OVERCOMING AFRICA’S ENERGY ACCESS GAP:
Strategic priorities for scaling up renewables
RES4Africa's mission is to create an enabling environment for renewable energy investments in African countries to meet local energy needs for sustainable growth.

As a private sector and member-driven organization, RES4Africa acts as a bridge between members and partners to exchange perspectives, expertise and initiatives.
Workstreams

**Promote policy dialogue** and deliver advisory services to countries on what it takes to enable RE investments

**Spearhead strategic initiatives** to catalyse innovative market solutions

**Build capacity** to empower communities, create businesses, and transform institutions
RES4Africa Foundation gathers the perspective and insights of a wide range of actors across the RE value chain.

**Members**

![Member Logos]

**Partners**

![Partner Logos]
RES4Africa relies on a strong partnership network to support the successful rollout of its activities and pursue its mission.

**The United Nations community**

**International organisations**

**European partners**

**African institutions**
What we have done so far

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

2. ALGERIA
   - 2 Executive Seminar with local stakeholders
   - 1 special session within Italian event
   - Studies
   - Job creation
   - Auction analysis
   - Grid integration
   - 16 participants to ATC

3. TUNISIA
   - 1 local event
   - 1 Executive seminar
   - 1 special session within Italian event
   - 1 Country profile
   - Studies
   - Job creation
   - Auction analysis
   - Survey on investment risks
   - 17 participants to ATC

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

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

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

7. 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 ATC
   - 5 Micro-Grid Academy trainings, over 200 participants

8. SOUTH AFRICA
   - 1 local event
   - 2 participants to ATC

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

REGIONAL
- 1 Training initiative (MGA)
- Studies
  - Socio-Economic study Western Africa
  - Decentralized RE solutions in Africa
  - Innovative Business models to power Africa
  - White paper “Where to invest in renewables in Sub-Saharan Africa”
  - White paper “What does it takes to accelerate RES investments in Africa”
  - “Applying the Water–Energy–Food Nexus Approach to Catalyse Transformational Change in Africa” study
  - “RE-thinking Access to Energy Business Models” study

9. ZAMBIA
   - 1 local event
   - 1 Position papers Book
   - RE Grid Integration study (ongoing)
   - 1 Executive Training
   - 14 participants to ATC
   - 1 Micro-Grid Academy training, 60 participants
RES4Africa holds a number of events to connect different stakeholders from the public and private sector to forward the deployment of renewable energy. These occasions provide participants the opportunity to gain updates on the renewable energy sector, to deepen their knowledge on specific topics, as well as to establish new partnerships.

<table>
<thead>
<tr>
<th>Strategic conferences</th>
<th>Business-to-government (B2G) workshops</th>
<th>Executive seminars</th>
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</table>

What we have done so far: events
What we have done so far: publications
Africa's demographic and economic growth is asking for more energy. Despite progress made, access to electricity will still represent a main issue in the coming decades. In many African countries, the renewable energy transition lags behind.
Africa is the world's fastest growing continent in demographic terms. Its economic growth is projected to accelerate in the upcoming years, but it remains insufficient to address structural challenges. Energy demand is expected to increase faster than anywhere else globally.
Africa has the potential to meet nearly a quarter of its energy needs from clean RE by 2030, contributing to providing half the continent’s total electricity generation capacity.

1. Huge local renewable energy sources
   - On average 2,000 kWh/m² of irradiance level for more than 320 d/y
   - 1,300 GW of wind power onshore and offshore
   - 15 GW of geothermal power
   - ~ 300 GW of hydropower

2. Cost-competitive modular technologies

3. Easily scalable to address Africa’s energy access challenge
Africa's RE potential

Electricity generation for access, 2017-2030
325 TWh

By connection type
- On-grid 73%
- Off-grid 18%
- Mini-grid 9%

By fuel source
- Hydro 32%
- Solar PV 30%
- Oil 8%
- Coal 15%
- Gas 9%
- Other renewables 6%

Source: IEA - Energy Access Outlook 2017
Energy access solutions

RE technologies are the most suitable option to provide energy access solutions in Africa.

