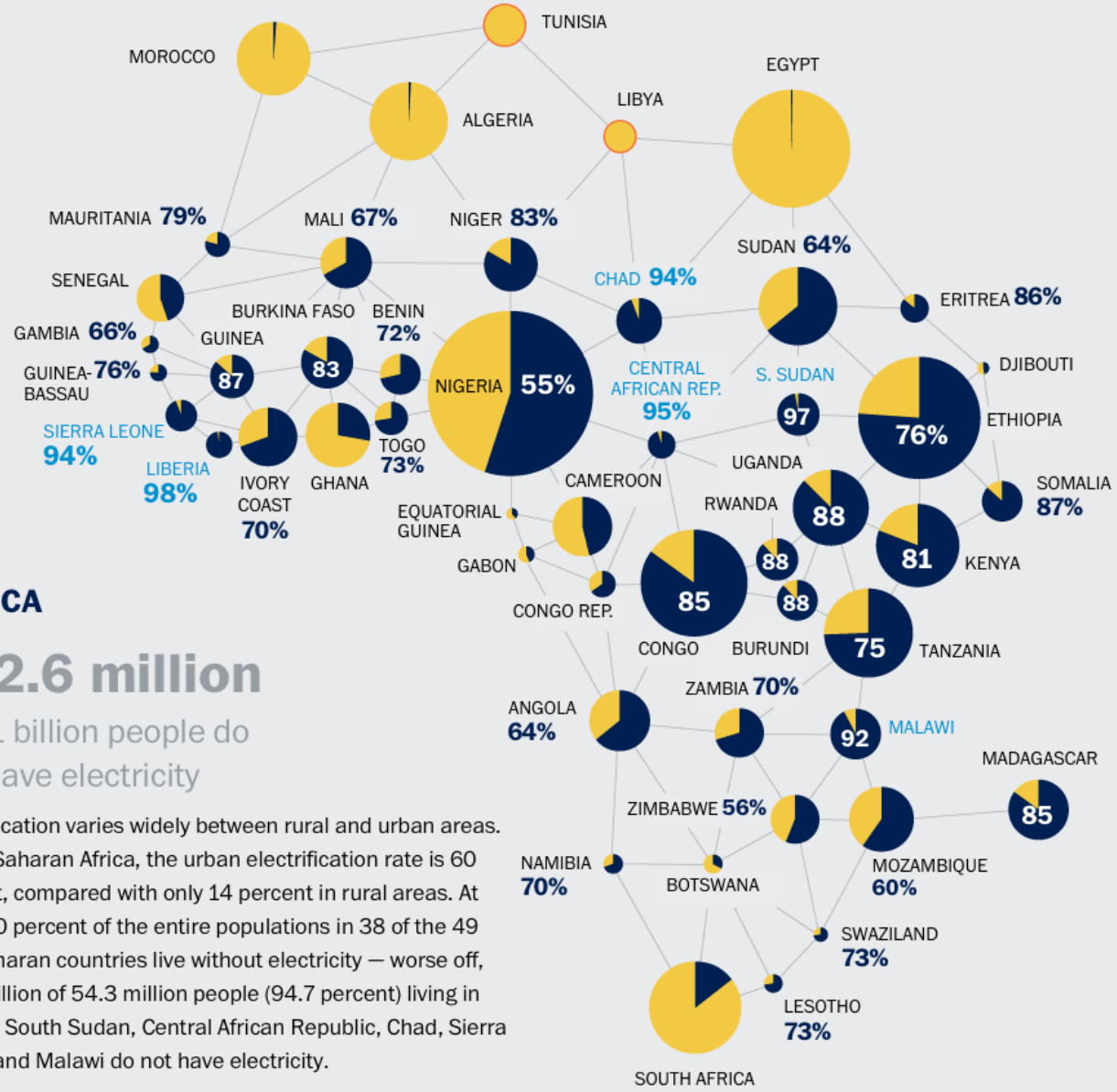
Population

NORTH AFRICA

Fewer than 1 out of 10 people do not have access to electricity

SUB-SAHARAN

7 out of 10 people do not have access to electricity



AFRICA

622.6 million

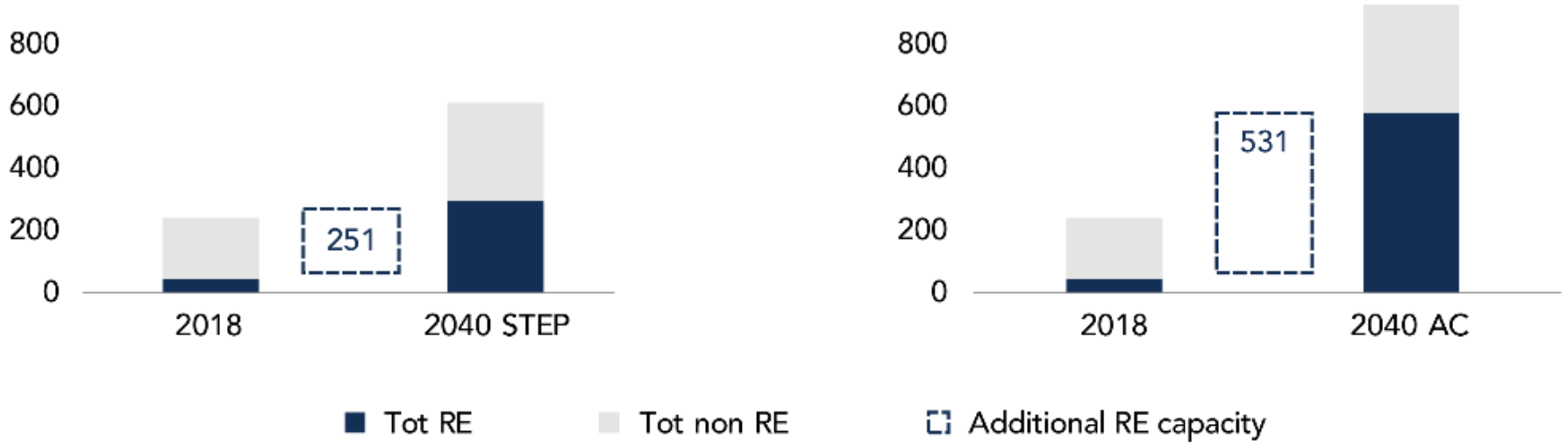
of 1.1 billion people do not have electricity

Electrification varies widely between rural and urban areas. In sub-Saharan Africa, the urban electrification rate is 60 percent, compared with only 14 percent in rural areas. At least 50 percent of the entire populations in 38 of the 49 sub-Saharan countries live without electricity — worse off, 51.4 million of 54.3 million people (94.7 percent) living in Liberia, South Sudan, Central African Republic, Chad, Sierra Leone and Malawi do not have electricity.

Bridging Africa's energy access gap requires unlocking investments in RE

By 2040 **~33 billion dollars/year** to be invested in generation capacity in the **IEA's Stated Policy Scenario**.

By 2040 **~60 billion dollars/year** are to be invested in generation capacity in the **IEA's Africa Case**.



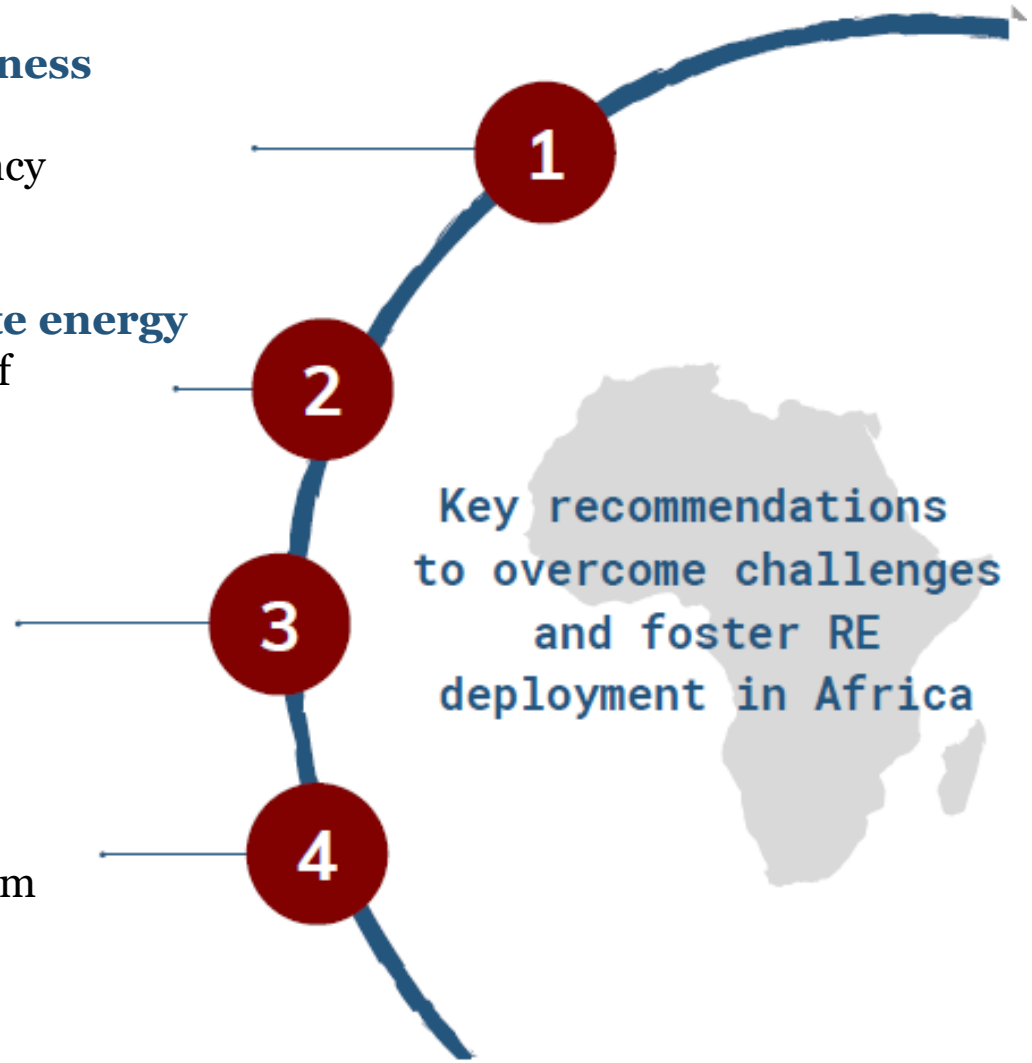
Overcoming Africa's energy access gap

Foster Africa's electricity sector attractiveness and readiness adapting policies and regulations to countries requirements and investors criteria, prioritising long term commitments, transparency and competitive procurement processes.

