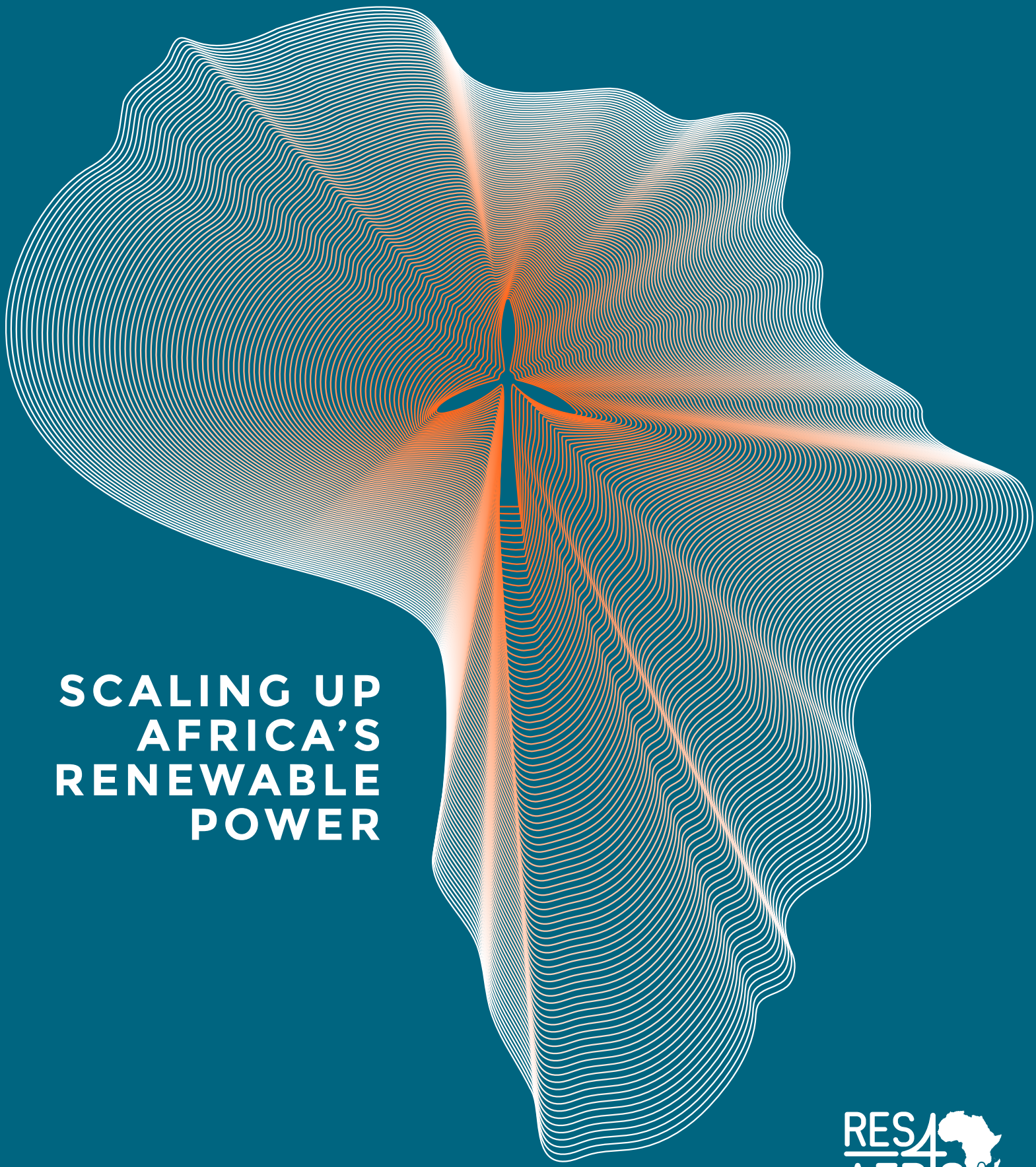


SCALING UP AFRICA'S RENEWABLE POWER

RES4AFRICA
RENEWABLE ENERGY SOLUTIONS FOR AFRICA
FOUNDATION

SCALING UP AFRICA'S RENEWABLE POWER

THE NEED FOR DE-RISKING INVESTMENTS AND THE CASE FOR RENEWAFRICA

ABOUT

OUR FLAGSHIP PUBLICATION

In support of RES4Africa Foundation's mission to create an enabling environment for renewable energy investments in Africa, the publication serves as a high-level tool for dialogue and awareness-raising on a theme key to Africa's renewable energy market development, at the European, African and international level. Each year, in close cooperation with Enel Foundation, the publication seeks to:

- shed light on a specific issue to raise awareness on a theme of convergence between the international development community and renewable energy business leaders;
- convey a high-level understanding of the topic for decision-makers followed by a call for action on the way forward;
- contribute to the rapidly evolving renewable energy scene and accelerate progress to achieve universal energy access in Africa by 2030, in line with the Sustainable Development Goals (SDGs).

Following the publication of the first edition in 2018, "Unlocking Value from Sustainable Renewable Energy", and the second edition in 2019 "Africa's Future Counts", RES4Africa Foundation leads the publication of the third edition "Scaling up Africa's renewable power" for release during a roadshow of events in Europe and Africa across 2020 and 2021. The publication is developed with the support of Enel Foundation and in collaboration with the renewAfrica Initiative.

PREFACE

ANTONIO CAMMISECRA
PRESIDENT, RES4AFRICA FOUNDATION
CEO, ENEL GREEN POWER
& PRESIDENT, RENEWAFRICA INITIATIVE

This is a landmark moment for RES4Africa Foundation, and I am honored to write the foreword to this year's flagship report titled "Scaling up Africa's renewable power". Following several years of analytical, advocacy and capacity building activities leveraging on its members' extensive field experience, RES4Africa is now ready to present concrete results that I believe will robustly contribute to the development of renewable energy in Africa.

Climate change has already powerfully demonstrated the fundamental interdependence of the social, economic and ecological systems along with the importance of their resiliency. Now, even more vividly during the current Covid-19 situation, we are suffering the intertwined effects of a global problem. When the pandemic is over, we will have to face the challenge of sustainability, but we will also have to get to grips with a possibly massive economic downturn, that even more tightly links the destinies of Africa and Europe. Africa, like other affected regions of the world, will need to provide a wide-reaching economic stimulus to overcome the crisis: the answer can lie in the large-scale deployment of renewables.

The African continent accounts for almost 20% of the world's population and close to 70% of the one without access to energy, but also less than 10% of the world's GDP. Renewables represent not just the opportunity to provide access to energy at scale, but a means for extraordinary sustainable economic progress. Rooted on reliable and abundant sources, renewables are indeed the fastest and cheapest technologies to provide access to energy, which is one of the central pillars to secure dignity, wellbeing and equality. This is crucial as people's needs and aspirations require more energy than what is currently supplied.

In many years observing the evolution of the African renewable market, we realized that the availability of capital to be invested in renewable energies is not the problem. Three key elements are needed to encourage the participation of the private sector, attract significant infrastructure investments and ultimately harness renewables at scale: properly designed stable policies and regulatory frameworks, mature developed projects, and tools to mitigate high investment risks. A plethora of investment programs have already been developed and implemented, both by multilateral development agencies and governments, to foster large-scale renewables in Africa. A detailed review performed by RES4Africa Foundation pinpointed how few of these programs seem to tackle the three key elements identified above, while none seems to embrace their interdependency. Africa can boast important experiences in deploying renewables, but limited to few countries and without a significant impact on the continent.

What is needed is a holistic and flexible program, able to support African governments throughout the implementation process, to stimulate the creation of a large pipeline of bankable projects, and to provide the necessary technical and financial assistance to de-risk investments. In order to design this comprehensive program for the entire African continent and for all renewable technologies, RES4Africa Foundation has opened a dialogue with all relevant stakeholders, gathering the needs of investors, funders, operators and institutions to bring together the largest pool of knowledge and experience in the renewables field.

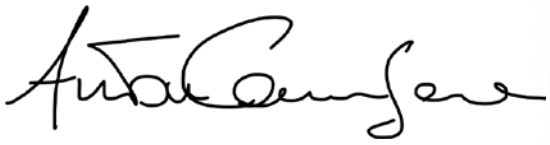
This journey led to the launch of the renewAfrica Initiative on June 4, 2019, a platform that brings together more than 25 players in Europe's RE industry, ranging from operators, manufacturers, public and private financial institutions to industry associations and think tanks, with the defined and clear objective to unlock access to energy through renewables in Africa.

Since the dawn of the renewable energy era, Europe has been the undisputed pioneer and world leader in the industry. More recently, the European Green Deal was launched to transform climate and environmental challenges into opportunities, with the imperative to make this transition towards a sustainable economy fair and inclusive for all. Within such a remarkable plan, Africa and Europe are not only close neighbors but are also, most importantly, partners in this transformative process. It is therefore somehow natural that the renewAfrica Initiative has turned to the European Union to lead the implementation of this program with Africa: a fit-for-purpose instrument to support the wider EU-Africa strategy to fight climate change and ensure access to energy in a sustainable way.

Now is the time to accelerate the adoption of such an innovative program that is able to deliver all this. I will say it with an even firmer voice: Africa can no longer wait, time for action is now.

I invite you to join us.

Antonio Cammisecra



EDITORIAL

ROBERTO VIGOTTI
SECRETARY GENERAL, RES4AFRICA FOUNDATION

Access to clean, affordable and reliable energy is a pre-requisite for Africa to achieve its ambitions of human and economic prosperity in a sustainable and inclusive manner. As a catalyzer of wellbeing, industrialization and jobs, electric energy can help current and future generations seize the many opportunities that Africa holds.

However, the electrification progress in Africa is still too slow to cope with population expansion, while connected businesses and households endure low reliability of electricity supply. Ensuring access to affordable, reliable, sustainable electricity for all (SDG 7) in Africa requires massive investment in existing and new electricity infrastructure, notably renewable energy power plants and electricity networks.

For a continent that is vastly endowed with natural resources, on-grid and off-grid renewables represent a cost-effective, reliable and clean solution to electrification needs, while acting as an important lever of growth. Unlocking Africa's renewable energy potential not only means reducing dependence on expensive traditional fossil fuels, therefore encouraging consumer uptake, but it also represents a significant leap forward on climate action. Despite this, only 2% of global renewable generation capacity installed in the past ten years was directed to Africa.

Scaling up renewable energy investments in Africa is then crucial, and the private sector plays a fundamental role in mobilizing capital, skills and technologies to complete this endeavor at the pace needed. However, high risk perception and exposure to country and project risks act as deterrents from entering most African markets. Fit-for-purpose de-risking mechanisms are thus key to increase market appetite and ramp up private-led investments.

A plethora of de-risking programs have been launched in the last decades to support African

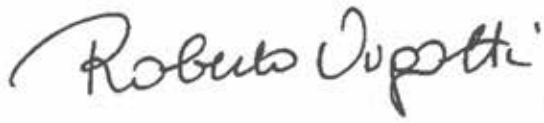
countries in this regard, though with limited impact. Our assessment concluded that most of them are often deemed inadequate to meet market requirements, and sometimes confusing in their usage. Today we argue that there is need for a comprehensive and easily-adoptable risk mitigation program that can offer targeted support to developers, lenders and beneficiary countries along the entire renewable project cycle.

Building on its extensive analytical and advocacy work in northern and sub-Saharan Africa, RES4Africa Foundation collected the experience and perspective of public and private stakeholders across the renewable energy value chain. This resulted in the launch of the renewAfrica Initiative, which aspires to fill existing gaps by creating a one-stop-shop de-risking program able to provide focused and inclusive support across all project phases.

Throughout the next four chapters, the publication takes us on a journey through Africa and its tales of a bright RE-powered future, coming straight from a young and thriving population. It then follows with an overview of Africa's electricity sector and future prospects in Part One, highlighting the leading role of renewable technologies. Part Two proceeds with an analysis of the main risks perceived by the private sector entering African RE markets, while exploring the meaning of de-risking strategies. Part Three introduces renewAfrica as a concrete deliverable to scale up RE investments and build a pipeline of bankable projects in Africa by combining existing tools and providing comprehensive support. This is based on an EU-Africa multi-stakeholder partnership effort, also the focus of Part Four, that places renewAfrica within the broader European and African visions of a clean energy transition, sustainable growth and climate action, recounting the progress made so far and looking ahead to the future.

It is right on partnerships that we want to put particular emphasis. Like the current health and economic crisis have taught us, collaboration and unity is fundamental to effectively face global challenges like the one of climate change. As renewAfrica is based on principles of inclusivity and knowledge-sharing between European and African RE industry leaders and institutions, this publication aims to begin a conversation with different stakeholders on the need to bridge the energy access gap in Africa and transition to renewable energy. It then goes one step further and proposes a concrete solution, exhorting all to take concerted action in a decade that urgently calls for it. Africa's energy pathway can be different, and RES4Africa Foundation with renewAfrica invite you to join their work-in-progress and take part in making the change.