A holistic strategy of multiple, versatile and innovative solutions are needed to achieve universal energy access in Africa.
Africa's RE potential is untapped

Global installed RES generation capacity by region - GW

Δ 2010-19: + 1.476 GW

Out of the 1.5 TW installed 58% was in Asia Pacific, 7% in Latin America, and only 2% in Africa.

Source: IEA - WEO 2018, New Policies Scenario; United Nations - Population Division; EGP Analysis
Strategic initiatives

The renewAfrica Initiative
The objective of the renewAfrica Initiative is to boost European investment in renewable energy projects in Africa by providing investors with a “one-stop-shop” EU support programme for financing, credit enhancement, and risk mitigation, while providing African governments with advisory and knowledge sharing services.

The “Missing Link” Programme
An assessment, from a foreign investor point of view, of the effectiveness of African countries’ regulatory frameworks in enabling RE investments. It focuses on target countries and includes a benchmark analysis.

The Water-Energy-Food Nexus
The Water, Energy and Food Nexus approach reveals business cases that reimagine energy connecting with water and food to respond to energy access and development needs.

Country Dialogues
RES4Africa brings together the most important stakeholders of various African countries, as well as industry leaders and international organisations, to advance the renewable energy transition.
The objective of the renewAfrica Initiative is to *boost European investment in renewable energy projects in Africa* by providing investors with a "one-stop-shop" EU support programme for financing, credit enhancement, and risk mitigation, while providing African governments with advisory and knowledge sharing services.
Africa's need for private investment

- Over the past 10 years, RES capacity more than doubled, with a minimum annual growth pace of 5% all over the world. Out of the almost 1500 GW added over the past decade, only 2% was in Africa.
- Filling Africa's energy access gap by 2030 will require upward of 300 GW of renewable capacity, equivalent to roughly $500bn or $32bn annually.
- Most of the investment needed must come from the private sector, as public financing is not expected to exceed its current level of 15%. However, in the current African energy market environment, mobilizing that private capital is hampered by a multitude of risks.

Risk mitigation can take 3 dimensions:

1. **Enabling policies** to create stable and predictable investment environments
2. **Structured finance** to make renewable energy projects accessible to mainstream investors
3. **Financial risk instruments** to reduce risk exposure of private investors
A preparatory study to assess market gaps identified more than 75 existing RE support schemes of which 17 are most significant. They were screened following specific criteria, including:

- support for large-scale RE generation (> 50 MW)
- financing and risk mitigation solutions offered
- technology and geographical coverage
- presence of EU actors

Key results of the preparatory study:

**RISKS:** the legal/regulatory and political framework is the most uncovered risk.

**INVESTMENT SUPPORT:** within the project cycle, most of the instruments analysed lack support in the areas of transparent and clear tender procedures, international RFP standard, and active stakeholder engagement.

**BEST PRACTICES:** among the 17 support schemes deemed most relevant, only the European Investment Platform and Scaling Solar provide an overarching risk mitigation tool.
An innovative EU Support programme for RE investments in Africa is needed to...

- Facilitate high level dialogue with governments and authorities
- Design structured tender processes and standardized documentation
- Set the stage for the right investment environment
- Provide financial support and risk mitigation tools
- Cover more African countries and technologies
- Promote capacity building and knowledge transfer
renewAfrica's objectives

renewAfrica will set up a comprehensive one-stop-shop EU programme to support RE investment in African countries, comprising:
• financing, credit enhancement, and risk mitigation tools for investors,
• advisory and knowledge sharing services for African governments.

renewAfrica will cover a broad range of RE technologies, across all African countries, and for different project sizes including utility-scale RE.

Its approach rests on the logic of de-risking: by diminishing the risk profile of renewable energy projects, renewAfrica aims to be a gamechanger in unlocking transformative RE investments on the African continent.
### renewAfrica's Declaration of Intent signatories

<table>
<thead>
<tr>
<th>Finance</th>
<th>Think tanks and consulting firms</th>
<th>Independent Power Producers</th>
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<tr>
<td>cdp</td>
<td>pwc, AFRY</td>
<td>enel, edp, renewables powered by nature</td>
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renewAfrica approach has no equals in the EU

Reducing fragmentation will enable the EU to maximize the impact of its existing instruments. A one-stop-shop will unlock synergies among multiple existing programs.