Provide an integrated power transmission grid and create energy markets across countries so to foster and exploit economies of scale in the generation, transmission and distribution of electric power.

Put productive uses of energy on top of the agenda so to enable the activation of a wider value chain, leading to the increase of energy demand.

Develop comprehensive de-risking instruments to unlock Africa's renewable energy potential reducing fragmentation of existing instruments and extending the focus form early project phases and financing to the whole project process.



The time to act is now

- Clean energy is pivotal for sustainable development: far from being an end in itself, it is **a means to achieve overall Socioeconomic development**.
- In the Decade of Action, **green ambitions must not be put on hold, but rather scaled up** in order to achieve the SDGs by 2030.
- The recovery plans offer the once-in-history **opportunity to build back better**.
- A green recovery strategy is the most effective way to **come out of the current crisis stronger and more resilient**.

How we do it

- Strategic initiatives
- Regional programmes
- Training and capacity building

RES4Africa Strategic initiatives

Missing Link to investigate the openness, attractiveness and readiness of African countries' regulatory framework in enabling private-led investments.

renewAfrica as a new EU-led de-risking program to crowd-in RE investments and develop a pipeline of bankable projects across Africa.

Access to Energy Program for analysing business models to ensure access to energy for all applying the Water-Energy-Food nexus approach.

Grids4Africa for providing access to electricity by improving the quality of service, grid infrastructure and boost private investments.

Innovation & Digitalization to break down boundaries between energy sectors, increasing flexibility and enabling integration across entire systems.

Job and socioeconomic impact of clean energy: a new flagship Publication 2021.

The Missing Link Programme

The Missing Link Programme analyses the ability of African countries' **policy and regulatory frameworks** to attract **private investments** in power generation, transmission, distribution and off-grid systems.

- **private sector perspective and multilateral development priorities** merged through strategic alliances and joint implementation.
- serves **multiple objectives**, involving **multiple stakeholders** and integrating with **existing initiatives**.

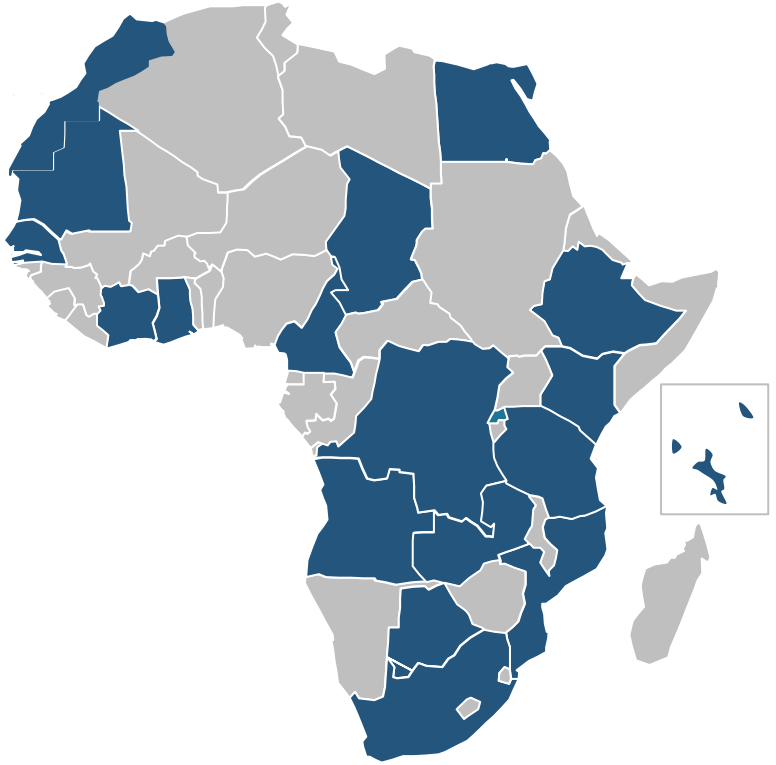
In partnership with United Nations Economic Commission for Africa

Strategic initiatives

Aims of the Missing Link Programme

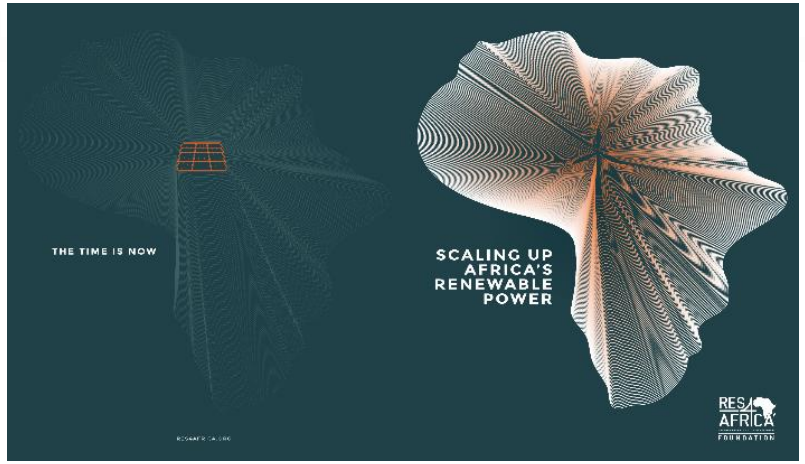
- To gain a **better understanding** of the effectiveness of national electricity sector policy and regulatory frameworks vis-à-vis private requirements and needs.
- To define **best-practices** based on countries' successful experiences, and to disseminate them at a local, regional and continental level.
- To build **consensus** around policy recommendations for **reforms**, and define possible **roadmaps** for policy and regulatory reforms.
- To build **capacity** at the national level, for the definition and implementation of policies and regulatory reforms in the electricity sector.

Target countries



Strategic initiatives

Flagship Publication 2020 Scaling up Africa's RE power

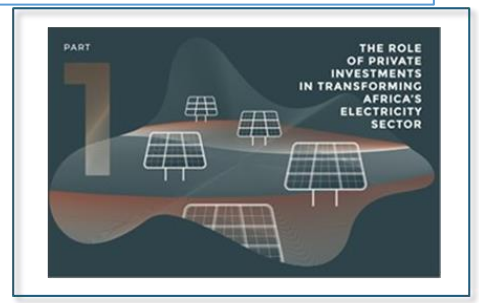


RES 4 AFRICA FOUNDATION in collaboration with INTESA SANPAOLO

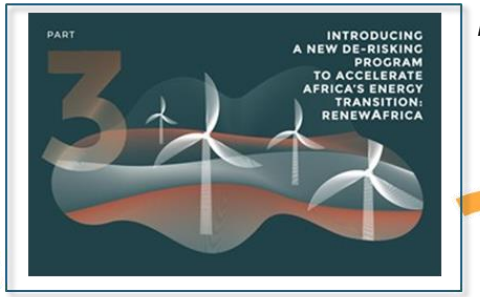
External contributors:

(boxes, case studies, visionary statements)

enel Foundation · European Investment Bank The EU bank · enel Foundation · IEA · European Union · African Union · IFC International Finance Corporation · IRENA · United Nations Economic Commission for Africa · REN21 · cdp · BonelliErede · SIEMENS Gamesa RENEWABLE ENERGY

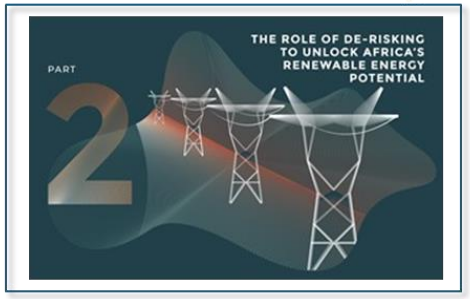


More effective de-risking is needed to unlock Africa's renewable energy potential

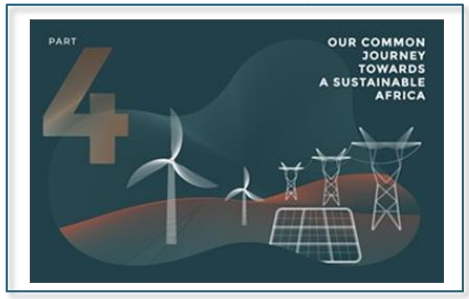


renewAfrica has the ambition to be a game-changer in crowding-in private investments