Roberto Vigotti



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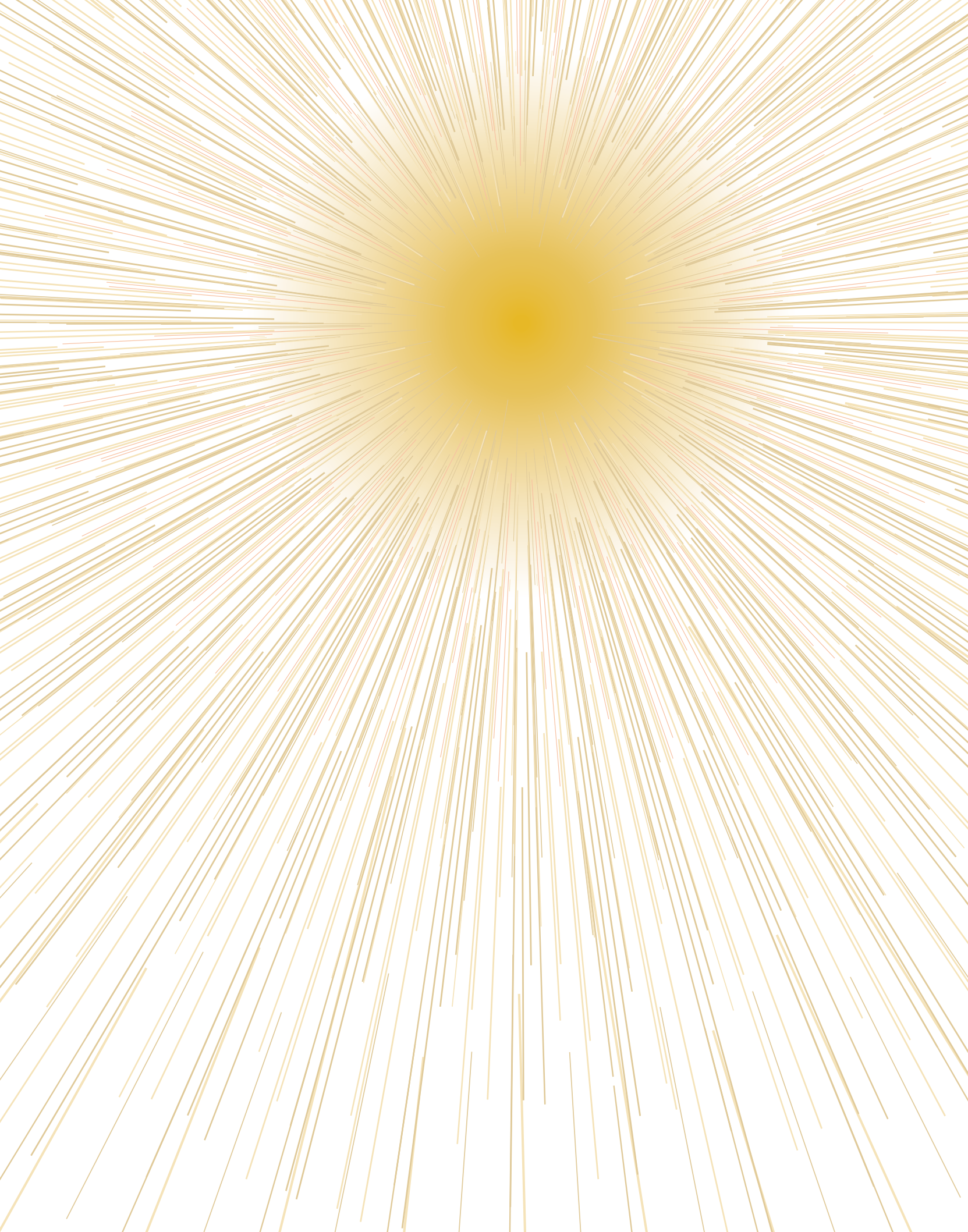


SWING WITH THE WIND AND SING WITH THE SUN

HASNAÂ SEFRIOUI, 32, PROJECT DEVELOPMENT MANAGER AFRICA, MASEN, MOROCCO

I was lucky enough to grow up in a country where electricity was a non-questionable blessing. Back to the beginnings in 2020, in a context of climate change, with strong impacts on our environment and economic competitiveness, mindsets started evolving. All eyes were then looking chiefly for an inexpensive, sustainable and unlimited source of energy. Few years earlier, in 2008, Morocco called for its first dance. Since then, the country started surfing on this green wave aiming to achieve, as a first step, 52% of its power from renewable energy sources by 2030.

However, some of you will wonder what kind of dancer could be a lonely one without a partner, right? Dressed up and got ready to impulse the flow: that was the Kingdom strategy! Indeed, Morocco positioned itself as a welcoming and attractive partner for the private sector. The government has focused its best efforts on providing a supportive legal framework, establishing dedicated institutions and initiating large and diversified energy projects. Unfortunately, dancing is never enough, those brilliant spirits can tell.

Conciliating between a clean, affordable and continuously available power was certainly a challenge. Nevertheless, who said that embracing the change would have been an easy move? In fact, as of today, researches are still ongoing to improve the production and to reduce network intermittency, mixing different technologies and using various ways of storage. Initially hydro power plants were fashionable, providing the necessary power to cover the base load whenever needed. However, like stars, depending on the season and area, they might lack some resources. Eventually, it takes two to tango!
Therefore, for countries such as Morocco, a wind/solar mix with storage was becoming part of the solution.

What was next? Some “just put [their] feet in the ground and move them around”[1], but others learn gradually, invest time, efforts and “obviously” money to develop innovative, accessible and lasting solutions. Those are the winners! My dream was to be part of the winners; living in a world functioning with most of its power coming from sustainable green energy. Therefore, I accorded myself with the tempo, always looking to harmonize between stakeholders, steps and projects symphony. Wishing meanwhile singing mornings with the sun and swinging evenings with the wind, but constantly keeping storytelling the change.

[1]Quote by Fred Astaire.

AFRICA'S FUTURE WITH WOMEN IN ENERGY

LILIAN MOTONGORI JAMUNGA, 25, CO-FOUNDER, WOMEN IN ENERGY AFRICA, KENYA

This year, Kenya hosts an international conference on new energy technologies. High-level panels are filled with women leaders in the political and energy spaces, presenting on "The African journey as benchmark to achieve 100% clean energy access". Africa has not only made great progress but it is also a major green energy exporter worldwide. Looking back, I can see that mainstreaming gender equality in the energy industry has been a major contributor to this success: the energy workforce holds a 53% women participation, with a safe working environment for all. There are many more women in STEM and all are economically and politically empowered, with some in leadership positions even in national and international governing bodies. Speaking from their own experience and representing the situation of many, these women have helped create better laws and policies, making meaningful decisions for achieving universal clean energy access.

Today, I am honored to speak as the Minister of Innovation and Industrial Affairs in Kenya. Having served for many years in the energy industry, I recount the journey towards achieving gender equality in the sector, while paying tribute to all the organizations and people that took part in it (for example, Women in Energy Africa). I recall all the work done, including advocacy for women in STEM, mentorship in schools, laws enforced to ensure equal participation in all sectors, and global grassroot movements. I recount of when, as a child, I used to hear of friends being hospitalized for breathing problems because of the "jiko", a once common cooking stove fueled with charcoal or firewood. Women suffered greatly from it as they were responsible for the household. Today, nobody even remembers what the jiko was as all households use clean cooking stoves.

Social infrastructure and agricultural production in both rural and urban settings are well powered by renewables. Industries and local manufacturing have increased and women are part of the technical and management workforce. I end my speech highlighting the stories of women past struggles to participate in the workforce due to patriarchal systems and I can see many astonished faces among the very young audience. These memories bring to my eyes tears of joy and pride. The freedom women enjoy now is the result of resilience and collaboration among different actors, inside and outside the energy industry. Women are now seen as essential for the success of the energy industry in research and technological innovation fields, as well as managerial and political leadership positions, and are equally sharing domestic labor with men. We have definitely come from far compared to the 2020s, and further we are going towards a renewable energy-powered and gender equal Africa and globe.

E-MOBILITY AND RENEWABLE ENERGY SOLUTIONS

IGNATIUS WAIKWA MARANGA, 26, ELECTRICAL ENGINEER, STRATHMORE UNIVERSITY ENERGY RESEARCH CENTER, KENYA

I enjoy the sound of water waves and birds chirping as I walk along the beach. The breeze today is cooler than usual. I look at fishermen undergoing their usual activities, which motivates me to take regular morning walks along the beach. It has been fifteen years now that I work and live in Rech fishing village in Homa Bay, Kenya, along the shores of Lake Victoria. Fishermen set out for expeditions late in the night, and are welcomed back to the shore as heroes in the morning, by traders awaiting to purchase the catch.

My memories in Rech will remain my most memorable ones. One morning, during my routine walk, a middle-aged lady caught my attention: she was a daily client at the fish market. Always with huge baskets, she got dropped by a "boda boda" motorcycle taxi. Out of curiosity, I walked towards it and asked the rider what he was up to. Among the items on the "boda boda" were two cooking pots, utensils and other kitchen tools that the lady used to run her fish restaurant, situated 10 km away from Rech. Only then I learnt that many clients at the fish market travelled long distances to purchase fish. Large amounts of spoilage, high cost of transport and fatigue were the main challenges faced by the majority of fish customers. As a researcher with an engineering background, it was only just for me to study the local fish micro-enterprise in detail and propose a feasible solution.

Twelve years have passed now since my encounter with the lady, and the Rech fish market does not look the same. The local government, in partnership with fishermen and trade associations, has built structures around the once open-air market. The numerous tricycles with solar panel roofs parked outside, waiting to distribute fish supply make one unique view. These electric vehicles fitted with a refrigerator have revolutionized the fish industry in the village. The quantity of spoilt fish has decreased significantly and mobility within the region has become cheaper and more effective, as vehicles use sunlight to power movement. Regular fish customers and residents of the village record an improvement in their quality of life.

The success of the solar-powered electrical vehicles as means of transport and fish preservation has resulted in the adoption of solar PV systems as the main energy generation technology in the area. These vehicles are now in use in the entire country. Solar powered charging stations, micro-grids, RE installation and maintenance enterprises are among the new industries that have developed in Kenya as a result of this technological disruption. Who could have known that the power from the (always available) sun in Rech was a solution to some of the problems faced in Kenya? I hope to live long enough to enjoy my routine morning walks along the beach, satisfied by the view of happy fishermen and traders, all because of the power from the sun!

A CLEAN ENERGY REVOLUTION FROM INSIDE THE HOUSEHOLD

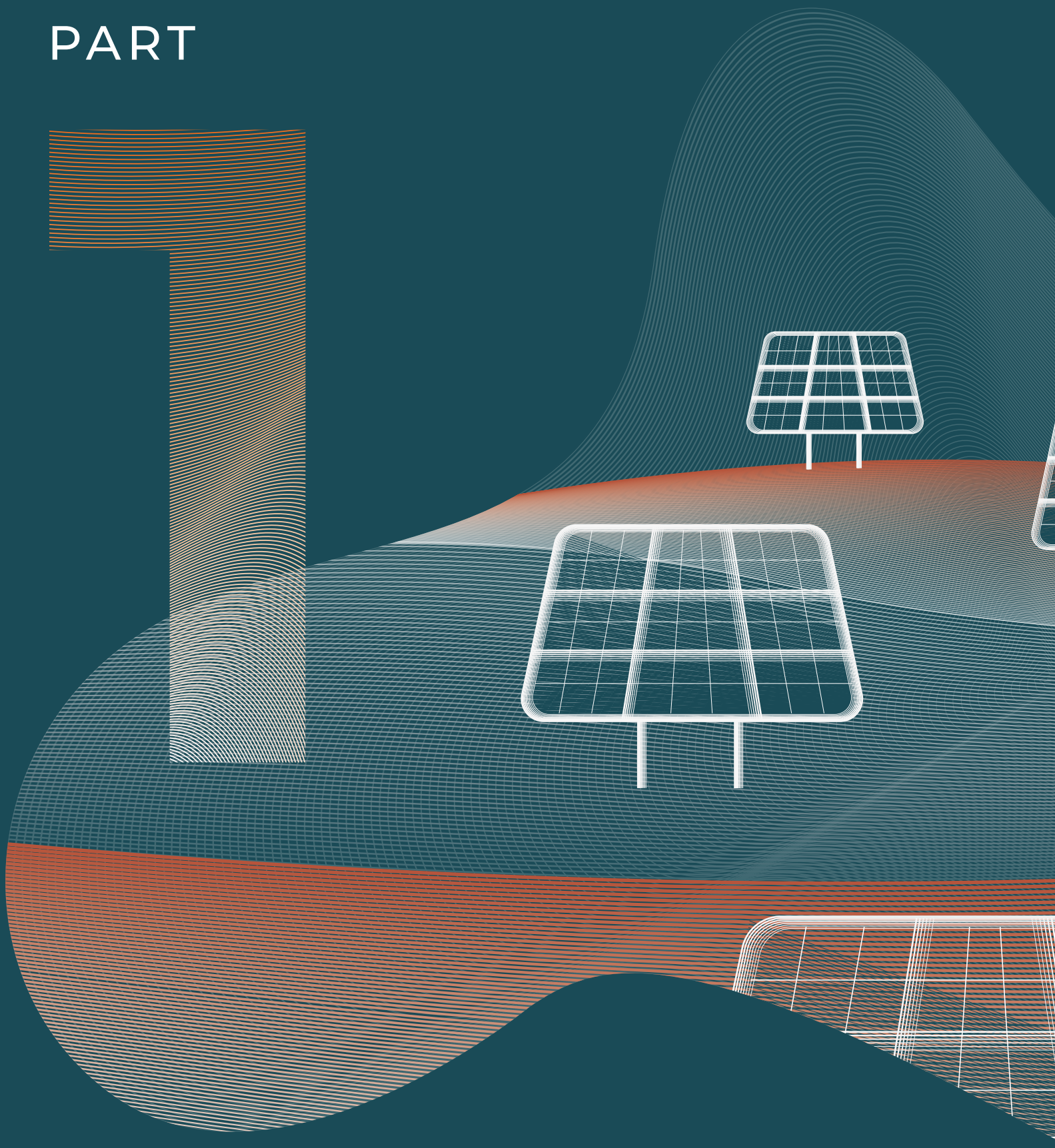
GUIDA CHISSANO, 19, STUDENT AND SWEETS SELLER, AVSI PROJECT BENEFICIARY, MOZAMBIQUE