Being managed in close partnership with African countries, renewAfrica will be able to promote the advantages of RE and invigorate the appetite of governments for clean energy solutions.

As a reference point for all EU energy support schemes, renewAfrica is a powerful vehicle to implement EU green deal policies and disseminate best practices of the European RE industry.

Removing limits in terms of country coverage, technology type, and project size will catalyse investments and the scale that African energy markets demand.
RES4Africa Foundation 2020 Flagship chapters:

**01**
Africa's growth is asking for energy

1.1. Africa is committed to provide sustainable energy for all.
1.2. The energy access gap is widening (access to date, population growth, and urbanization).
1.3. Energy demand is expected to increase faster than anywhere else globally.
1.4. Reaching scale is a cornerstone for affordable, sustainable energy for all.

**02**
Achieving Africa's energy investments at scale

2.1. Market readiness (summarize findings of the what does it take).
2.2. Improving and expanding infrastructure.
2.3. Strengthening institutions for effective markets.
2.4. Sustainable energy production makes economic sense.

**03**
Building a sustainable pipeline of bankable energy projects

3.1. A multitude of support schemes exists.
3.2. Gap analysis of existing risk mitigation instruments.
3.3. Learning from best practices.

**04**
renewAfrica: supporting African countries' energy transition

4.1. renewAfrica: technology neutral and ambitious.
4.2. Reducing fragmentation to enhance effectiveness.
4.3. Enhancing partnerships for wider impact.
4.4. De-risking investments: from policy to financing.
4.5. The road ahead.
In this white paper RES4Africa analysed RE financing mechanisms’ best practices and weaknesses, thus stressing the need for a new instrument to support large scale RE plant development in Africa.
The “Missing Link” programme

An assessment, from a foreign investor point of view, of the effectiveness of African countries' regulatory frameworks in enabling RE investments. It focuses on target countries and includes a benchmark analysis.
What does it take to accelerate RE investments in Africa?

• What is the current degree of performance of RE investment frameworks in African countries?
• How have other countries attracted RE investments and what lessons learnt?
• How can best practices be applied to Sub-Saharan African markets and what recommendations can be made to policy makers?

A clear market governance to ensure enforceability of targets and plans is fundamental for clear signals to investors.

Cost-reflective prices and fair competition among technologies in the market must be ensured to benefit from RES competitiveness.

Technical regulations must ensure adequate grid development and flexibility, while viable routes-to-market are needed to facilitate RES IPPs integration.
The “Missing Link” programme

The programme, to be carried out in collaboration with UNECA and in partnership with Enel Foundation, aims to accelerate Africa’s sustainable energy transition and attract significant private investments to expand Africa’s future energy markets.

Applying a private sector perspective, a study will assess the effectiveness of African countries’ regulatory frameworks in enabling RE investments through the analysis of the market openness, attractiveness and readiness of the electricity sector.

The resulting 14 country reports and 1 continental report will be presented at dissemination events. Key-findings, cross-country patterns, common challenges and opportunities will be key to build consensus and define a road map for change.
The “Missing Link” programme’s analysed dimensions

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<td>Assess national commitment towards RES development and openness of renewable market to private sector investments</td>
<td>Assess supporting policies and instruments to promote the development of renewable energy sources and ensure attractiveness of renewable market for private investors</td>
<td>Assess the readiness of national power market to efficiently integrate and manage increasing capacities of variable renewable generation</td>
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<tr>
<td>• Energy strategy</td>
<td>• Production-based supporting schemes</td>
<td>• Network development regulation</td>
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<tr>
<td>• Market framework and governance</td>
<td>• Investment-based supporting schemes</td>
<td>• Routes-to-market</td>
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<tr>
<td>• Investment regulation</td>
<td>• Cost reflective electricity prices</td>
<td>• System operation regulation</td>
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<td>• Grid connection regulation</td>
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The Water-Energy-Food Nexus approach reveals business cases that reimagine energy connecting with water and food to respond to energy access and development needs.
The Water-Energy-Food Nexus

- Securing access to water, energy and food is vital for human wellbeing and sustainable development. The interactions between the water, energy and food supply systems are manifold.