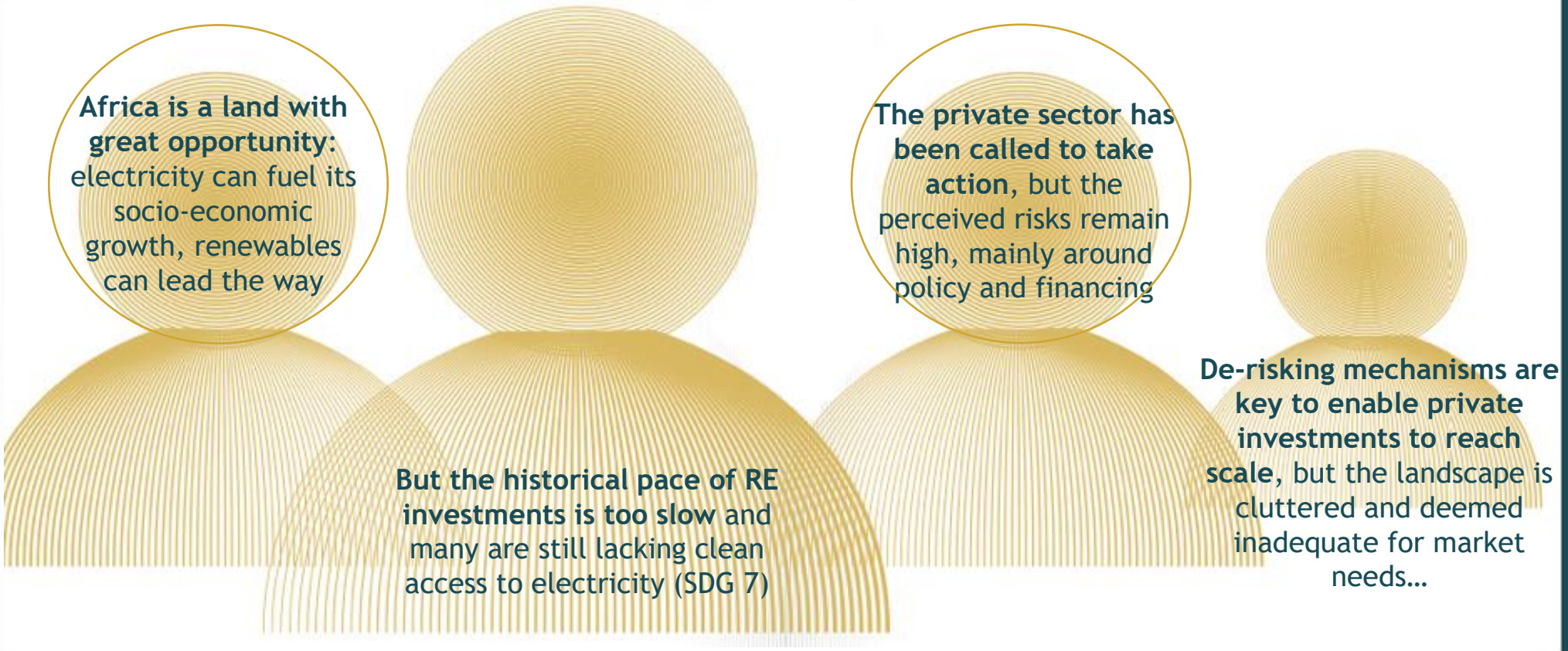
Private investments are key to transform Africa's electricity sector



An EU-Africa partnership towards sustainable development



The narrative begins in Africa



Africa is a land with great opportunity: electricity can fuel its socio-economic growth, renewables can lead the way

But the historical pace of RE investments is too slow and many are still lacking clean access to electricity (SDG 7)

The private sector has been called to take action, but the perceived risks remain high, mainly around policy and financing

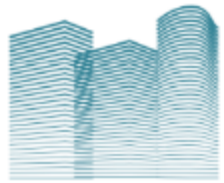
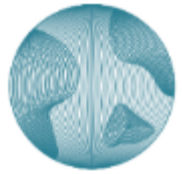
De-risking mechanisms are key to enable private investments to reach scale, but the landscape is cluttered and deemed inadequate for market needs…

…this is the opportunity for renewAfrica

An EU-Africa partnership effort which looks to address the existing gaps by offering targeted services to de-risk renewable energy investments in Africa, and a comprehensive and inclusive toolkit for end-to-end risk mitigation.

The socio-economic opportunity for Africa

Driven by structural transformation trends, there is an opportunity to redesign economies and societies

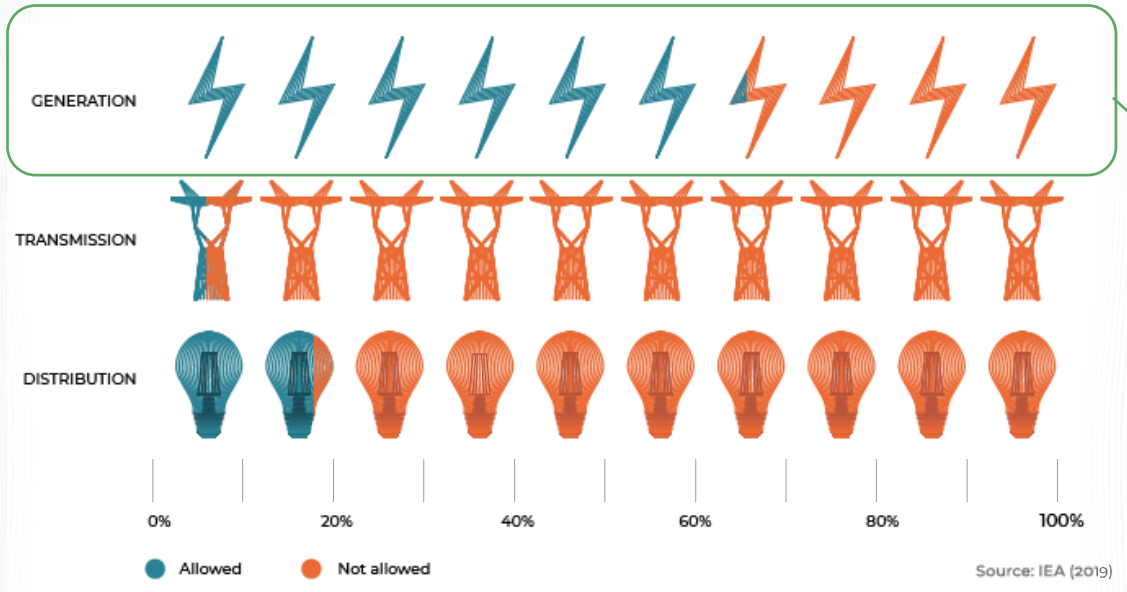
	 RISE OF EMERGING ECONOMIES	 NEW INDUSTRIAL REVOLUTION	 URBAN TRANSITION	 DEMOGRAPHIC TRANSFORMATION	 CLIMATE CHANGE
MAIN RISKS	▪ Competition with other emerging economies ▪ Creating one-dollar jobs ▪ New scramble for Africa	▪ Automation ▪ Rerouting manufacturing to adv. economies ▪ Unprepared skills and technological base	▪ Increased urban poverty and inequality ▪ Larger wealth gap between rural and urban areas ▪ More air pollution and inefficient use of natural resources	▪ High youth unemployment and informal sector employment ▪ Increased pressure on public services and environmental resources	▪ Natural disasters, droughts and changing weather patterns ▪ Loss of livelihoods and eco- nomic activities
MAIN OPPORTUNITIES	▪ Diversification of African exports ▪ Reallocation of low-skilled manufacturing to Africa ▪ New DFI flow into Africa ▪ Skills transfer	▪ Reduction in trade costs ▪ Creation of new niches and markets ▪ Use of new technologies to improve access to services	▪ Growth of urban middle class and demand for high value added goods and services ▪ Social innovation ▪ More sustainable use of resources and sharing of infrastructure	▪ Growth of Africa's workforce and middle-class ▪ Larger savings, consumption and GDP growth due to increased labour supply and wealth	▪ Expansion of new green sectors ▪ Higher job creation in green sectors

Source: AUC/OECD (2019)

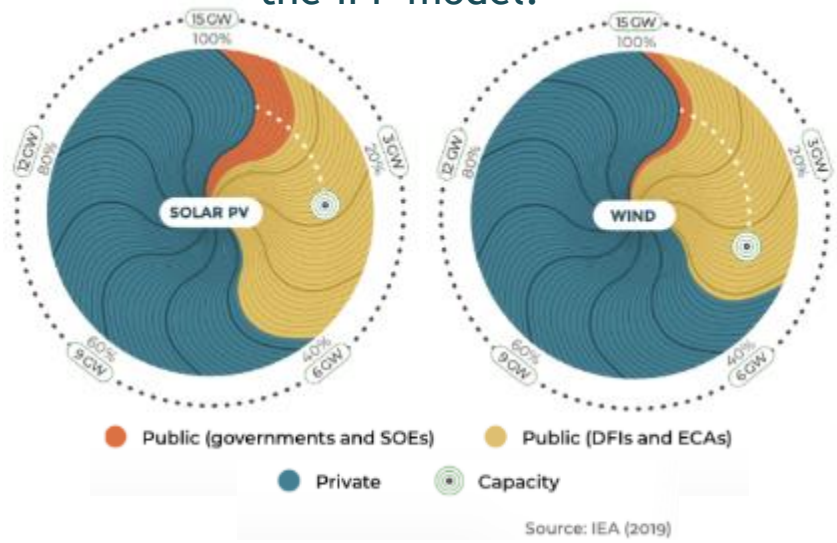
The role of private investment in transforming Africa's electricity sector 26

Private sector to play a prominent role in delivering on Africa's power needs

PS remains marginal but is increasing in generation..



Especially within RE development private sector is becoming the main sponsor through the IPP model.



Governments need to work closely with private sector to identify the right model to maximize private contributions, balances commercial outcomes and allocates risks

The renewAfrica initiative

renewAfrica is an **industry-backed initiative** that aims to advance European commitment to Africa's clean energy access by boosting European investment in African renewable energy.

- RES are the most competitive, cleanest and fastest way to bridge Africa's energy access gap;
- Europe is a global leader in the renewables sector;
- European investments in renewables need to become an entrenched answer to Africa's rising energy needs.