I wake up every morning with the noise of my kids walking around the house. I am 39 years old and I have a family now. We still live in the neighborhood of Chamanculo in Maputo, which used to be a slum, but nothing looks the same as 20 years ago: the unhealty environment, the lack of public services, water and energy are now a memory of the past. My husband and I are proud to have been born in this neighborhood and to have seen it changing over the years. The streets are now all lit by public street lights functioning through solar panels, criminality rates and violence have been reduced to zero, and I really cannot remember the last time I heard of a crime case here. I have breakfast with my family and we go to work. Children nowadays do not need to fight to use public transport as we were used to during our childhood. Gasoline and diesel cars have been banned by the government to make room for locally manufactured electric cars. Today, I work in one of the cars' manufactutring companies as a HR manager, and I was able to pursue a professional career in my field of study. When I tell my children that I had to pay for my studies by selling sweet cakes in the Xipamanine market using an improved cook-stove availed by AVSI Foundation, they almost do not believe me and think I am joking.

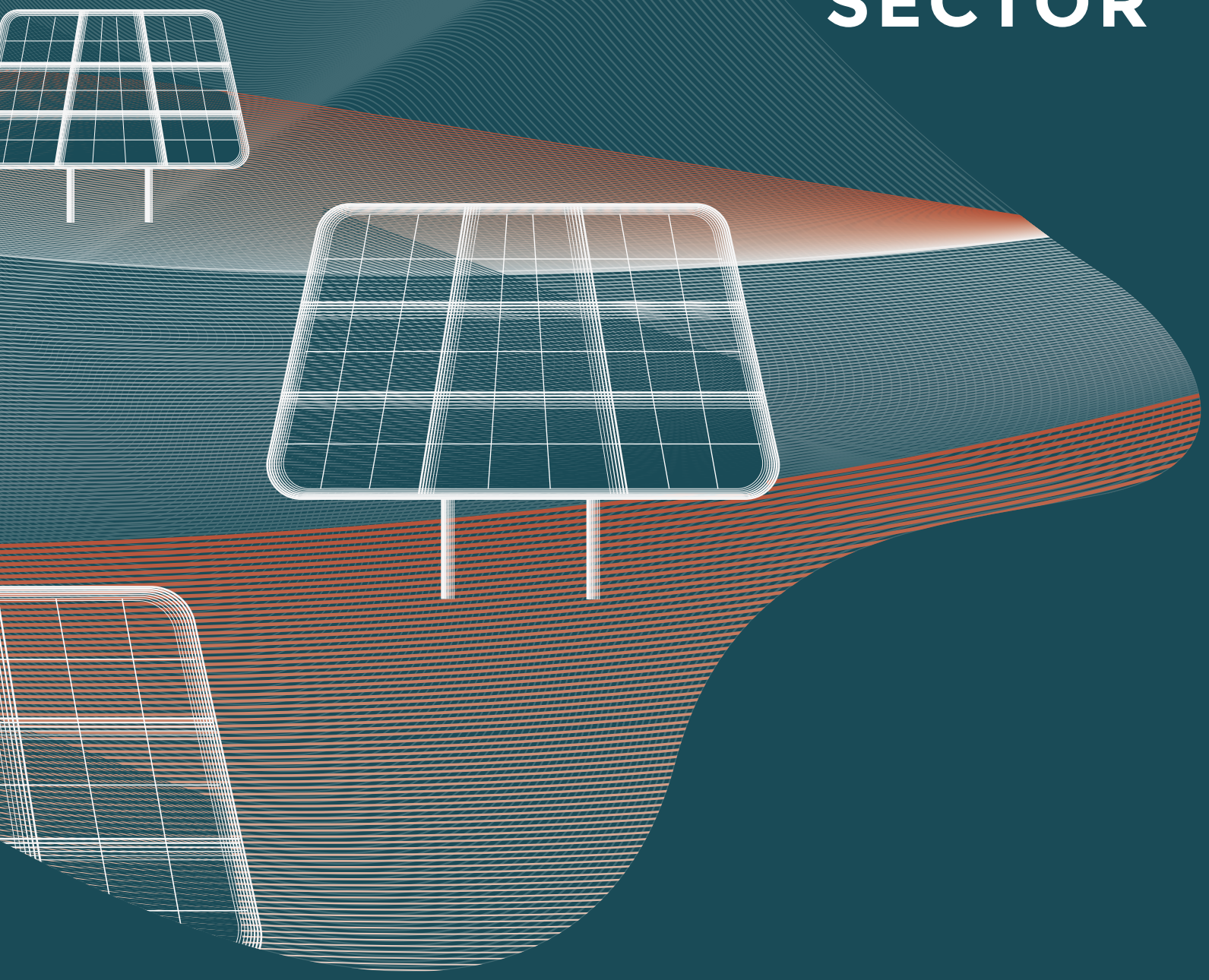
My husband takes me to work and then goes to his own. He is a successful businessman now and founded his own company in the waste collection and recycling sector. He always had the dream of succeding in the environmental business, recalling the days when, as a young man, he used to collect bottles of water from the streets to recycle and resell them. Thanks to the financing awarded to him by a local business incubator to promising start-ups, he was able to start his own company called Bassiça, which means "cleaning" in Portuguese. My work day is over and I walk to the tram station to go home: today, we have electric trams that run all day long. I go straight home to prepare dinner for my children. Speaking of cooking, I recall the times when I had to go buy charcoal every day to bake the cakes I used to sell. At that time, charcoal was the most used fuel for cooking. I remember one night I was frying my pastry out-side in the yard, but suddenly it started raining and I had to take my stove inside the house. I put the stove in the middle of the room where my brother was sleeping and he soon started to feel sick, breathing difficultly and coughing. We immediately went to the hospital because he was suffering from asthma and he could not bear so much smoke.

Our house and the ones all around the neighborhood do not rely on such polluting fuels any-more, and are all supplied by modern, smart and sustainable energy systems. The use of char-coal has been finally eradicated and now I can breath fresh and clean air, and the trees are so green and leafy. Now, I can say we live a quality life!

PART 1



PRIVATE INVESTMENTS TO TRANSFORM AFRICA'S ELECTRICITY SECTOR



WORKING TOGETHER TO IMPROVE AFRICA'S ENERGY FUTURE

FATIH BIROL, EXECUTIVE DIRECTOR, INTERNATIONAL ENERGY AGENCY (IEA)

This year, the world has experienced a historic global health and economic shock. The coronavirus pandemic has caused death and suffering, damaged communities and livelihoods, and threatened the stability and security of energy systems. At the same time, the threat of climate change continues to grow, with severe implications for our societies and economies. For this reason, in response to the coronavirus, I made an early call for governments to put investments in clean energy transitions at the heart of economic recovery plans, with the aim of quickly creating jobs and enhancing energy sector resilience and sustainability.

Improving Africa's energy future is central to its response to the coronavirus crisis. The continent is also grappling with the health and economic impacts of the virus, with some countries and regions more exposed than others. According to the World Bank, sub-Saharan Africa will experience its first recession in 25 years this year. This will make key Sustainable Development Goals, such as increasing access to electricity and clean cooking, much harder to achieve. Now more than ever, Africa needs groundbreaking initiatives that will build a brighter future.

The International Energy Agency (IEA) has long monitored Africa's energy sector closely. We have carried out pioneering analysis on energy access issues in the World Energy Outlook series over the past two decades. Since being appointed as IEA Executive Director in 2015, a top priority for me has been ramping up our work in Africa. We have deepened our engagement by helping countries in Africa to advance clean energy transitions and make progress on sustainable economic development. This has come through greater dialogue with governments and business leaders, increased support for policy makers and expanded analytical work. In 2016 and 2018, Morocco and South Africa became IEA Association countries, creating a strong foundation for deeper cooperation. We have also developed a close relationship with the African Union (AU), jointly organizing an annual Ministerial Forum to be hosted next by South Africa, the AU President, in November 2020. The IEA is committed more than ever to supporting African efforts to accelerate access to affordable, reliable and sustainable energy – and to build more prosperous and resilient communities.

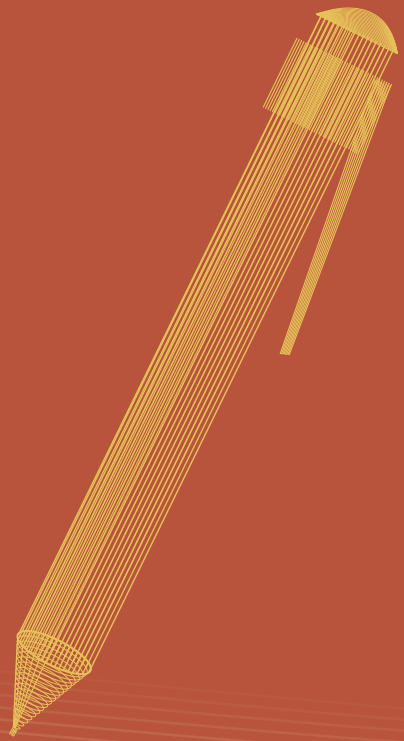
The IEA's recent Africa Energy

Outlook 2019 shows how the energy sector – particularly by shifting to more modern, efficient and clean sources – can support sustainable economic development. Our findings show that today's policy settings are not calibrated to put the continent on track to meet its sustainable development ambitions, including providing reliable and modern energy services for all. One in two Africans lacks access to electricity, and most health facilities do not have reliable access to power. Moreover, the continent is disproportionately on the front line when it comes to the effects of the world's changing climate conditions, having produced just 2% of global energy-related carbon dioxide (CO_2) emissions to date.

Armed with the lessons of the past and better data and analysis, I am optimistic that policy makers in Africa have the tools and the opportunity to drive an economic recovery that supports sustainable development. Creating a clean and secure energy future should be central to governments' plans to rescue their economies and people's livelihoods. Public sector actions will matter more than ever in efforts to drive clean energy investments that support sustainable recoveries. IEA analyses show that governments directly or indirectly drive more than 70% of global energy investments. Priority investments could include measures to boost the development, deployment and integration of technologies such as solar, wind and hydro power – and also natural gas and LPG for cleaner cooking.

To create new jobs and support workforces, economic recovery plans should support dynamic energy industries such as energy efficiency, renewables, electricity grids and mini-grids. Experience has proven the effectiveness of investing in energy efficiency, as it improves competitiveness, lowers energy bills and creates jobs quickly. Energy efficiency measures such as well-designed buildings or efficient agricultural pumps can support labor-intensive activity in key sectors such as construction, manufacturing and agriculture. They can also underpin productivity gains through innovation and infrastructure. Renewables such as wind power and solar PV form a key pillar of clean and affordable energy sectors. They have shown how, in the right conditions, new low-carbon technologies can grow rapidly to become a dynamic and innovative part of forward-looking economies. Governments should bear in mind the structural benefits that renewables can bring in terms of economic development and job creation while also reducing emissions and fostering technology innovation.