- Increasing trends in water and food consumption highlight the opportunity to make sustainable energy a key pillar for the development of water and food industries.

Energy is required to extract, process and distribute water, as well as power agricultural and 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, distribution, storage and disposal of food products.
Strategic rationale towards Water-Energy-Food Nexus

RES4Africa aims to lead this process jointly realizing studies and projects with international development institutions active in the water and food sectors, and attracting investors in the agro-industrial sector.

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.

RES4Africa application of the WEF Nexus approach

Small scale pilot projects

Large scale: C&I applications
WEF Nexus application: commercial and industrial energy market

- Africa’s commercial and industrial energy market is still widely unexplored.
- C&I clients need reliable and affordable power to run their businesses, but they are still affected by the low quality of the national grid and still pay indirect costs for production.
- RES4Africa is carrying out a study to identify the main potential sectors and players, and to evaluate how to overcome barriers and speed up investments. The preliminary results will be presented in Spring 2020.

74MW of installed capacity in commercial and industrial solar in Sub-Saharan Africa (excluding South Africa)

Mining, manufacturing and public buildings account for about 75% of total installed capacity

420MW of installed solar capacity selling electricity to the grid in Sub-Saharan Africa (excluding South Africa)
Publications on the Water-Energy-Food Nexus

RES4Africa’s 2019 Flagship Publication looks at how the Water-Energy-Food Nexus reveals opportunities to overcome Africa’s energy access gaps by considering energy as an enabler for development.

The study, looking at a project in Tanzania, concludes that the integrated WEF Nexus approach has had more than twice as much economic impact than sole energy supply.

The study analyzes potential business models, as well as key enabling factors, to reach financial sustainability of rural electrification through decentralized renewable energy solutions and productive uses of energy, with a focus on the WEF Nexus approach.
Recommendations for action

1. Break the silo mentality and embrace a WEF Nexus strategy

2. Walk the WEF Nexus talk and facilitate financing

3. Build an inclusive and supportive WEF Nexus business environment

4. Dedicate efforts to capacity building on the WEF Nexus

5. Fill the WEF Nexus information gap

6. Innovate business models by exploring partnership potentials
RES4Africa brings together the most important stakeholders of various African countries, as well as industry leaders and international organisations, to advance the renewable energy transition.
Ongoing country dialogues

Morocco
- In collaboration with Masen, Ministry of Energy, ONEE, IRESEN, National Authority, MedReg, etc.

Kenya
- In collaboration with Ministry of Energy, Kenya Power, KenGen, Ketraco, KEPSA, KEREA, etc.

Zambia
- In collaboration with Ministry of Energy, ZESCO, ERB etc.

Ethiopia
- In collaboration with Ministry of Electricity, Ethiopian Electric Power, Ministry of Industry, etc.

Tunisia
- In collaboration with STEG, STEG RE, Ministry of Energy, ANME, MENAREC, etc.
The South Africa programme outlines an **Energy Transition Roadmap** to drive the country’s decarbonization process and renewable energy transition.
South Africa's energy context

- **South Africa is the largest electricity market in Africa**, accounting for half of SSA installed capacity. Despite the successful initiation of a renewable energy transition, today South Africa's power sector is experiencing some difficulties.

- Following the economic crisis, **electricity demand growth has been weak** and negatively influenced by frequent supply shortages, rising tariffs and lower energy intensity.

- A generation mix growing older and poor plant performances **reduced reliability of supply**, while the debate on the optimal energy mix and electricity market restructuring led to an impasse in adding new generation capacity.