Yet:

Of the existing European support programmes, only:

- **35%** are available in all African countries
- **29%** are technology neutral
- **40%** comprehend at least one risk mitigation mechanism
- **20%** offer an aggregated package of guarantees and insurances

renewAfrica at a glance

renewAfrica Initiative

Launched in 2019, renewAfrica is **industry-backed Initiative** advocating for the **creation of a European comprehensive Programme for renewable energy investments in Africa** to be promoted and owned by EU institutions

renewAfrica aims to unlock Africa's renewable energy potential by supporting the creation of a **sustainable pipeline of bankable RE projects** and greater use of **Public-Private Partnerships (PPPs) models**

The future EU-led Programme should include and **deliver end-to-end support** along the entire **project lifecycle for all RE technologies, infrastructure and grids**, in all African countries, with a focus on utility-scale projects

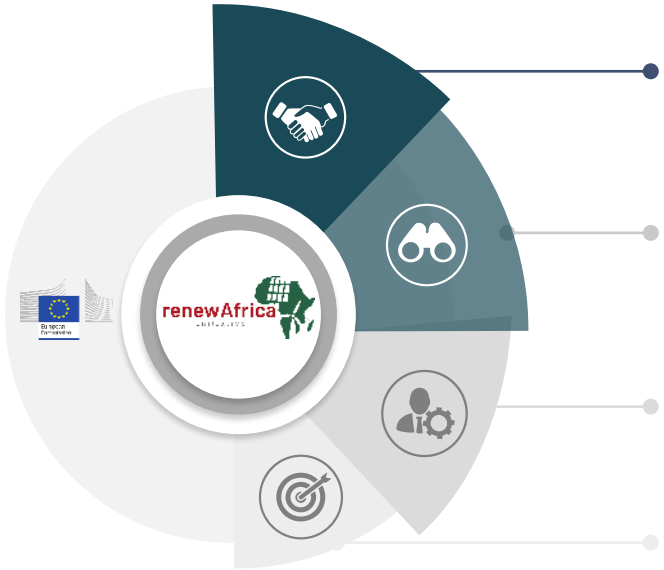
Acting as a central reference point, the renewAfrica Programme could become a powerful **vehicle to the implementation success of the EU Green Deal vision abroad**

Strategic initiatives

Focusing on several channels of cooperation

The RES4Africa Foundation and renewAfrica are working closely with the EVP Cabinet, DG ENER, DG INTPA, and DG CLIMA to:

EVP
CABINET
DG ENER
DG INTPA
DG CLIMA



develop a joint approach to **integrate renewAfrica into the EU-Africa Strategy and the Green Energy Initiative**

develop a common understanding of **how renewAfrica and its Task Forces can contribute to the Green Energy Initiative**

structure a governance model for renewAfrica that makes it compatible with current and planned European flagship programs

liaise with EU External Action Service (EEAS) to coordinate country landing and outreach in Africa

Strategic initiatives

Our work in 4 modules, crafted on the advice from Signatories, while the Secretariat retains its role as linchpin

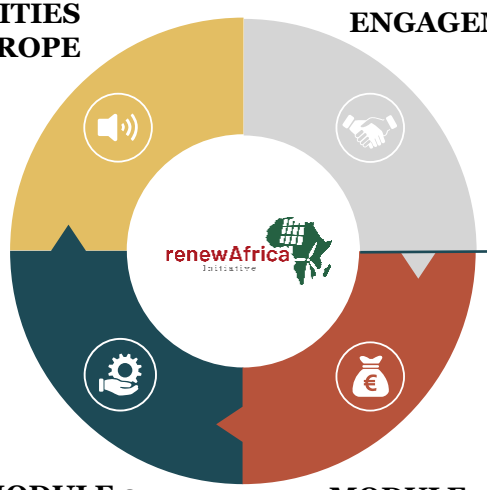
renewAfrica Initiative

MODULE 1

EXPANSION OF ADVOCACY AND OUTREACH ACTIVITIES IN EUROPE

MODULE 2

STRONGER STAKEHOLDER ENGAGEMENT IN AFRICA



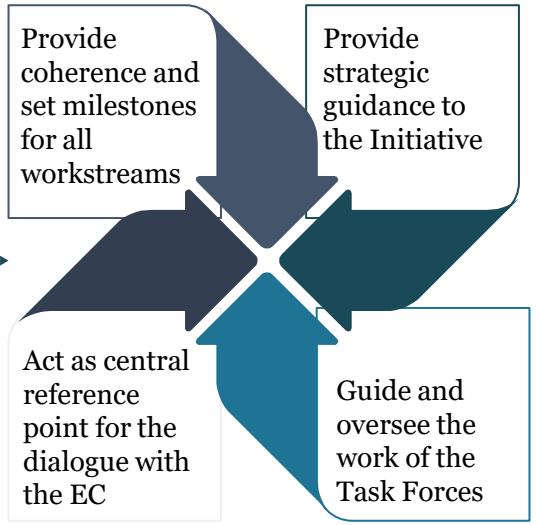
MODULE 3

FROM INITIATIVE TO FULL FLEDGED RENEWAFRICA PROGRAMME

MODULE 4

RENEWAFRICA FINANCIAL INSTRUMENT UNDER EFSD+

THE ROLE OF THE SECRETARIAT



**Multiannual Financial Framework*

Strategic initiatives

Many of renewAfrica's key deliverables for 2021 will be related to outreach in Africa

renewAfrica Initiative

renewAfrica

outreach plan 2021

Country Landing guide
specific rules on the operative phases of renewAfrica in the

renewAfrica Handbook
Living document with the details of the work done by the Task Forces

…

EU-Africa Business Summit
renewAfrica involvement in EU-Africa Summit 2021, likely Autumn 2021

renewAfrica involvement in COP26 side events

UN CLIMATE CHANGE CONFERENCE UK 2021

G20 ITALIA 2021
renewAfrica involvement in G20 side events

2021PORTUGAL.EU

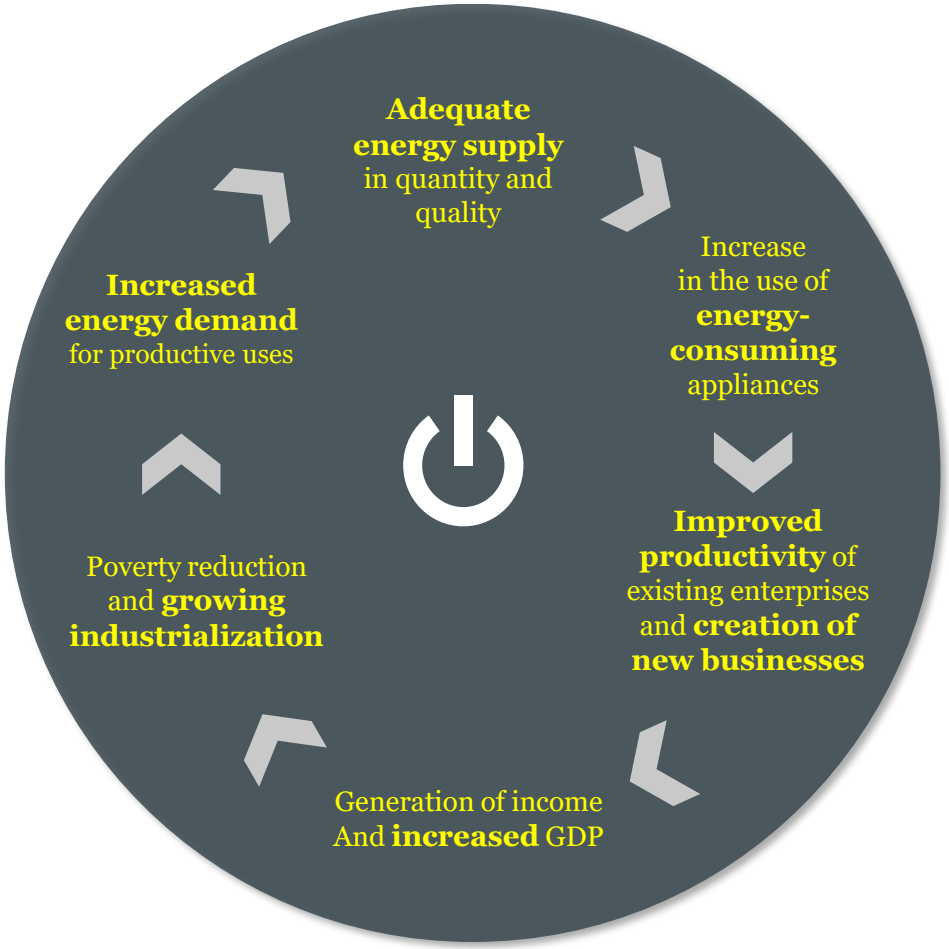
Workshops organized during the Portuguese Presidency of Council
To foster capacity building and training in Africa

Strategic initiatives

Access to Energy

Access to adequate quality and quantity of energy doesn't only mean to **reduce inequalities and improve communities' life conditions**, but also to **foster the industrialisation process**, essential for socioeconomic development.

Expanding access to energy is possible not only by bringing the grid to the most remote rural areas, but also by leveraging on off-grid solutions through **innovative, sustainable solutions** and business models built on proactive and **cross-sectorial approaches**.



The Water-Energy-Food nexus

The WEF Nexus offers an innovative perspective on bridging the energy access gap by considering **energy as an enabler for development and by emphasizing the interdependencies between water, energy and food supply systems**.

Energy
is required to extract and distribute water, as well as power agri-business processes

Water
is central to all forms of energy generation, human needs and agricultural production

Food
requires vast amounts of water and energy for production, processing and distribution

The Water-Energy-Food nexus

Innovative solutions based on a **mix of grid extension and off-grid solutions are needed to accelerate the green energy transition and access to energy**. Rural electrification is still strongly dependent on grants and subsidies: a **waterenergy-food integrated approach can bridge the gap between viable and non-viable projects** by leveraging the **productive use of energy and looking beyond the sole electricity supply.**

A paradigm shift toward a Nexus approach can make RE players access to new financing resources, creating new investment opportunities and new successful business models.