Together, we can tackle the challenges created by this extraordinary crisis while also transforming economies and energy systems across Africa. In the months ahead, we can build momentum and broaden consensus on how to do this. I remain mindful as ever of the IEA's all-important responsibility to help countries around the world shape a secure and sustainable energy future.



HIGHLIGHTS

1

Driven by demographic transformations and a digital revolution, Africa is expected to experience significant economic growth and turn into a continent of opportunity in the coming decades.

2

Ensuring access to affordable, reliable and sustainable electricity for all will be fundamental to support Africa's journey, but this will require a deep transformation of existing power systems.

3

Africa's electricity sector needs a substantial scale-up in investments to achieve the desired socio-economic targets. Renewables will lead the way as the most competitive solution to provide universal access, though greater investments are also needed in transmission and distribution networks.

4

Enhanced investments will accelerate the current pace of electrification, solve the unreliability of existing infrastructures and lower the costs of electricity services.

5

Delivering on this challenge requires a fundamental change in current investment strategies: the private sector is called to play a more prominent role to support the transformation of Africa's electricity systems.

6

Governments will need to work more closely with the private sector to identify the right model able to deliver new infrastructure systems, that maximizes private contributions, balances commercial outcomes and allocates risks appropriately.

A FORWARD-LOOKING VIEW OF AFRICA'S ELECTRICITY SECTOR

AFRICA'S FUTURE LOOKS BRIGHT AND PROMISING

What could Africa look like in 20, 30 or even 40 years? The earlier "Tales of Change" section walked us through a continent that was imbued with entrepreneurship, innovation, shared prosperity and equality; a picture of Africa that we at RES4Africa firmly believe in. In a recent survey[1], addressed to Africa's youths, the majority of people also expressed their optimism about the future of the continent and highlighted their excitement about "looking ahead towards an African century". Africa's youths believe that the continent is ready to build its own prosperity around three main pillars:

- **a technological transformation**;
- **a vigorous entrepreneurial drive** – 76% said they would like to start a business in the next five years; and
- **a renewed pan-African spirit** based on a common culture and history – 63% of the interviewees believe that the continent should unite to face challenges, and show high confidence in the African Union (AU) as a unifying vehicle.

This sense of optimism is also increasingly coming from the business community and investors[2], both in Africa and internationally. The reasons for this are varied and understandable. In the 2000-2019 period, most African countries experienced rapid economic growth and the continent as a whole averaged about 4.6% growth in gross domestic product (GDP), the second highest in the world[3]. Social welfare and human development improvements followed, with 11 countries attaining middle – or higher – level of income status, and 17 African countries now having "emerging" or "frontier" economy status.

These positive high-level trends appear to be substantiated by a variety of international and regional institutions, which forecast positive macro-economic scenarios for Africa in the coming years (Figure 1). Due to the current health and economic crisis, short-term scenarios have changed, but long-term macro-economic predictions are likely to remain unvaried, with key findings including:

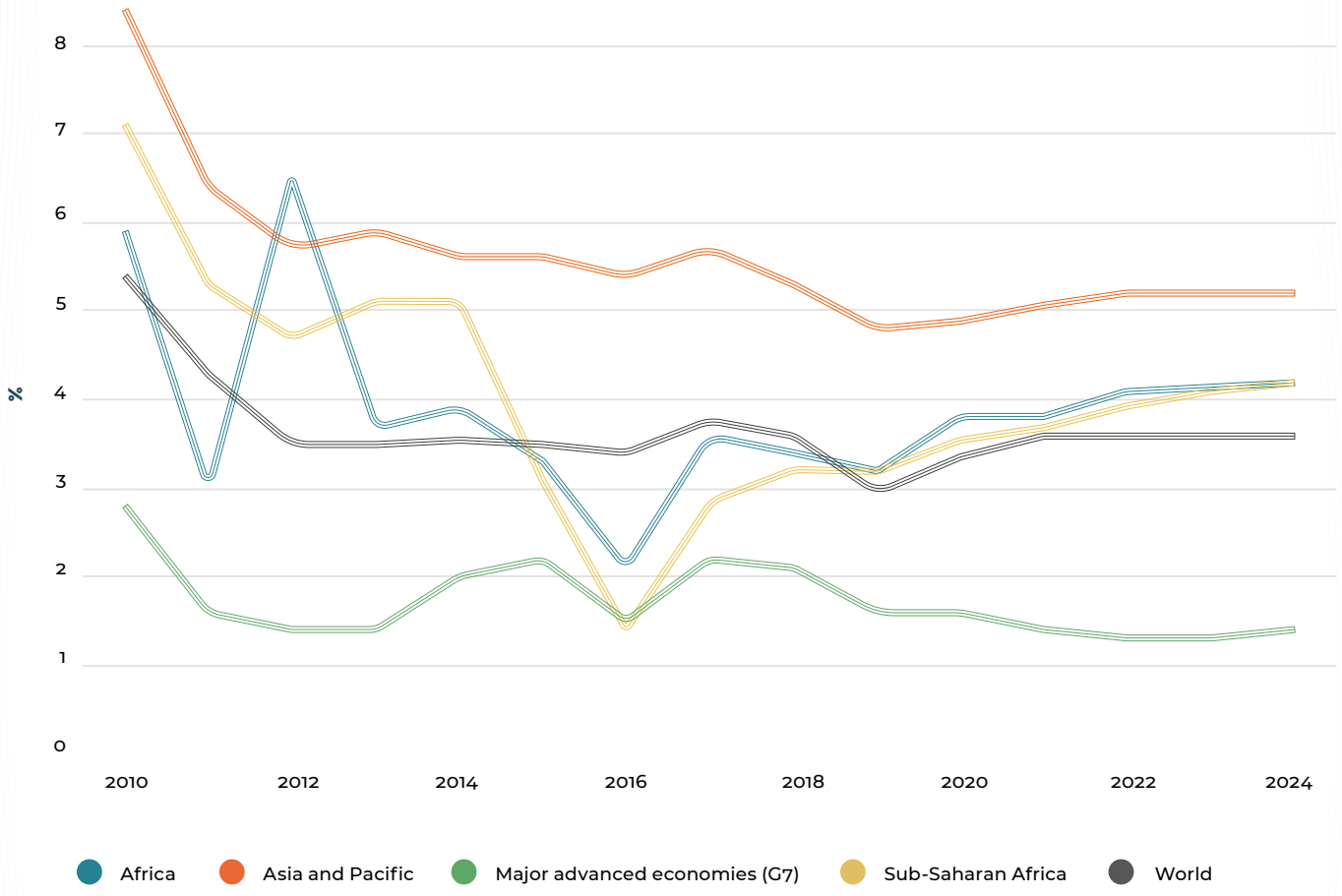
- **highly positive economic growth projections for Africa**, showing an average GDP increase of about 4% per year in the 2020-2024 period[4] (although with significant cross-regional and cross-country variations);

- **many African countries being among the fastest growing global economies**, with GDP growth of above 6% on average between 2020 and 2024[5];
- **one in four people on Earth will be African by mid-century**, with the total number of Africans in 2030 expected to reach 1.7 billion;
- **urban and peri-urban areas** hosting around half of the continent's population by the next decade, with a share of young and working people expected to surpass that of China by 2035[6];
- these developments taking place in **a vibrant economic setting**, including a rising start-up scene made up of talented and digitally-savvy entrepreneurs[7].

FIGURE 1

WITNESSING THE WIND OF CHANGE: AFRICA'S POTENTIAL TO RISE

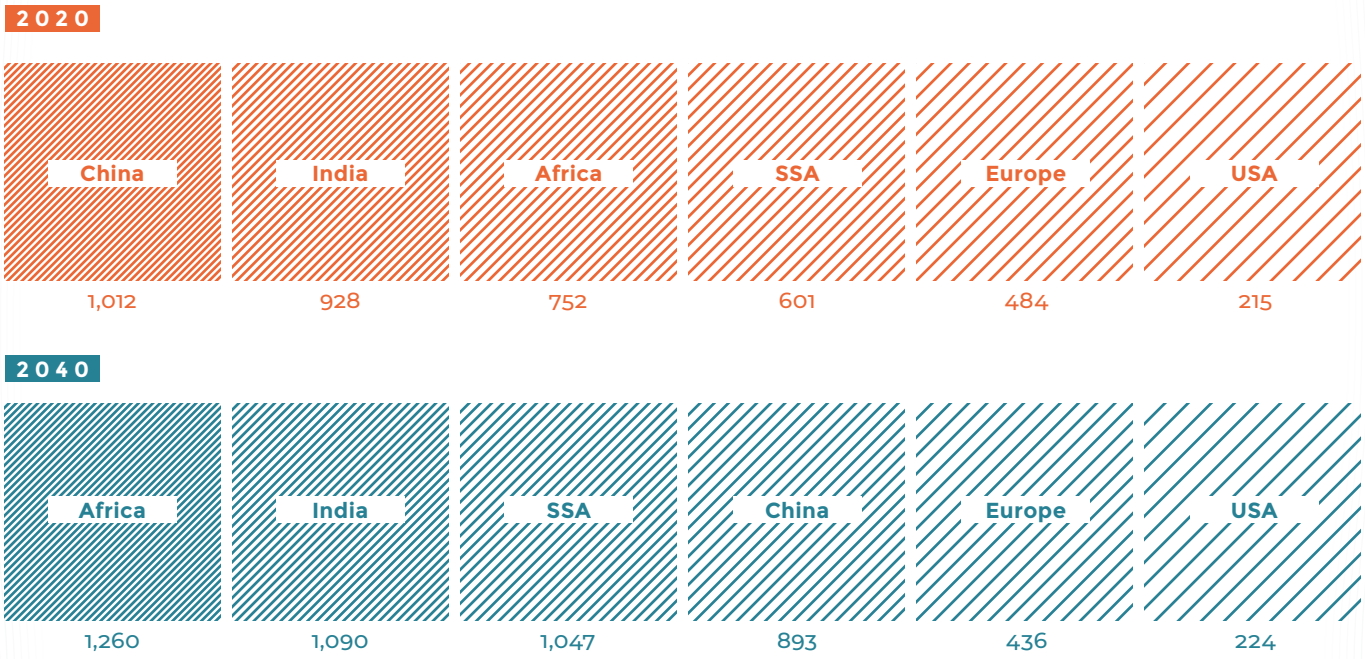
1.1. EVOLUTION & PROSPECTS OF AVERAGE GDP GROWTH RATE IN REFERENCE REGIONS (2010-2024, %)



Source: IMF (2019)

AFRICA IS EXPECTED TO OUTPACE THE WORLD'S AVERAGE GDP GROWTH BY 2024.

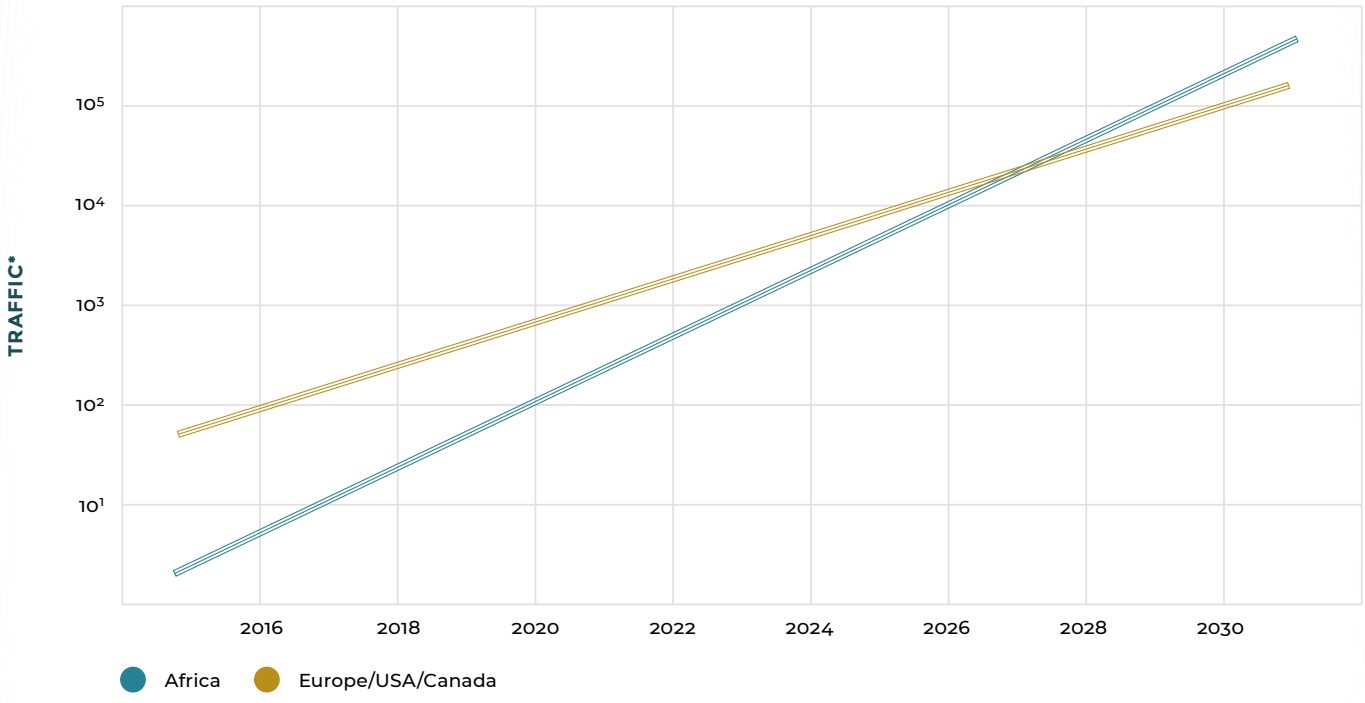
1.2. EVOLUTION & PROSPECTS OF WORKING POPULATION (AGE 15-64, MILLIONS OF PEOPLE)



Source: United Nations Department of Economic and Social Affairs (2019)

AFRICA'S WORKING-AGE POPULATION WILL BE AMONG THE LARGEST IN THE WORLD.