- The country's economy, already severely stressed by the economic crisis is **highly dependent on the extraction and export of coal**.
“Exploring South Africa’s Energy Transition Roadmap” programme

South Africa carries great opportunities for the large scale deployment of renewable energy. The South Africa programme outlines an **Energy Transition Roadmap**, that will be carried out in **partnership with South African stakeholders**.

<table>
<thead>
<tr>
<th>Decarbonization study</th>
<th>Just energy transition study</th>
<th>Independent Transmission Company Scenario Study</th>
<th>Localization study of RES sites</th>
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<tbody>
<tr>
<td>To identify 2030–2050 emission scenarios resulting from the 2019 IRP and consequent policy recommendations to achieve the objectives of the NDCs (National Determined Contributions).</td>
<td>To analyse lessons learnt from European countries, adapting them to the South African context. Furthermore, the study will analyse the possibilities of re-training workers from the coal sector.</td>
<td>To analyse the restructuring of transmission within ESKOM as a separate entity to foster RES. The study has been requested by Eskom.</td>
<td>To analyse different locations for the scale up of RES, taking into consideration resource availability and grid connection constraints. The study has been requested by Eskom.</td>
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The programme will be presented on 9th March 2020 in Cape Town.
RES4Africa’s capacity building and training programmes aim to address topics relevant to regional integration and common practices to develop RE in Africa.

The traditional capacity building activities Advanced Training Course and Micro-Grid Academy are complemented by the new A Proposal for Africa.
Advanced Training Course

The two weeks' Advanced Training Course, held every year in Milan, 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 in the electricity market.

The training course is organised in partnership with Enel Foundation and in cooperation with SDA Bocconi and MIP Politecnico di Milano.
Advanced Training Course highlights

Kick-off: November 2014 Milan, Italy

6 training sessions so far

Over 300 participants from 20 African countries

Job Sector
The Micro-Grid Academy (MGA) is a vocational capacity building platform that aims to create skilled and conscious workforce to deploy decentralized renewable energy solutions in Africa.

The MGA builds on local partnerships to enhance access to energy while fostering local enterprise and job creation.
Micro-Grid Academy

Kick-off: January 2018
Nairobi, Kenya

8 training modules so far:
- 5 in Kenya
- 1 in Zambia
- 2 in Ethiopia

Over 330 students from Kenya, Ethiopia, Zambia, Uganda, Tanzania, Rwanda, Somaliland and Europe

WORK CONDITION
- Employed
- Self-employed
- Student
- Trainer
- Volunteer
- Unemployed

JOB SECTOR
- Development agency
- Training center
- UN Agency
- NGO
- Governmental entity
- Private company
- Public utility
- University
The **RE capacity development training programme** aims at addressing topics relevant to regional integration and common practices to develop RE.

The training programme is organised in collaboration with the Ministry of Foreign Affairs of Italy (MAECI).

- **Institutional capacity building** activity
  - An **intensive one week** regional programme hosted on yearly basis in different African countries;
  - **35 middle managers** coming from all African regions, from public and private stakeholders (e.g. ministries, authorities, utilities, etc.).

- **Vocational training**
  - **Two weeks** (10 days) on key technical issues directly on-site of RE power plants to strengthen project development and operation & maintenance skills.
  - **50 junior engineers and technicians** from the main universities and technical institutes of the African countries.
Communication

Members' brief

Social media

Articles
What it means to be on board of RES4Africa Foundation

• **To join a unique platform** of leading private sector companies from across the RE value gathering broad RE public-private sector perspectives and expertise.

• **To play a pivotal role** in supporting African countries to devise the fundamentals of their energy transition and create conditions to interact and participate in energy markets.

• **To reinforce the strategic positioning** and to strengthen and expand partnerships with SDG mission driven multilateral, bilateral and development organizations as well as with Foundations and academic institutions in Europe and in Africa.

• **To access direct dialogue with stakeholders** and partners within focus countries and conduct joint activities in the framework of Foundation’s activities.

• **To benefit from the wide network of partners** at local, regional and global level and to take part in regional and international RE cooperation initiatives on renewable energy.