ON-FIELD PROJECTS

RES4Africa application of the WEF Nexus approach

COMMERCIAL AND INDUSTRIAL MARKET STUDY

Strategic initiatives

WEF Nexus Pilot projects

With the aim to show the financial and environmental sustainability of RE solutions, in the framework of access2energy we are supporting three pilot projects covering three different areas:

	1. WEF Nexus	2. Health	3. WEF Nexus and Smart extension
Project purpose	Construction of PV plants (150-200 kW) for productive uses (irrigation, pasteurization, meat processing, clean cooking) in two woredas in Afar region.	Construction of PV plants to ensure affordable, sustainable and reliable energy supply to CoViD treatment centres.	Construction of 3-4 MW hybrid solar plant for irrigation of 500ha + smart extension.
Country	Ethiopia	Kenya	Ethiopia

In cooperation with:

Technical Solidarity

AVSI

IFAD

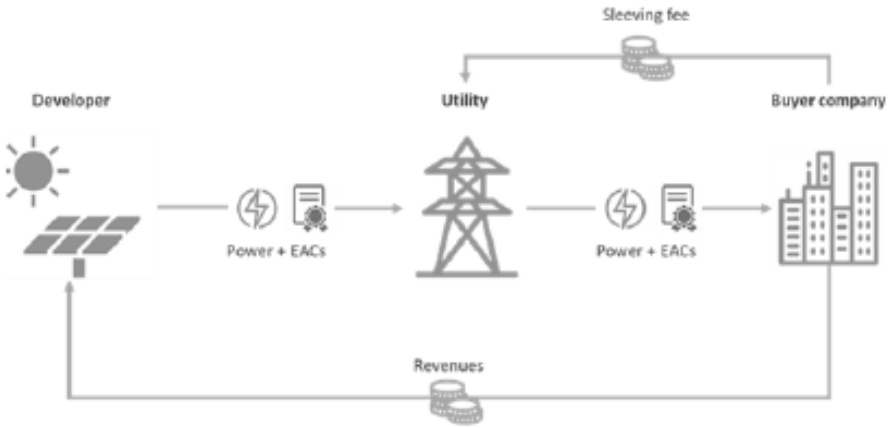
RINA

Strategic initiatives

Commercial & Industrial RE market study

Renewable energy sources allow **cost savings, long-term price stability and security of supply** for Commercial and Industrial (C&I) clients. However, despite the C&I sector's growth in recent years thanks to a combination of RE technologies' cost reductions and increasing commitment to sustainability, regulatory barriers have hampered a further growth in many African countries.

Focused on South Africa, the study presents **market trends and opportunities, business models, regulation and tariff dimensions, as well as benefits and challenges** for stakeholders, so to overcome existing barriers, create a ready C&I market and attract investments in African countries.



In partnership with

Strategic initiatives

Grids4Africa

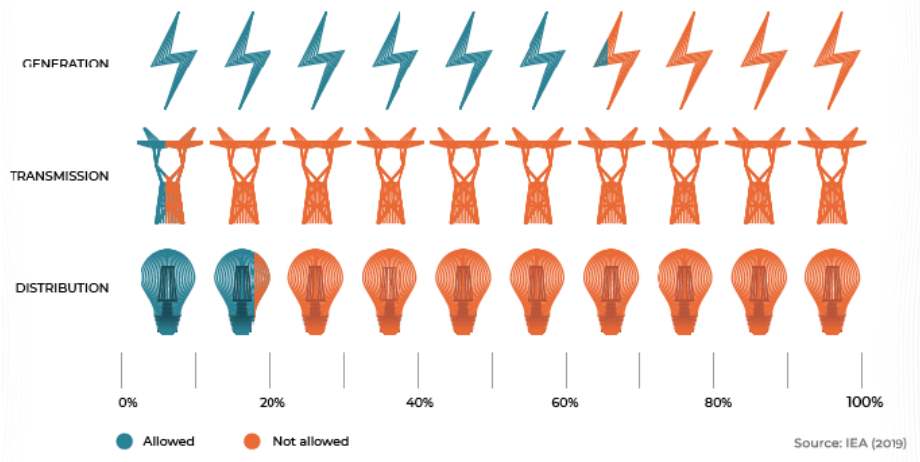
- **Electricity networks are the bedrock of our power systems**: they are key for the security of the electricity supply, for ensuring access, and for the integration of renewables. In 2040 in Africa, 90% of electricity will be provided through national grids, with mini-grids and stand-alone systems covering the remaining 10% (IEA Africa Case).
- However, **Africa's transmission network is small**, especially if compared to the continent's area. Moreover, most African countries suffer from a **low-quality and unreliable grid**, which negatively affects the economic system.
- **Fully integrated regional power markets have the potential to reduce the cost of electricity and improve the quality of the service** in many countries. However, transmission lines between national grids are insufficient in Sub-Saharan Africa even in power-integrated regions; while Northern Africa is well interconnected as a region, power trade between countries remains well under the interconnection capacity.
- **The traditional "transmission follows generation" approach no longer works**. A planned approach has to be adopted, coordinating generation and transmission development at different geographic levels (regional, national and local).

Grids4Africa

Sub-Saharan Africa's **limited and ageing power infrastructure** poses significant challenges to achieving universal access to energy. The incorporation of increasing amounts of intermittent generation and the growing need for flexibility further add to the complexity of the issue.

Although private sector participation in Africa is growing in the electricity generation segment, it remains marginal in transmission and distribution.

Private participation must increase significantly to contribute to the large-scale investments necessary to address the challenges of the next decade.



Strategic initiatives

The huge problem of periurban areas

Source: Unequal Scenes by Johnny Miller

Grids4Africa

In order to support Africa in building up modern, reliable and sustainable electricity infrastructure, RES4Africa is introducing a new focus area: Grids4Africa. The programme will initiate with a series of strategic analyses:

Grid Ownership & Management

In contrast to the prevalent liberalised electricity market model, African countries are still reluctant to open their distribution services to private players. This study proposes an analysis of private grid ownership/management models, highlighting the benefits of opening up this segment to private participation.

Regional Integration of Power Systems

Despite the existence of power pools, regional power trading in Africa remains limited. This study will assess the benefits of regional integration and trading, considering reduced LCOEs, increased RE integration, optimisation of investments, and emissions reduction; and will make recommendations for the acceleration of power pool implementation.

Innovation and Digitalisation

Africa is embracing technological disruption in a way that sets it apart from other continents. What marks out the digital revolution in Africa isn't the technology that underpins it, so much as the **growing affordability, accessibility** and, until recently, largely **untapped demand** that have made its advances so rapid.

DISRUPTION ISN'T JUST A TECH OPPORTUNITY

Connectivity is breaking down barriers between business sectors and opening up new markets for industrial and consumer goods.

ECOSYSTEMS OF INNOVATION

Africa has a growing array of tech hubs which create opportunities for established businesses to partner with start-ups and create thriving ecosystems

ENLARGED CONSUMER CLASS

By making products and services cheaper, more accessible and easier to use, disruption is greatly enlarging Africa's consumer class

INCLUSION AND DIVERSITY

Digitalisation and online technologies can benefit many of those who have been excluded from society, such as women, rural populations and the unbanked, fostering inclusion and diversity

Innovation and digitalisation as drivers for Africa's energy transformation

The greatest potential for digitalisation in energy is its ability to break down boundaries between energy sectors, increasing flexibility and enabling integration across entire systems.

RES integration

Digitalization can help integrate variable renewables by enabling grids to better match energy deman

Connectivity

Connectivity, combined with electrification and decentralisation, holds the potential to create a highly interconnected system, transforming the way electricity is supplied and consumed

New Digital tools

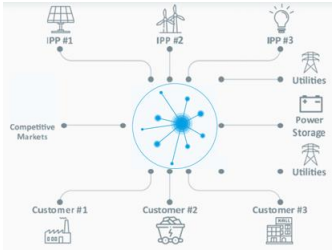
Thanks to the new digital tools, it is possible to significantly reduce energy waste and losses in all sectors. Disruptive technologies, safer, more effective processes, constantly updated new skills: these are the innovative solutions to produce clean energy efficiently and sustainably

Energy and Agriculture

Digital technology has a strong role to play in supporting also African agriculture, bringing environmental sustainability in solar plants. This will create more jobs for young Africans boosting sustainable development of the continent

Innovation & Digitalization: The role of RES4Africa

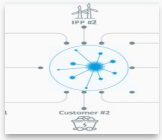
- Boost the **adoption of innovative *low-cost* digital solutions** to accelerate Africa's sustainable electricity systems transformation
- **Enhance knowledge and human capacities** in the field of innovative technologies for the energy transition
- **Support African countries** in scoping and selecting innovative and technological solutions to be adopted to increase the reliability, affordability and sustainability of electricity service
- **Demonstrate** with evidence-based analysis the **benefits of innovative solutions** in addressing Africa's electricity service challenges
- Support the implementation and validation of **nexus-based projects to showcase** the potential of RE to fostering access to electricity, productive energy demand and socio-economic impact



RES Development and Digital Transformation must go hand in hand together with trained local resources for creating sustainable local wealth

Strategic initiatives

Innovation & Digitalization: the series of Webinar by R4A
1st on April 14th

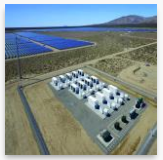


Disruptive Technologies for Africa: riding the wave of the digital revolution

How disruptive technologies can impact the Sustainable Development Goals in Africa? A look across new technologies which are ready to accelerate the development of RES in Africa

Shaping the smart and sustainable energy infrastructure for the future of Africa

It's important to ensure that grids will be able to host increasing shares of RES, capable of coping with new needs coming from sectors (transport, homes, industry), while managing the integration of increasing Distributed Energy Resources



How to Improve the Flexibility of the Grid using Storage Systems

Energy storage technologies are required to facilitate the continuous supply of electricity as per the demand of locality and play an important role in balancing and creating a more reliable grid system

Digital transformation of energy management in Africa: solutions for mini grids

By using new technologies, mini grids aim to develop business models and technical solutions to accelerate access to energy

Electric Mobility Opportunities for North Africa

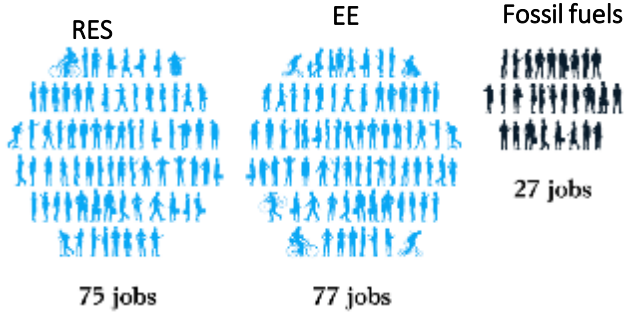
It is time to explore the electric mobility market examining some of the barriers and enablers of uptake, and presents some best practices from other countries

Job and socioeconomic impact of clean energy

Context:

With only 2% of global RES addition in the last 10 years, Africa is not only missing the opportunity to achieve SDG7 but also to **benefit from the wide positive socio-economic** impact of RE investments in terms of: sustained economic growth, local value chains development, creation of local jobs, …

Jobs created per 10 million $ in spending (direct and indirect)[1]



Project scope:

- **Macro socio-economic analysis** of the African continent with focus on the role of RE and sustainable practices in **building a resilient economy and build back better.**
- Impact, opportunities and challenges of a clean energy transition for the Africa's **socio-economic and employment sectors.**
- Focus on the **role of the private sector** as key actor for the **next socio-economic transformation** of Africa built on sustainable investments and shared value.
- **Institutional, policy and financing transformations** necessary to maximise jobs and socio-economic impacts of clean energy investments.