1.3. EVOLUTION & PROSPECTS OF INTERNET TRAFFIC IN AFRICA



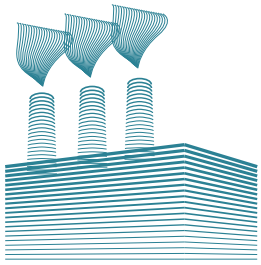
*The units on the vertical axis represent the growth based on the initial ratio between Europe/USA/Canada and Africa.

Source: Cloudfare (2018)

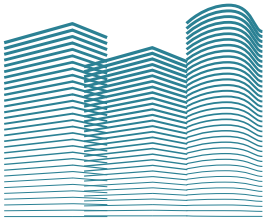
INTERNET TRAFFIC IN AFRICA IS EXPECTED TO CONTINUE TO GROW IN THE COMING DECADES, SURPASSING THAT OF SOME MAIN MODERN ECONOMIES.

At a more fundamental level, the Organisation for Economic Co-operation and Development (OECD), in a recent report, has identified five mega-trends[8] that, if approached in the right way, will result in a **redesign of economies and societies and enable Africa to step into an era of major productive transformation** (Table 1). Delivering on the opportunities above will not be a small undertaking. Challenges will need to be overcome and all the necessary foundations for a solid and stable growth will need to be built. The introduction of reliable infrastructure

TABLE 1
THE FIVE MEGA-TRENDS DRIVING AFRICA'S PRODUCTIVE TRANSFORMATION

MEGA TRENDS	 RISE OF EMERGING ECONOMIES	 NEW INDUSTRIAL REVOLUTION
MAIN RISK	• Competition with other emerging economies • Creating one-dollar jobs • New scramble for Africa	• Automation • Rerouting manufacturing to advanced economies • Unprepared skills and technological base
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

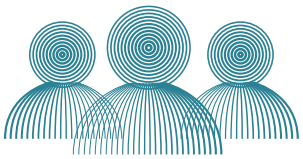
systems, along with access to capital and adequate skill sets, represent the backbone of efficient and productive socio-economic environments. Physical infrastructure, in particular, is the skeleton of modern economies, while energy infrastructure could be seen as the arteries and veins that power the entire socio-economic body. Allowing these trends to deliver on the outlined opportunities will require not only the transformative role of reliable, affordable and sustainable energy access for all, but also new strategies to: **(i) increase the reliability of infrastructure systems, (ii) enhance Africa's ability to attract capital investment, and (iii) engage Africa's working population to tackle the new challenges**.



URBAN TRANSITION

- Increased urban poverty and inequality
- Larger wealth gap between rural and urban areas
- More air pollution and inefficient use of natural resources

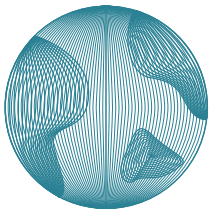
- Growth of urban middle class and demand for high value added goods and services
- Social innovation
- More sustainable use of resources and sharing of infrastructure



DEMOGRAPHIC TRANSFORMATION

- High youth unemployment and informal sector employment
- Increased pressure on public services and environmental resources

- Growth of Africa's workforce and middle-class
- Larger savings, consumption and GDP growth due to increased labour supply and wealth correlation



CLIMATE CHANGE

- Natural disasters, droughts and changing weather patterns
- Loss of livelihoods and economic activities

- Expansion of new green sectors
- Higher job creation in green sectors

Source: AUC/OECD (2019)

ACCESS TO ELECTRICITY IS ESSENTIAL TO REALIZE AFRICA'S POTENTIAL

To use the words of the African Development Bank (AfDB) President Mr. Adesina from a 2015 speech: "Just like blood is to the body, so is energy to the economy"[9]. With increasing societal and human development, **societies and economies have become almost fully dependent on continued access to modern forms of energy**. Its absence can significantly hold back and prevent development from happening.

At a more micro level, access to electricity today plays an essential role in fueling both domestic and industrial usages: from illuminating to powering productive, transformative and industrial processes; from running small domestic appliances to large industrial machines.

Access to electricity also makes communities safer, helps small businesses to thrive, and powers essential services such as schools and clinics. It is an essential piece of the puzzle that allows for enhanced economic productivity and broad social development, for job creation, improved health systems and the continuity of modern lifestyles. This causal, reciprocal and obvious **relationship between access to electricity and a range of socio-economic development outcomes** (Figure 2) has formally been acknowledged by the United Nations 2030 Agenda for Sustainable Development, which recognizes "access to affordable, reliable, sustainable and modern energy for all" (SDG 7) as a vital cross-cutting element and major enabler of a variety of long-term sustainable development areas and of poverty reduction.

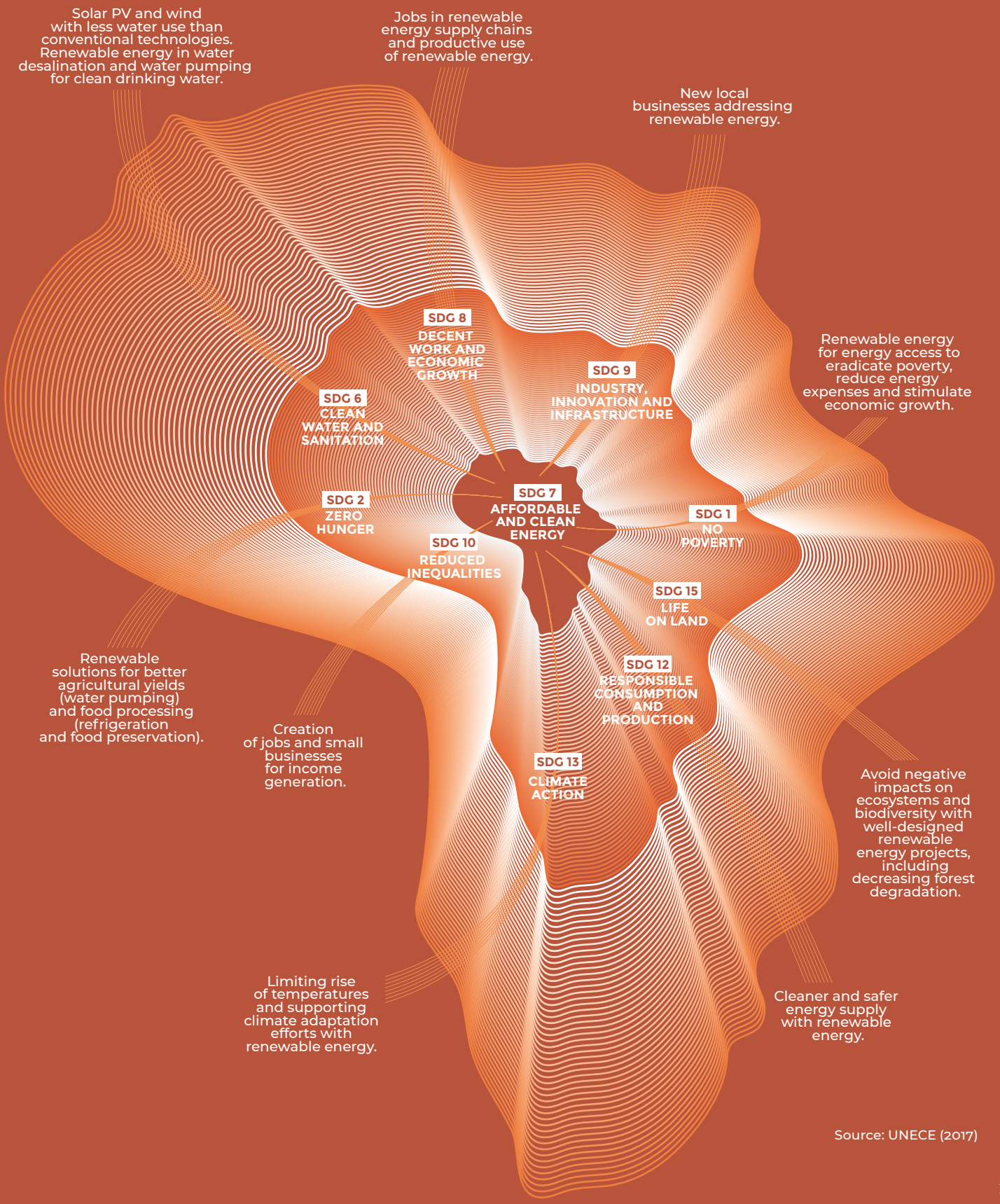
The nexus between access to electricity and broad development outcomes has been extensively investigated over the years by academic literature[10] and the evidence of a positive correlation has been demonstrated by empirical analysis (Figure 3).

Key findings include:

- **access to electricity impacts macro-economic indicators**, such as GDP growth and employment creation, and improves business productivity and skills development;
- increased access to electricity also **provides benefits at the micro-economic level**, in terms of household income growth, levels of expenditure, household consumption and allocated time for duties;
- **individual, social and communal well-being increases as electricity access spreads**, which positively impacts health outcomes, children's education, women's empowerment, access to entertainment and information, life satisfaction;
- **access to electricity also benefits the environment**, playing a role in climate change mitigation efforts, resource use and pollution.

FIGURE 2

CLEAN ENERGY ACCESS FOR DEVELOPMENT: SDG 7 INTERLINKS WITH ALL OTHER SDGs

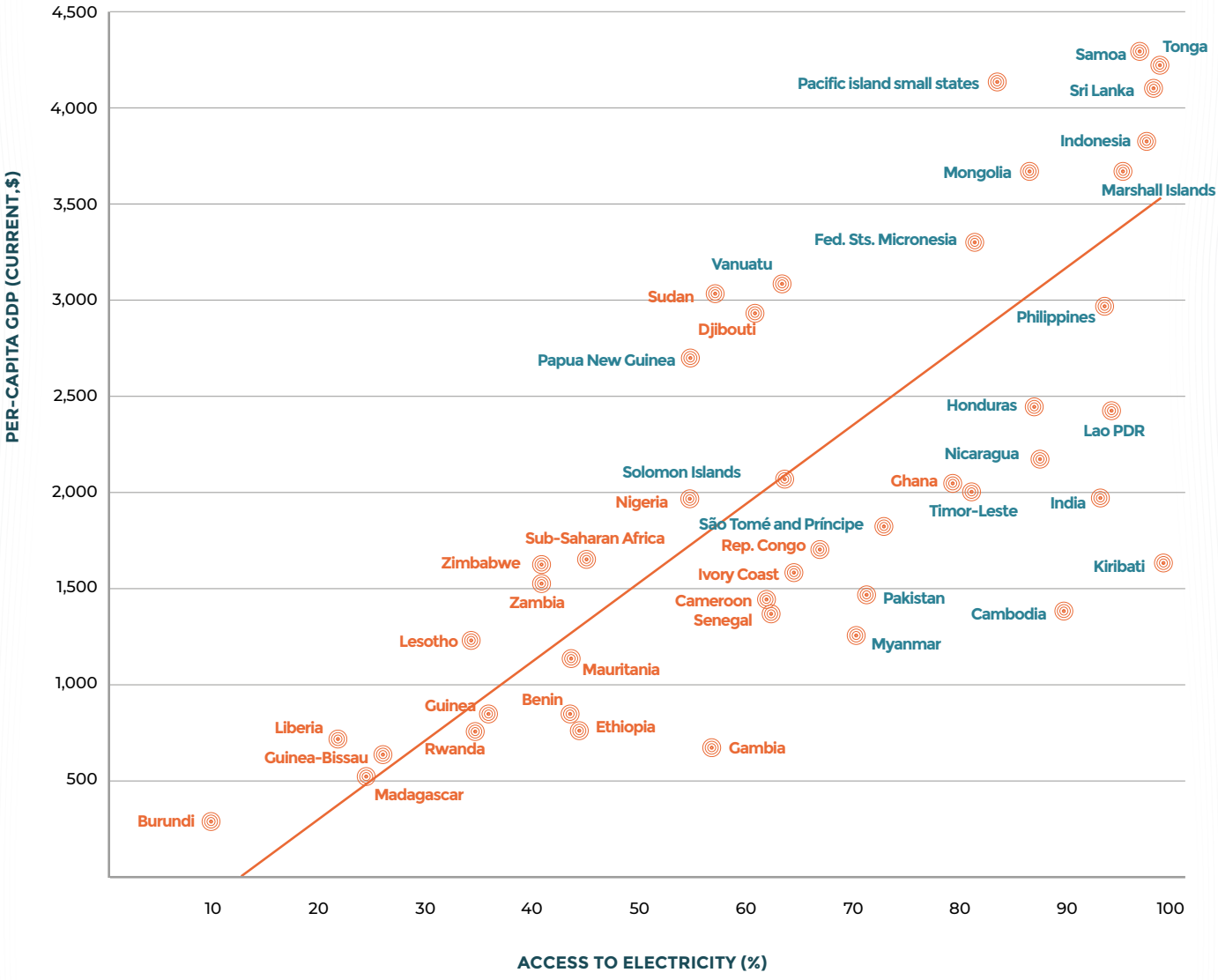


Source: UNECE (2017)