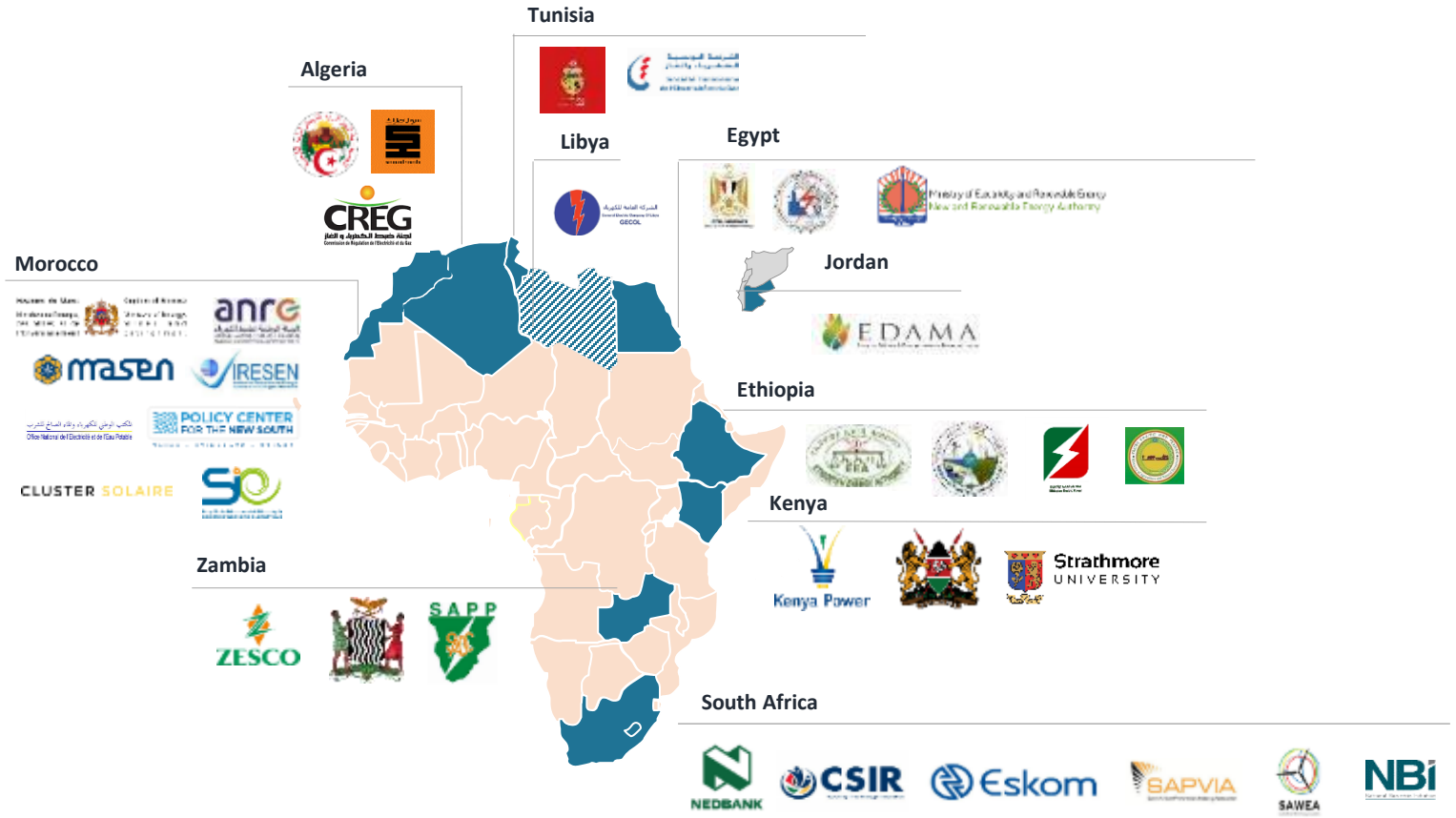
Authorship:

1) Source: H. Garrett-Peltier, Green versus Brown: Comparing the emloyment impacts of energy efficiency, renewable energy, and fossil fuels using an input-output model, *Economic Modelling*, 2017

Strategic initiatives

Regional Programmes

RES4Africa has established and consolidated strong partnerships at the national and local level, in order to deepen its understanding of the demand side and to promote the use of renewable energy as a way to achieve climate and sustainable development targets.

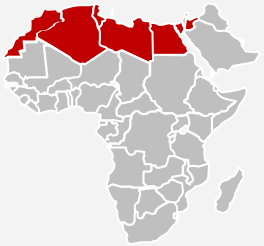


REGIONAL ORGANIZATIONS

RCREEE
MEDREG
EDAMA
Med-TSO
EACREEE
African Union

Mediterranean Program 2021

CROSS CUTTING TOPICS



- Barriers to Renewable Energy Investments
- Electric Mobility
- Renewable Energy Certificates
- Agrivoltaic
- Storage Flexibility

COUNTRY FOCUS TOPICS

- Grid
- Green Hydrogen
- Public Lighting
- Rural Electrification

- PPA Bankability

- Autoconsumption

Areas of Focus

- DIGITALISATION OF THE ENERGY SYSTEM
- RURAL DECENTRALISED ELECTRIFICATION
- SMALL PV
- STORAGE
- ELECTRIC MOBILITY
- GREEN HYDROGEN
- DESALINATION OF SEAWATER
- ENERGY TRANSITION
- RENEWABLE ENERGY CERTIFICATE SYSTEM
- PUBLIC LIGHTING

Since its inception in 2012, **RES4MED** has promoted renewable energy in Southern-Mediterranean countries as a cost-effective, sustainable, and reliable energy strategy to meet growing energy demand.

RES4MED applies a “bottom-up” approach that seeks renewable energy solutions by encouraging a direct dialogue between private and public Mediterranean stakeholders.

Focus on Morocco

Promoting and energizing the **cooperation between the Ministry of Energy**, Mines & Environment of the Kingdom of Morocco (MEME) in the fields of electricity and RE.

MEME and RES4Africa will coordinate specific working groups, each of these focused on one of the activities above.

ENERGY TRANSITION

- Decarbonisation pathway for Morocco
- Green Hydrogen study
- Webinar on electric mobility
- Desalination of seawater
- Agrivoltaic

ENERGY INTERCONNECTION

- Cross border PPA study

CAPACITY BUILDING

- Advanced Training Course
- MGA

RURAL DECENTRALIZED ELECTRIFICATION

- Small PV capacity study

RENEWABLE ENERGY CERTIFICATE SYSTEM IMPLEMENTATION

- Webinar on RE certificates

GRID FLEXIBILITY

- Study on Moroccan grid

DIGITALIZATION : ENERGY AND NTIC

- Explore public lighting business models

Regional Programmes

Sub-Saharan Africa Program

Sub-Saharan Africa is home to some of the **most rapidly growing economies in the world**, and is set to experience rapid population growth and unprecedented urbanisation in the next decades.

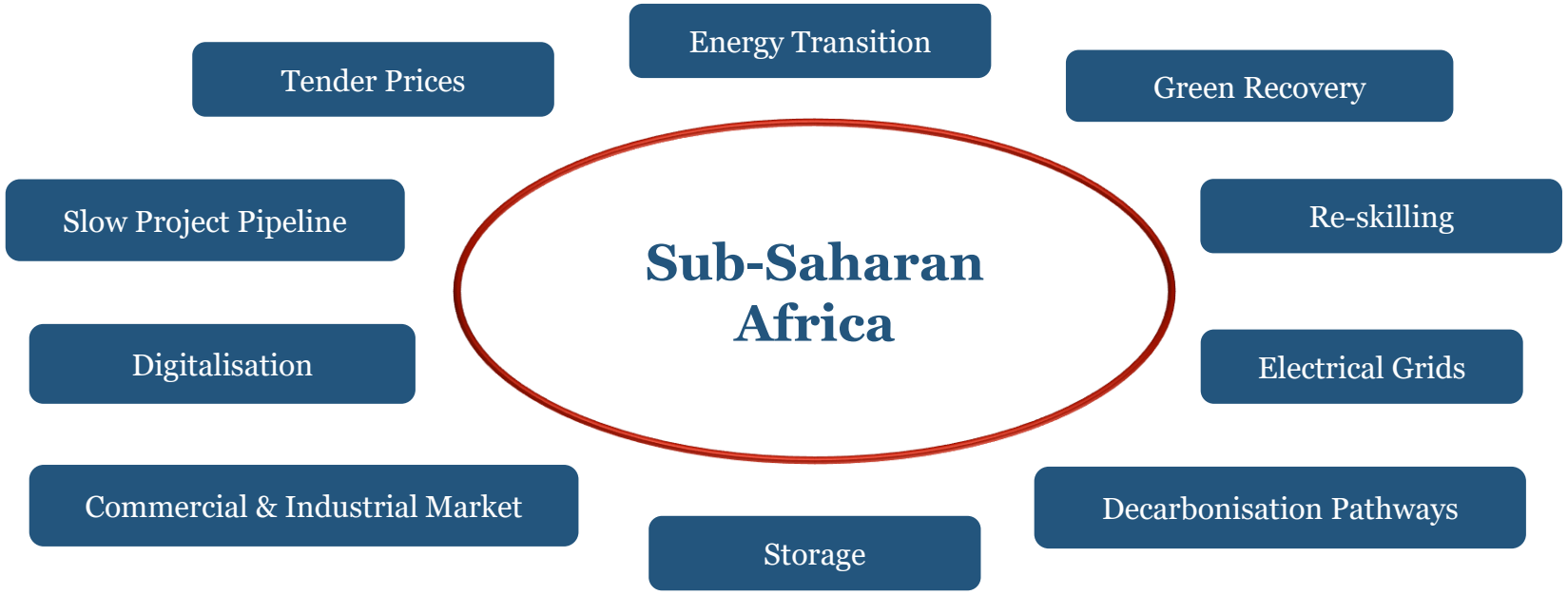
Enabling continued sustainable development, expanding access to electricity and ensuring that rising demand is met in a clean and cost-efficient way requires that sub-Saharan states capitalise on their abundant renewable resources by **expanding their RES generation capacity and adapting their power systems to incorporate more intermittent generation**.

RES4Africa is supporting the **Sub-Saharan region's clean energy transition through high-level dialogue and research guided** by local interests in four key countries: Ethiopia, Kenya, South Africa and Zambia.

Sub-Saharan Africa Program

Sub-Saharan Africa is home to some of the most **rapidly growing eco**nomies in the world, and is set to experience rapid **population growth** and unprecedented **urbanisation** in the next decades.

Enabling continued sustainable development, expanding **access to electricity** and ensuring that rising demand is met in a clean and cost-efficient way requires that sub-Saharan states capitalise on their abundant **renewable resources** by expanding their RES generation capacity and adapting their power systems to incorporate more intermittent generation.

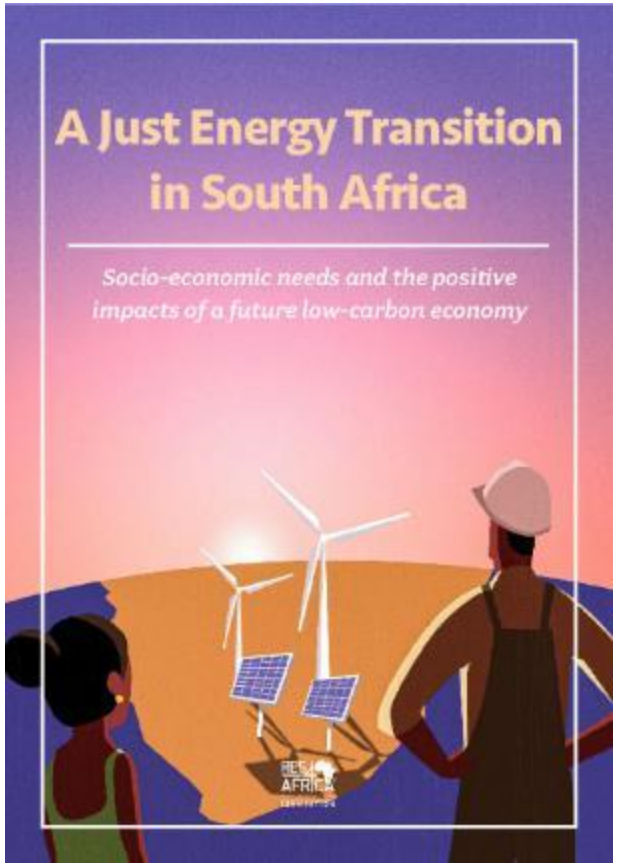


Focus on South Africa

South Africa's Integrated Resource Plan 2019 foresees the **decommissioning of 11GW of coal and the addition of 6.8 GW of solar and 15.7 GW of wind generation capacity**. The country's energy transition will carry **socio-economic implications**: RES4Africa aims to **play an active role on the ground by contributing to the roadmap design for an effective and just energy transition**.

RES4Africa, with its local partners, aims to support South Africa's transition through a series of new studies and on-the-ground initiatives, including:

- **Reskilling Lab:** a capacity building project offering training and reskilling to coal workers;
- **AM-Powering Connexions:** monthly morning appointments for the South African energy community;
- **Executive Training Seminars:** held locally by RES4Africa members.



Focus on South Africa

Independent Transmission Scenario

Lesson learned from international experiences of unbundling to support divisionalisation roadmap

Decarbonisation

Modelling decarbonisation scenarios

Storage Solutions

Enabling storage applications through regulation

Commercial & Industrial Market

Overcoming regulatory barriers and accelerating investments

Stakeholder Engagement

AM-Powering Connexions

Localisation of RES Sites

Identifying ideal RES deployment locations

Capacity Building

Executive Seminars

MGA Proposal

Reskilling Lab

Regional Programmes

Ongoing studies in South Africa

Independent Transmission Scenario Study

The purpose of this study is to identify lessons learned from international experiences of unbundling and RES deployment to inform policy-making for the separation of transmission and RES integration in South Africa.

Decarbonisation Study

This study aims to provide a decarbonisation roadmap for South Africa, defining the country background in terms of GHG emissions, modelling selected alternative decarbonisation scenarios, and providing policy recommendations.

C&I Market Study

This study consists of an analysis of the C&I market segment in South Africa to understand the main potential sectors, players, and opportunities, and propose available solutions to overcome barriers in the current regulatory framework whilst accelerating investments.

Localisation of RES Sites Study

This technical analysis aims to quantify variable renewable energy potential in different regions of South Africa and identify ideal RES deployment locations taking into consideration grid constraints.

Training and Capacity Building

Capacity building **is key to foster local project development**. RES4Africa capacity building **trainings** and **executive seminars** include courses on technical, economic, policy, and business-relates aspects of large-scale and decentralized renewable energy technologies, to **both middle managers** and **technical practitioners**

RES4Africa capacity building and training efforts are based on **members' expertise to enable skills and knowledge transfer that support long-term RE market creation.** The Foundation aims to foster **local ownership** to enhance project sustainability, **build jobs** in the renewable market and **develop local capacities** to enhance the development of local RE markets.

Advanced Training Course

*The ATC focuses on **key technical, regulatory, financial and sustainability** issues for RE. It's delivered by experienced managers, professionals and academics*

Micro Grid Academy (MGA)

*The MGA is the vocational training program based in Nairobi, that aims at **creating a skilled and conscious workforce to deploy decentralized renewable energy solutions***

Executive seminars

*Local and online events targeting **managers and professionals** on specific tailored topics on RE-field, requested by African ministries, utilities or regulators.*

Training and Capacity Building

Advanced Training Course (ATC)

The **Advanced Training Course** aims at providing participants with a set of technical, economical and regulatory tools to assess the most appropriate solutions in different energy contexts for an efficient and effective integration of renewables.

- Launched in 2014, held in Milan for two weeks (2020 edition: online);
- Addressed to **highly achieving professionals and middle managers** in African RE sector;
- Aimed at supporting the long-term market creation, by providing the local workforce a **technical**, **financial, regulatory knowledge**;
- Delivered by experienced managers, professionals and academics.

7 training editions

(6 training in presence and 1 online)

More than 570 participants

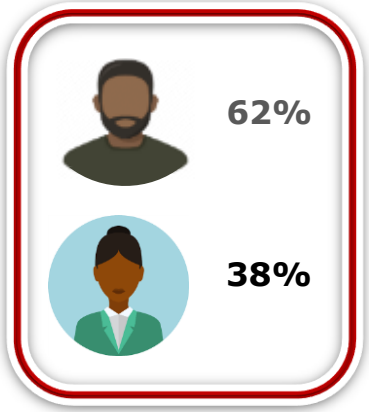
(including online course)

More than 30 countries from African continent

Micro-Grid Academy (MGA)

The Micro-Grid Academy (MGA) is a **vocational capacity building programme** that aims to create skilled and conscious workforce to deploy decentralised renewable energy solutions in East Africa and beyond. The MGA builds on local partnerships to support a just energy transition and enhance **access to energy** in local communities while fostering **local enterprise, job creation and youth empowerment** through supporting innovative experimental activities and ideas.

In 2020 RES4Africa Foundation launched the MGA Young **Talents of the Year Award** to support brilliant young talents, coming from the MGA alumni community, addressing major environmental and social challenges that hamper the development of African countries. Through this initiative, the Foundation awards the best ideas submitted by young African innovators, contributing economically to their realization.