FIGURE 3

POWERING AFRICA'S POTENTIAL: THE ROLE OF ELECTRIFICATION FOR SUSTAINABLE GROWTH

3.1. CORRELATION BETWEEN ACCESS TO ELECTRICITY (%) AND PER-CAPITA GDP (CURRENT, $)



Source: World Bank (2017)

GREATER ACCESS TO ELECTRICITY IS DIRECTLY CORRELATED TO INCREASED PER-CAPITA GDP.

3.2. TOTAL FINAL ENERGY DEMAND OF REFERENCE COUNTRIES AND REGIONS (1990-2015, Mtoe) AND AVERAGE PER-CAPITA GDP (CURRENT, $)

Sources: IEA (2019), IMF (2019)

THE SHARE OF ELECTRICITY IN TOTAL FINAL ENERGY DEMAND INCREASES AS ECONOMIES MODERNIZE.

3.3. ACADEMIC EVIDENCE OF THE IMPACT OF ELECTRIFICATION ON DEVELOPMENT OUTCOMES

Source: adaptation from A. Eberhard and G. Dyson (2020)

HOW ACCESS OR IMPROVED QUALITY OF ELECTRICITY IMPACTS

Stimulating GDP growth*	MIXED
Direct job creation Indirect job creation through impulse of economic growth	POSITIVE
Business productivity and competitiveness	POSITIVE
Amount of energy consumed	POSITIVE
Increased incomes Increased ability to spend	POSITIVE
Reduction of energy expenditure	MIXED
Number of appliances held by households or businesses	POSITIVE
Quality of housing Increased asset wealth	MIXED
Increased migration to an electrified community	MIXED
Increased economic activity Increased entrepreunership	MIXED
Increased time for new activities (income-generating, leisure)	POSITIVE
Poverty or inequality reduction	MIXED
Improved healthcare Reduction of health problems	POSITIVE
Decrease of indoor air pollution Reduction of associated diseases	POSITIVE
Improved educational outcomes Increase of study hours and years of schooling	POSITIVE
Improved women's equality and empowerment (greater participation in non-household work, improved leisure time)	POSITIVE
Better life-satisfaction and mental well-being	POSITIVE
Increased sense of safety in communities and at home	POSITIVE
Increased access to entertainment and information	POSITIVE
Reduced GHG emissions	POSITIVE
Reduced local e-waste pollution	POSITIVE
Reduced deforestation	POSITIVE

Significant positive impact
(> 70% of studies)

Mixed findings
or not significative

Significant negative
or null impact (> 50% of studies)

*Casuality of relationship between electricicty use and Gdp growth can work in either or both directions.

The analysis above confirms that **Africa would benefit immensely from the transformative power of universal electrification**. By extension, the expansion of its electricity systems would in turn play a fundamental role in helping the continent achieve its wider socio-economic goals. However, providing reliable, affordable and sustainable electricity to some 600 million Africans who still lack access to it, while coping with the growing needs of the continent, will require a **drastic change in the current strategies and policies**. New solutions must be explored to satisfy Africa's rising power demand and build the infrastructure needed for its economic rise and modernization.
One idea recognizes that the impact of electricity access and the delivery of the development outcomes mentioned above could be achieved more efficiently if there were close **alignment between any efforts to rollout electrification and the pursuit of broad socio-economic targets, such as business and job creation or productivity support**. Because electrification plays such a fundamental role in creating and supporting income-generating activities, comprehensive strategies which look to interlink electricity expansion with support to productive uses and local development can create virtuous circles of socio-economic development[11]. This, in turn, creates opportunities for greater investments thanks to the increase of average electricity consumption levels[12].

ELECTRIFICATION IN AFRICA IS PROGRESSING BUT THE EVOLUTION IS STILL TOO SLOW

Between 2014 and 2018, the rate of increase in newly-electrified people in Africa finally outpaced the rate of population growth, reaching an average of 20 million new connections per year. As a result, the number of people without access to electricity, mainly located in the sub-Saharan region, peaked at 610 million in 2013 and has been slowly declining ever since, reaching around 595 million in 2018 (out of 1.08 billion people living in sub-Saharan Africa).

Most of the new connections resulted from an expansion of the main national grid. However, thanks to the adoption of more diversified and comprehensive energy access strategies, as well as recent technology improvements (for example, "pay-as-you-go" appliances, storage systems, etc.), **off-grid solutions were able to progressively cover a greater role** in the **provision of basic electricity access in Africa**. Solar-home systems, solar kits, lanterns and mini-grids counted for about 5 million of new access gains in 2018 (up from only 2 million in 2016)[13].
However, **more than two-thirds of the global population without access to electricity lives in sub-Saharan Africa** and its electrification rate of about 45% in 2018 is not only the world's lowest but it is also below what the average income level would allow us to predict[14]. Between 1991 and 2016, electricity access in Africa progressed at rates well below the average observed in other recently electrified regions[15], progressing of about 0.8% per year on average against an international benchmark rate of about 2.4%.
At the same time, Africa is also confronted with

a low level of electricity uptake in areas already covered by the grid: depending on data sources, the median uptake rate is estimated to be somewhere between 46% and 70%[16]. Moreover, average consumption levels among people who do have access to electricity remain very low, about 200 kWh/cap in the sub-Saharan region – and as little as 100 kWh/cap in rural areas – compared to a global average of 3,000 kWh/cap. This remains a large challenge to overcome in the next decade. Some of the underlying areas are touched on in the second part of this chapter.

At a global level, from a sustainable development point of view, **we have entered the "Decade of Action"**[17]. The measures that will be implemented in the coming years to achieve universal electrification will be pivotal in determining whether the **next decade will deliver on the wider SDG targets and enable Africa's continued transformation**. To cope with both supply and demand constraints of Africa's electricity systems and to solve the complex equation of universal electricity access in Africa, it is clear that more comprehensive strategies need to be adopted.

MASSIVE INVESTMENTS IN ELECTRICITY INFRASTRUCTURE ARE NEEDED TO DELIVER AFFORDABLE, RELIABLE AND SUSTAINABLE ELECTRICITY FOR ALL

It is worth looking at the scenarios recently developed by the IEA's Africa Energy Outlook[18] to help us clarify the magnitude of Africa's future electricity needs. In 2018, Africa's total power demand was about 700 TWh, with South Africa and North Africa accounting for over 70% of this total demand. Sub-Saharan Africa (excluding South Africa) has a total electricity demand of about 200 TWh, with a population of over 970 million people. By comparison, France's power demand is about 520 TWh for 67 million people, and Italy's 335 TWh for 60 million people.

Delivering universal access to electricity by 2030 will require that nearly 60 million people are connected every year across the continent, tripling the current average of 20 million new connections per year. The IEA also predicts that if the current stated government policies continue without changes in the coming decade, the share of sub-Saharan population with access to electricity will rise, but only from the current 45% to 65%, and around 530 million people will remain without access by 2030. It is clear that **significant policy changes are therefore required to define and implement comprehensive energy access strategies. These should consider and adopt each and every technology solution available**: from on-grid generation capacities to decentralized solutions; from solar-home systems and mini-grids to transmission and distribution networks.

If universal access were to be achieved by 2030 and maintained later on, electricity demand would be expected to grow sharply and reach about 1,400 TWh by 2030 and 2,300 TWh by 2040. This is based on forecasts by the IEA's Africa Case scenario (for more insights about IEA's scenarios see Box 1).

Sub-Saharan Africa will be the region experi-

BOX 1

GENERATING A BRIGHT FUTURE FOR AFRICA: ACCESS TO ELECTRICITY AND RELIABLE POWER

INTERNATIONAL ENERGY AGENCY (IEA)

The IEA's recent analysis of Africa points to the increasing influence of the continent in shaping global energy trends over the next two decades. Africa Energy Outlook 2019 underlines the unique opportunity the continent has to pursue a low carbon-intensive development model, with renewables pushing ahead to power a brighter future.

The report makes clear that Africa's energy future is not predetermined. Today, the persistent lack of access to electricity and unreliable supply act as a brake on the continent's development. Furthermore, the momentum behind today's policy and investment plans falls well short of meeting Africa's energy needs. In contrast, the IEA's Africa Case scenario points the way to a brighter future. Built on the premise of Agenda 2063, it envisions an inclusive and sustainable roadmap for accelerated economic and industrial development, delivering universal energy access by 2030 and a sharp reduction in the number of premature deaths resulting from air pollution.

A critical task for policy makers is to provide access to electricity to sub-Saharan Africa in 2030. Meeting this challenge will require tripling the number of people gaining access per year. It involves a combination of solutions including grid expansion and densification as well as mini-grids and stand-alone systems. North African countries along with South Africa account for 70% of Africa's 700 TWh of electricity demand today. In the coming decades, sub-Saharan Africa (excluding South Africa) is set to see the fastest growth, with electricity demand in these economies expected to grow eight-fold to 1,500 TWh by 2040 in the IEA's Africa Case. Even though per-capita electricity demand in Africa remains low in this scenario, at less than 30% of today's global average, electricity supports an increasing range of residential, service and industrial uses in 2040.

Keeping pace with Africa's soaring needs requires a major expansion of the power system as installed generation capacity needs to grow from 240 GW today to 925 GW, with capacity in sub-Saharan Africa (excluding South Africa) increasing eight-fold to 600 GW. Renewables account for three quarters of new generation, with a key question being how fast solar will grow. Africa has the richest solar resources in the world, but at only 5 GW of solar PV installed capacity today, the continent accounts for less than 1% of the global total. Nonetheless, solar PV has the potential to overtake hydropower and natural gas to become the largest electricity source in Africa in terms of installed capacity (and the second-largest in terms of generation output). Wind also grows rapidly in several countries including Kenya, which is also at the forefront of geothermal deployment. Hydropower continues to grow across the continent. In addition, the rapid deployment of renewables leaves room for plentiful gas to grow as a flexible and dispatchable source of electricity.

Progress in improving power infrastructure, notably transmission and distribution networks within countries and across borders will shape the development and reliability of Africa's electricity sector. Targeted investment and maintenance could reduce power outages and losses from 16% today to a level approaching advanced economies. Regulatory tools and human capacity also need to expand to support Africa's burgeoning power pools and strengthen regional electricity markets.

Realizing a brighter future in Africa requires a significant scale-up in electricity sector investment, far beyond today's levels. Achieving reliable electricity supply for all would require an almost four-fold increase from current levels, to around $120 billion a year through 2040, with half of that amount for networks. Mobilizing this level of investment involves implementing policy and regulatory measures aimed at improving the financial and operational efficiency of utilities and facilitating a more effective use of public funds to catalyze private capital. Developing the technical and regulatory capacity to support sector reform policies, as well as Africa's own financial sector, is also critical to ensure a sustained flow of long-term financing to energy projects.

There are reasons for optimism, both from the dynamism of Africa's energy sector and from the technologies that offer a cost-effective way to meet rising electricity demand in a sustainable way. Whether and how African countries take advantage of these opportunities will depend in large part on the way that energy policies evolve. With the right institutional and policy foundations, a well-functioning energy sector can be the cornerstone of economic development and make a huge difference in the lives of Africa's people.

encing the fastest growth in power demand worldwide, with an average growth rate of 11% per year against a continental average of around 5.7%. Electricity consumption per capita will reach about 850 kWh/cap, more than quadrupling current per capita consumption level.

To meet this increased demand, total power generation capacity in Africa (including on-grid, mini-grid, stand-alone systems and back-up generation capacity) **will need to grow** from the current 230 GW to a total of 550 GW by 2030 and 924 GW by 2040. Representing the least-cost solution in remote, rural and some peri-urban areas, off-grid appliances and mini-grids will provide electricity to about 450 million Africans by 2030 and will represent around 10% of total electricity supply in the sub-Saharan region by 2040.

However, **grid-connected infrastructure will most likely remain the bulk of capacity additions**: grid-connected capacity in the sub-Saharan Africa region (excluding South Africa) will grow from the current 80 GW to around 490 GW by 2040, with most of new capacity coming from renewable technologies. Non-hydro renewables will experience the largest increase in terms of capacity additions per year, with about 10 GW of new capacity coming online every year between 2019 and 2040.
If we translate the above into investment dollars, **achieving full access by 2030 and maintaining it to 2040 will require an average investment of around $120 billion per year**, of which $100 billion dedicated to the sub-Saharan region. **Renewables** (excluding hydro) **are meant to account for the large majority of this investment effort**, representing about 70% of all investments in new generation capacities for the 2019-2040 period. The new investments in renewable capacities, excluding hydro, are expected to total around $800 billion in the 2019-2040 period, or $37.7 billion per year over the period. In addition, renewables are expected to account for $16.3 billion of investments in new stand-alone and mini-grid supply systems per year (about one quarter of total investments in new capacity). Should these investments come about, Africa would then not only be on a path to achieving its socio-economic development ambitions, but it would also finally become a major player in the global renewable energy market.

RENEWABLES CAN LEAD THE FUTURE OF AFRICA'S ELECTRICITY SECTOR

Renewable energy technologies already represent the most competitive, secure and sustainable solution to achieve universal electricity access in several African countries. Thanks to a continued global decrease in technology costs, to the scalability and reliability of the technologies themselves, and to the abundance of well-spread, indigenous and sustainable sources of energy, it is clear that renewable technologies, most notably wind and solar PV, will remain the least-cost option in Africa for both on-grid generation and off-grid appliances expansion.

Besides energy access, **renewable energy would create significant spillover effects across the 2030 Agenda's dimensions of sustainability** (Figure 2). In terms of environmental sustainability, renewable energy development can help mitigate impacts of energy consumption, **reduce pollution and fight climate change**, enable the development of more sustainable cities and communities and improvements in biodiversity. Renewables can also **enable social and human development** by improving general well-being through increased access to basic services, including healthcare and water access. They can also **catalyze quality education and thereby promote gender equality**.

Moreover, the development of decentralized renewable solutions, such as solar-home systems or renewable-based mini-grids, will open new opportunities for market players, beyond large public utilities and independent power producers, fostering **job creation and local development**[19]. Opportunities may arise from the whole value chain of the renewable energy sector for manufacturers and technology providers, small generators and distributors, product retailers, as well as O&M players.

Greater uptake of renewable energy technologies will then be fundamental in supporting Africa with its ambition to achieve universal electricity access by 2030 and beyond. The IEA forecasts show that **renewables will account for approximately 63% of total electricity generation in sub-Saharan Africa by 2040**, with non-hydro renewables covering about 37% of total power supply in the Africa Case scenario. Solar PV and wind are expected to be the prominent technologies, counting for above 85% of all new renewable capacity additions: solar PV should reach 124 GW by 2030 and 316 GW by 2040, while about 51 and 94 GW of wind capacity will be added to the African power systems by 2030 and 2040 respectively. Further coordination of power sector development and access strategies is, however, needed to reach scale and overcome the current barriers for Africa's power sector transformation.

BOX 2

THE CURRENT STATUS OF AFRICA'S RENEWABLE ENERGY SECTOR AND A FOCUS ON CITIES

REN21 (RENEWABLE ENERGY POLICY NETWORK FOR THE 21ST CENTURY)

Africa represents a small proportion of global renewable energy (RE) capacity, with only 2% (46 GW) of the global RE share installed across the continent by 2018. However, Africa's installed capacity has increased in recent years, with 2018 recording 8.4% growth in annual additions. Africa's top country for both cumulative solar PV and wind power capacity in 2018 was South Africa, with 1.8 GW and 2.1 GW of total installed capacity, respectively. South Africa was ranked third globally for concentrating solar thermal power (CSP) capacity (400 MW installed by 2018), with Morocco ranking fourth (366 MW installed). While Africa and Middle East together only accounted for 5% of global RE investments in 2018, this represents a 57% increase from 2017 levels. Much of this progress was driven by South Africa and Morocco, which – along with Egypt and Kenya – were all billion-dollar RE markets.

RE development in Africa is concentrated on electricity, with much less focus on the heating, cooling and transport sectors, reflecting a global trend. For example, 40 African countries had regulatory policies for the renewable electricity sector in 2018, compared to 7 countries with renewable transport fuel obligations or mandates, and only 2 countries with renewable heat obligations or mandates.

Energy access in Africa continues to lag behind, particularly in sub-Saharan Africa, which has an overall electrification rate of just 43%. In parallel, 84% of the population of sub-Saharan Africa still lacks access to clean cooking fuels, which poses significant health challenges. Distributed renewables for energy access (DREA) – such as off-grid solar systems, mini-grids, and clean cooking facilities – play a key role in providing access to energy 58% of global investments in off-grid electricity companies has occurred in East Africa alone since 2010;

with the region accounting for 60% of all pay-as-you-go system sales in 2018. The job opportunities associated with DREA are numerous, as the off-grid solar sector supported an estimated 110,000 full-time equivalent jobs in sub-Saharan Africa in 2018, a quarter of which were held by women.

RE use is growing in urban areas, with cities becoming instrumental in accelerating RE uptake at local levels. Sub-Saharan Africa is the world's most rapidly urbanizing region, with 55% of the urban population living in slums. As cities account for approximately two thirds of final energy use and around three quarters of CO_2 emissions globally, RE can play a crucial role in reducing urban pollution and greenhouse gas emissions, boosting employment, and improving energy infrastructure. In 2018, several African cities sourced at least 70% of their electricity from RE, including Dar es Salaam and Nairobi.

Health concerns are one of the main drivers of urban RE developments, as the burden of diseases attributable to pollution from fossil fuel burning is particularly prominent in cities. For example, the city of Johannesburg has deployed the country's first district heating network that incorporates solar thermal technologies, and both Johannesburg and Cape Town have used green bonds to fund several low-carbon public transport developments. The combined need for improved municipal energy infrastructure and reduced energy costs also help to boost RE uptake in African cities. This can be seen in the city of Lagos, where the Lagos Solar Project was established to provide a reliable supply of renewable power to critical public infrastructure, such as schools and health facilities. RE development in cities also presents an opportunity to increase citizen participation in energy governance, as municipal governments tend to have a more direct relationship with local citizens and businesses than national governments. For example, in the Moroccan city of Chefchaouen – located in a UNESCO national park – selected officials, companies, and civil society representatives are working together to develop the city's sustainable energy plan.

While the potential for RE to meet energy needs is high, increasing the level of investment remains a challenge, due to issues such as constrained municipal budgets and low credit ratings. For example, only 25 of South Africa's 280 municipalities are deemed bankable or creditworthy. Many African cities depend on the national government for funding and access to financial markets, requiring closer collaboration between different levels of governance.

Note: this box has been built upon REN21's Renewables 2019 Global Status Report (GSR 2019) and the Renewables in Cities 2019 Global Status Report (REC 2019). 2019 status data will be released in the GSR 2020, while the REC 2020 will include a chapter focusing on African cities.

UNTYING THE KNOTS OF AFRICA'S POWER SYSTEMS

AFRICA NEEDS TO SPEED UP THE TRANSFORMATION OF ITS ELECTRICITY SECTOR

To enable the continent to achieve the aspirations outlined above, a hard look at where Africa finds itself today is required. There are some clear findings:

- a radical change in the current landscape of electricity sectors in each of the countries is required to power Africa's transformation;
- **the current lack of adequate electricity supply** hampers Africa's potential and is slowing down its socio-economic growth: recent estimations show that poor electricity infrastructure shaves up to 2% off Africa's average per capita growth rates[20];
- **electrification is progressing, although at a lower rate than the one needed** to achieve universal access by 2030. Furthermore, low uptake rates in areas already covered by national grids slow down the progression of access rates and challenge the sustainability of grid expansion investments;
- **pervasive reliability challenges hamper business activities** and are a major deterrent for households to be interested in access;
- **electricity tariffs remain high**, especially when compared to other developing regions. High tariffs, coupled with poor reliability, act as a major deterrent to the increase of average per capita consumption levels, which stand among the lowest in the world;
- **most African public utilities are in financial distress** and are not able to cover their operational costs. This reduces their ability to finance the required investments to expand, maintain and operate electricity infrastructure, and forces them to rely on extensive public subsidies.

The net result is that **Africa suffers from a large gap in terms of electricity infrastructure** combined with insufficient technical and financial capacity, and low utility performances. The next sections look at some of these areas in more detail.

UNDERSTANDING CURRENT CHALLENGES IS KEY TO ADDRESSING INFRASTRUCTURAL INADEQUACIES

Africa's electricity sectors are characterized by a high level of unreliability. Frequent power outages, along with expensive electricity tariffs and connection costs, pose major challenges to electricity uptake and economic development in Africa (Figure 4). This has consequences: by one measure, this **unreliability is estimated to represent a 2-3% GDP loss per year for the continent**[21].

a. Unreliable power supply is a drag on both people and business activities

The unreliability of power supply is recognized as one of the main causes of the **unfriendly investment climate in most sub-Saharan countries**[22]. Between 2006 and 2016, 79% of firms in sub-Saharan Africa experienced power outages, with an average of 8.6 power outages a month and an average duration of 5.7 hours per outage[23]. **Outages have direct implications on business operations, causing unused production capacity, reduction of sales and delay in the supply and delivery of goods**, among other things. Taking into consideration the frequency of electricity outages, the analysis of data indicates that each percentage point increase results in a decline of about 3.3% in a firm's output[24]. Similarly, the effect in a firm's revenues is nontrivial: a percentage point increase in outage frequency results in a 2.7% loss in revenues[25].

If African businesses are deeply impacted by the unreliability of power supply, so are a **vast majority of African households**, who **endure several hours a day without access to power**. Frequent power blackouts and brownouts limit the ability of households to engage in productive, educational and recreational activities and limit end users' potential utilization of electricity. The **poor reliability of power, alongside the cost of electricity connection and tariffs, keeps uptake and consumption levels low**, and poses a major constraint on economic impact. This is also true for off-grid electricity solutions, where capacity, durability, and reliability are crucial to household uptake.

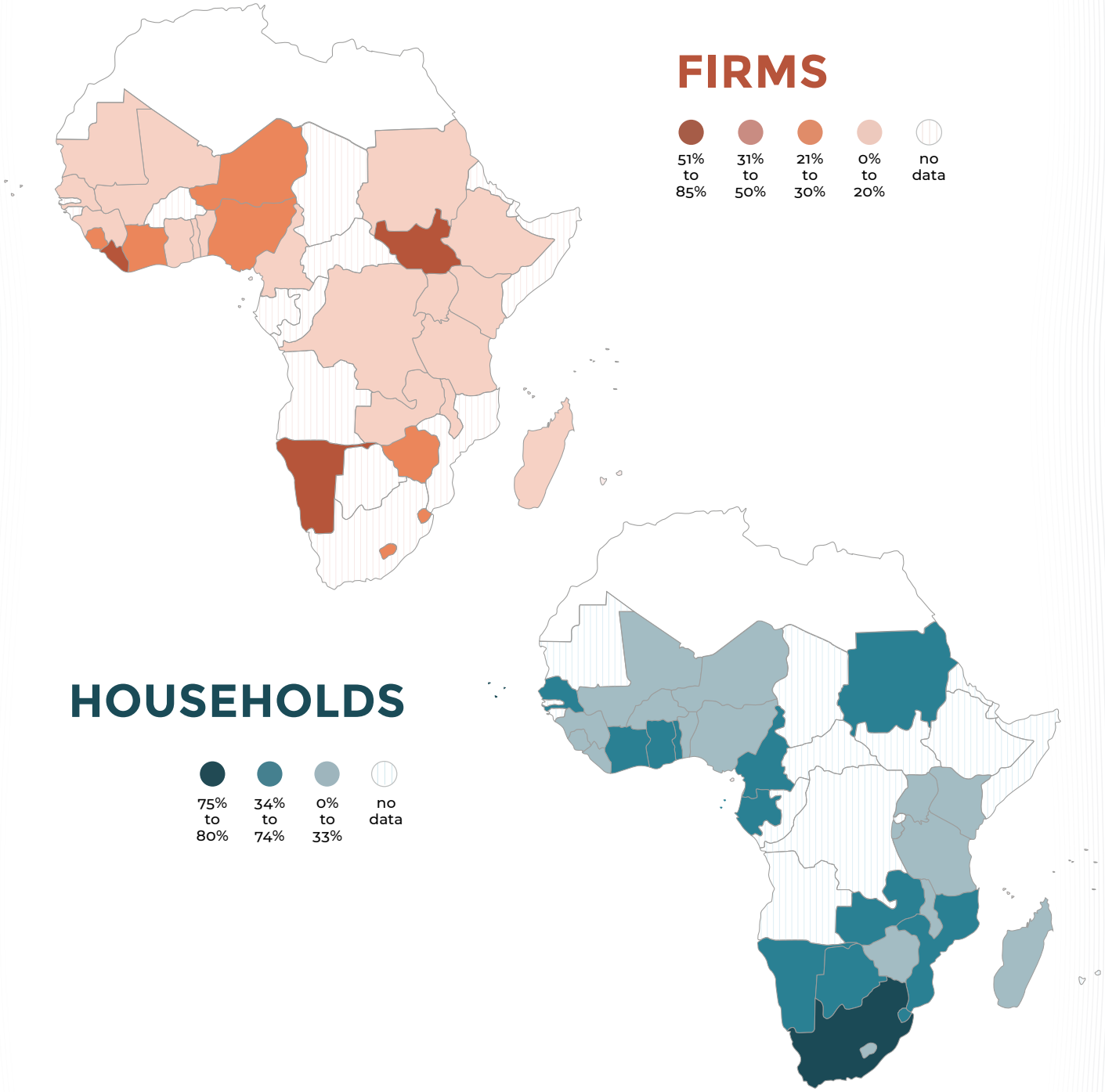
b. High electricity tariffs and connection costs currently make the existing electricity service unaffordable for many Africans