Over 14 trainings editions and 1 Young Talent Award

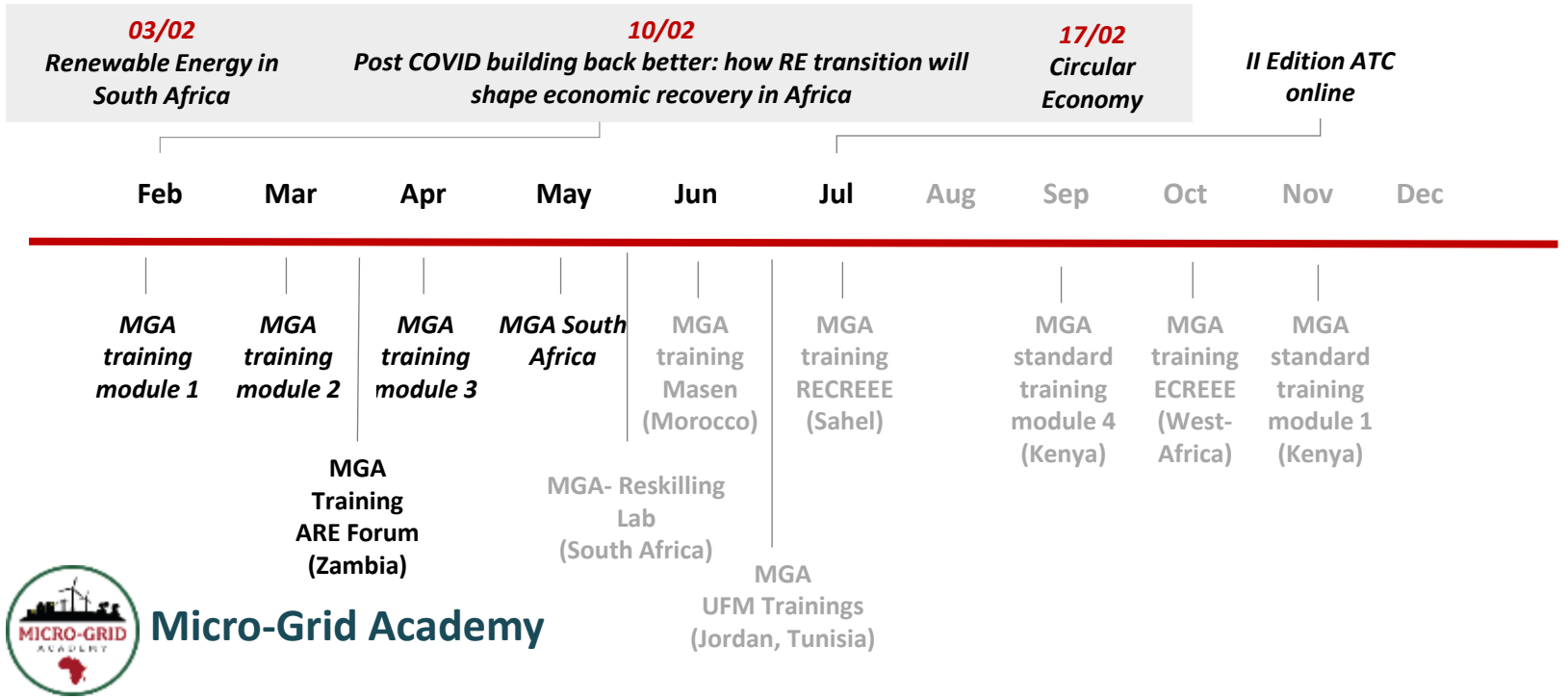
Over 550 students have benefited from full scholarships and 30 local trainers.

Participants from more than 15 countries

ATC and MGA webinars planning

Advanced Training Course

Online approved trainings in black
Proposed Training in grey



Micro-Grid Academy

Executive Seminars

Executive seminars are **high level workshops** developed by RES4Afica in partnership with key local stakeholders, with the support of our members and universities. They target **managers and professionals** on specific topics related to the RE-field and are requested by African ministries, utilities or regulators.

Thanks to the trusted, relations that RES4Africa built in the last years with high level local stakeholders, the Foundation had the chance to organize executive seminars for CEOs executive directors and first line managers on strategic issues, such as RE grid integration, tendering mechanism for international auctions and other local energy key issues.

Previous editions include **Morocco, Tunisia, Algeria, Egypt, Jordan, Kenya, Ethiopia and Zambia,** while some editions have been carried out for the **European Commission** and for **Italian Ministries** as well.

In partnership with

Ministry of Foreign Affairs and International Cooperation

ZESCO

REPUBLIC OF KENYA

MINISTRY OF ENERGY AND PETROLEUM

Kenya Power

European Commission

Next Events

G20 Italian Presidency

22-23 Mar

WG 1 Resilient, Smart and Sustainable Cities

26-27 Apr

WG 2 Sustainable recovery and opportunities offered by innovative technological solutions

26-27 May

WG 3 Green Finance boost for an inclusive and sustainable Recovery

20-21 Jul

WG 4 Ministerial preparation

23 Jul

G20 Ministerial Energy/Clima *(Naples)*

April
Collateral event

"Challenges and opportunities for urban and peri-urban electricity provision"

Presentation by RES4Africa on access to electricity services in urban and per-urban areas. More than half the world population already resides in urban areas setting to continue growing rapidly in regions with low average electricity access such as sub-Saharan Africa. Addressing urban and peri-urban populations could rapidly and cost-effectively improve the electrification of poor households, thus moving closer to the achievement of SDG7

May
Collateral event

"Digital transformation of energy management in Africa"

Presentation by RES4Africa on innovative technology and digitalization. Renewables, storage, smart networks, and digital services are changing the way energy is generated, transported, managed and used. By using technologies including sensors, Big Data, mobile payment and energy storage, mini grids aim to develop business models and technical solutions to accelerate access to energy specifically in developing countries.

June
Collateral event

"Enabling Africa's green recovery: solutions to scale-up renewable power in Africa"

Organized by RES4Africa focusing on challenges and the benefits of a Green Recovery in Africa. Relying on clean technologies and sustainability can open the road for the achievement of a triple dividend: accelerate economic recovery, enhance climate resilience and at the same time reduce pandemic risk. Private and public actors need to cooperate to find joint solutions to scale-up competitive investments and support inclusive and sustainable recovery.

COP26 Italian-UK Co-Presidency

30 Sep-1 Oct

Pre-COP26 YOUTH

7-8 Oct

Incontri con l'Africa (Ministerial Conference)

1-11 Nov

G20
COP26
Glasgow

Presentation of **Micro-Grid Academy** and **Young Talent of the Year Award**

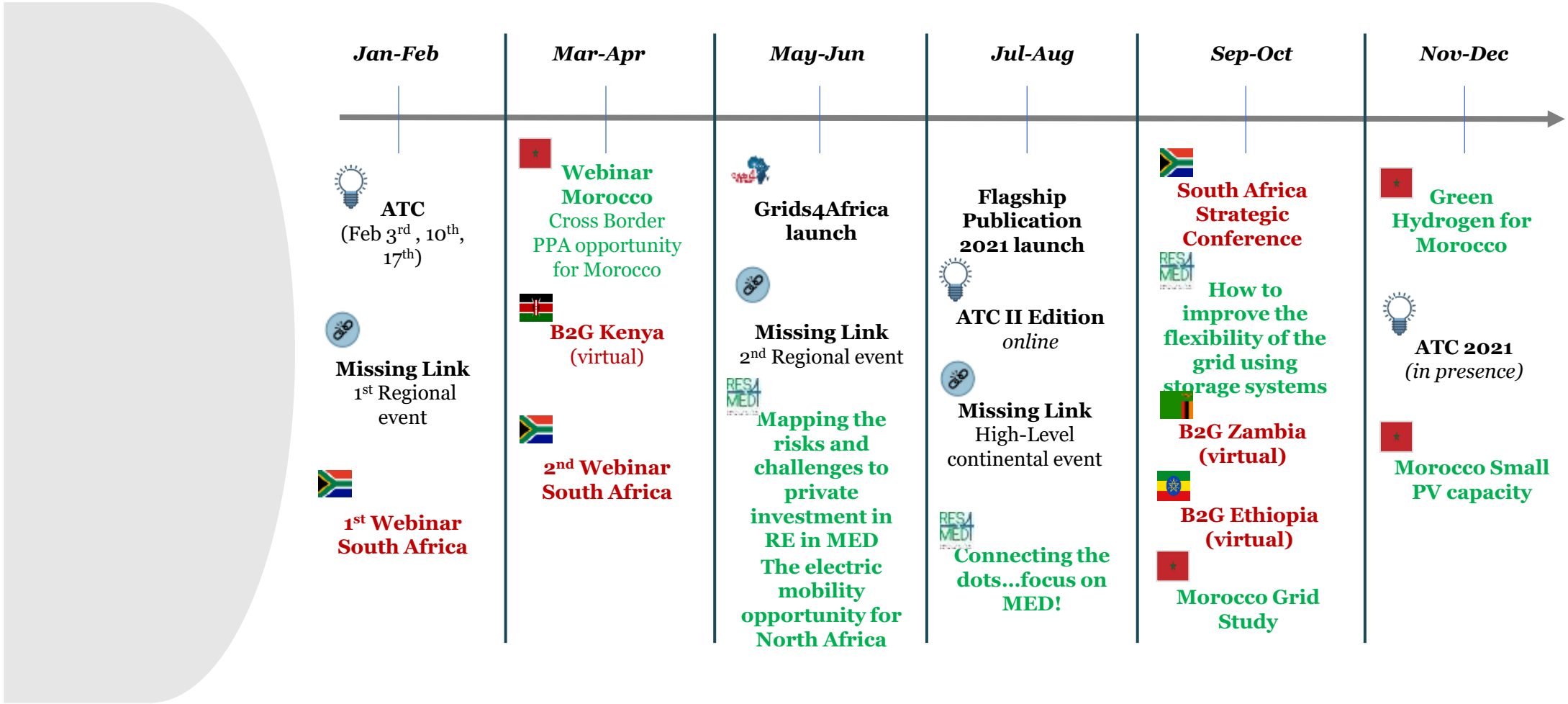
One or more panels moderated by young and high-level representatives of African organizations operating in the renewable sector who will discuss the relevant macro-topics related to climate change. There will be an opportunity to talk about the innovative projects of the winners of the call for young talents from the Micro-Grid Academy, In parallel, a photo / video contest will be organized, the finalist products will be published online before the side event.

High-Level Panel on Renewable Energy

The world is shifting toward renewable power with one-quarter of global electricity coming from renewables. In 2019 alone, two-thirds of the additions to the global power system came from modern renewable technologies. But only some 2% of this new power was deployed on the African continent, even though it has abundant renewable energy resources.

By harnessing its indigenous renewable resources, Africa can leapfrog into a sustainable, secure energy system, one that fosters resilience and equality and protects both livelihoods and the environment. The session will discuss key elements and partnerships necessary to accelerate Africa's green energy revolution

RES4Africa Webinars 2021



How to know more about res4africa

Follow us on our **social media**: we update our accounts daily with
information about our activities and news from the RE sector.

Visit our **website**: you will find everything you need to know about the Foundation, past projects, ongoing initiatives and publications.

Sign up to our **newsletter**: we will send you a selection of the most important news, as well as editorials and comments on the most interesting topics in the world of renewables.

Take part to our **events and webinars**.

Read what international press says about us in our **press room**.

RES4AFRICA

RENEWABLE ENERGY SOLUTIONS FOR AFRICA

FOUNDATION

OUR CONTACTS

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The time to act is now:
in Africa, with Africa, for Africa