Field research shows that while the desire for electricity access among African populations is high, the **ability to pay** for the electricity service, both through grid connection or off-grid appliances, **is still low**. The costs of accessing electricity services (both as connection costs and average electricity tariffs) in Africa are often high and in many countries well above what most households can reasonably afford. In many African countries average retail tariffs are above the levels observed in other developing regions (for example, South-East Asia), reducing Africa's economic competitiveness. **Tariffs are often high due to the high wholesale cost of electricity** with many countries still relying largely on diesel (along with coal and hydro) to generate electricity. Low technical performances of networks, and the consequent high losses, also represent a key reason for high electricity tariffs. More worryingly, the **current high tariff levels still do not cover the real costs of electricity services in many African countries**, where utilities do not even cover their operational costs and rely on public sub-

FIGURE 4

UNTYING THE KNOTS OF SUB-SAHARAN AFRICA'S ELECTRICITY SYSTEMS: A SNAPSHOT OF CURRENT CHALLENGES

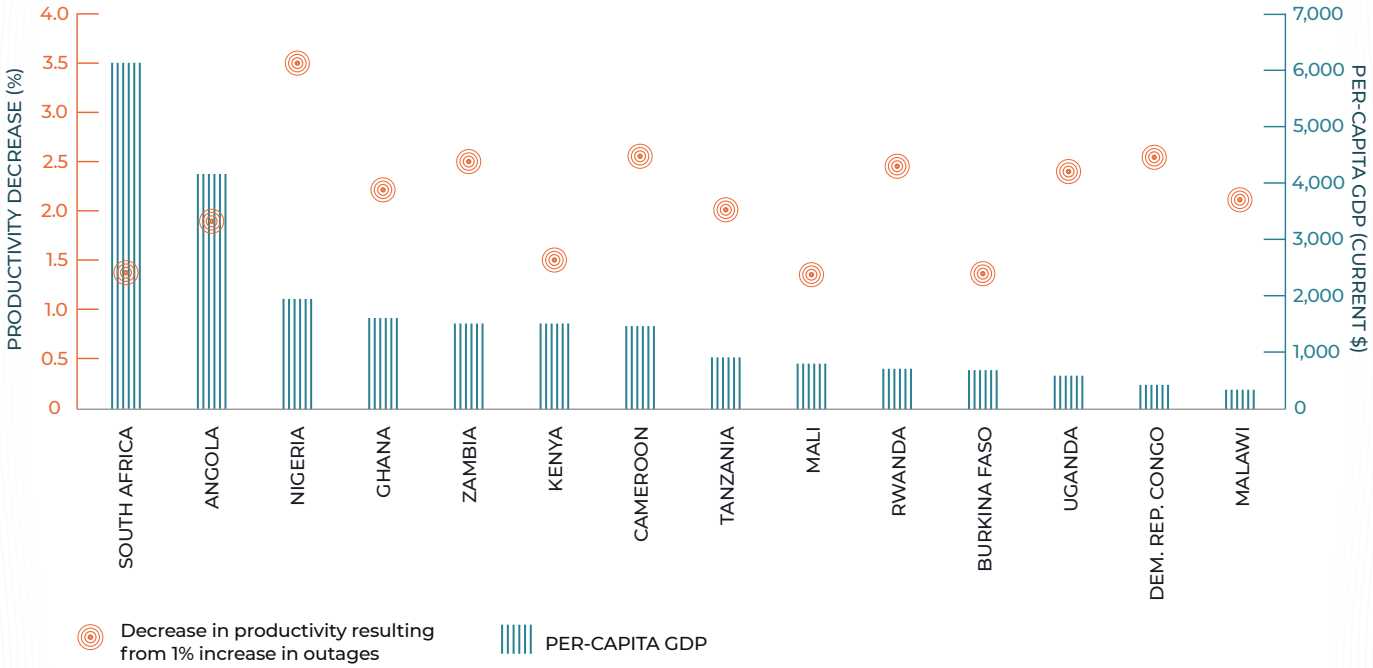
4.1. SHARE OF FIRMS AND HOUSEHOLDS WITH ACCESS TO RELIABLE ELECTRICITY IN SUB-SAHARAN AFRICA (%)



Source: AFD and World Bank (2019)

THE RELIABILITY OF ELECTRICITY IS A MAJOR CHALLENGE FOR BOTH FIRMS AND HOUSEHOLDS IN SUB-SAHARAN AFRICA.

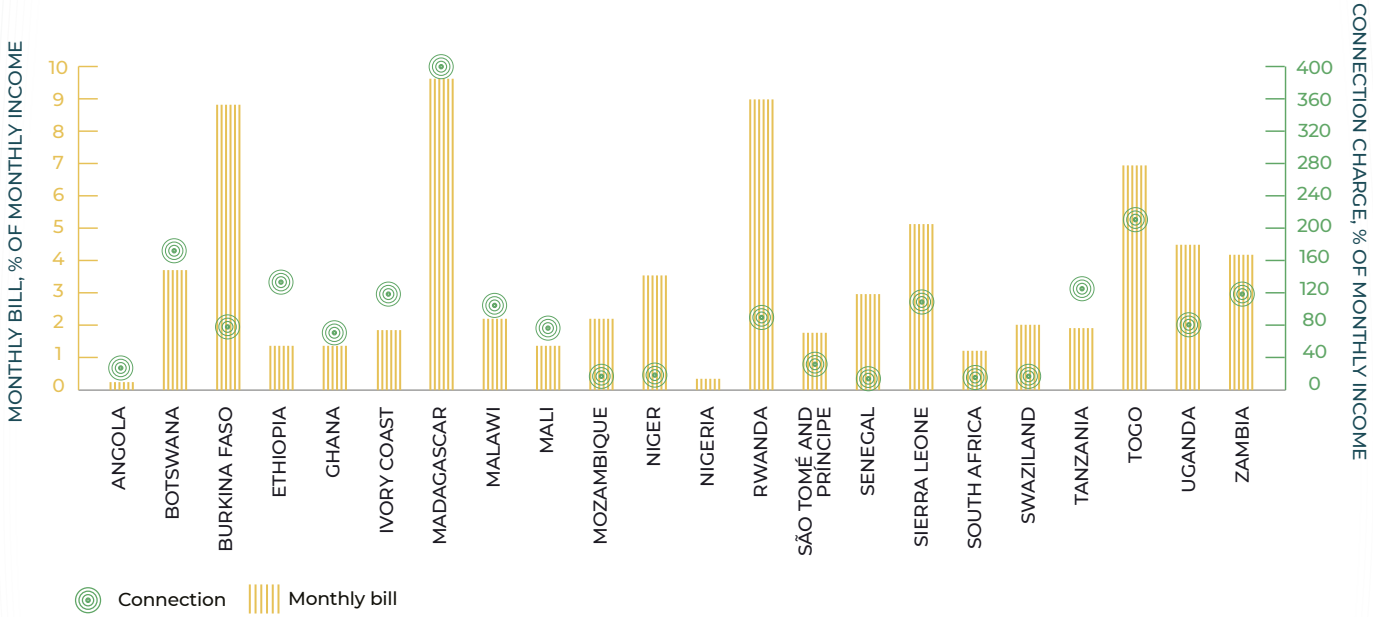
4.2. DECREASE IN FIRM PRODUCTIVITY RESULTING FROM INCREASE IN OUTAGES (%, CURRENT $)



Source: World Bank Group (2019)

POWER OUTAGES ARE LOWERING FIRM PRODUCTIVITY AND CAUSING LARGE SALE LOSSES IN SUB-SAHARAN AFRICA.

4.3. MONTHLY BILL FOR 30 kWh AND CONNECTION CHARGES AS PERCENTAGE OF MONTHLY HOUSEHOLD INCOME



Note: household weights are used for the calculations. Nigeria charges households for the cost of material needed. In South Africa, both the connection fee and the monthly bill may be waived for households according to different eligibility criteria depending on the municipality.

Source: World Bank Group, AfrEA, ESMAP (2016)

UNRELIABLE AND UNAFFORDABLE ELECTRICITY SUPPLY IS SLOWING DOWN UPTAKE AMONG AFRICAN HOUSEHOLDS.

sidies to cover their losses and finance all the investments[26]. This is one reason why **adding new customers is often unprofitable for African utilities**, and **investments** (for example, in grid extensions and connections) **are difficult to sustain financially**. As a consequence, connection costs and access charges tend to be very high, largely as a possible countermeasure for utilities to recover some of their losses of connecting new customers[27]; thus, reducing further uptake and access progression.

c. African power systems are vulnerable to the effects of climate change

Overall, Africa's contribution to greenhouse gas (GHG) emissions is still marginal on the world stage. However, the continent is already particularly vulnerable to the effects of climate change and global warming. These include **rising temperatures and decreasing water availability**, as well as the growing severity of storms, flooding and increased sea level with its **consequences on agriculture, biodiversity, natural ecosystems and ways of life**.

Physical infrastructure systems, and most notably electricity infrastructure, are also highly exposed to the destabilizing effects of climate change, potentially leading to major system breakdowns and electricity shortages[28].

Research suggests that every increase in average temperature of about 1 °C may result in a reduction of electricity output by 0.45-0.8%. Higher temperatures may also result in greater transmission and distribution losses due to the increased resistance of power lines. Changes and reduction in flood frequency and hydrological outputs will impact the ability of the existing hydropower capacity to deliver on its expected electricity output. This type of risk is particularly relevant for African electricity systems, which are already fragile as a result of their aging (or inadequate) equipment, a general lack of repair and maintenance, and major gaps in both generation and network infrastructure. The droughts in Ethiopia and Zambia in 2019[29], which gave rise to major power shortages in those countries due to the drop in hydropower output, provide a further reminder about the urgency to intervene to build up the resilience of African power systems. Africa's historical reliance on fossil fuels, traditional biomass and hydropower as main sources of energy supply will only serve to exacerbate the power sector's vulnerability to climate change disruptions whilst simultaneously greatly contributing to the expected growth of Africa's GHG emissions.

In the long term, **continued power supply disruptions**, exacerbated by climate change development and high electricity service costs, will act to **reduce the competitiveness of African economic systems**. What has been seen to date is that measures adopted by firms and households to make up for electricity infrastructure disruptions are often costly and polluting, such as the purchase and running of back-up diesel generators. The net outcome of these interim solutions is a further reduction of the competitiveness of African economies and goods; it also increases the costs of production, and the contribution of African power sectors to climate change.

To support Africa's upcoming socio-economic transformation, the electricity infrastructure needs to be expanded, maintained and future-proofed for this challenge now. Renewable energy technologies offer a possibility to overcome many of the above mentioned challenges and should therefore be a major part of the solution.

RENEWABLE ENERGY INVESTMENTS IN AFRICA REMAIN LIMITED DESPITE THEIR POTENTIAL

It is self-evident that closing Africa's infrastructure gap matters greatly for the continent's economic development, for the quality of life of its people, and for the continued growth of its business sector. To date, positive efforts have been made to close this gap. One example being that the average annual funding for Africa's infrastructure development increased exponentially from historical levels ($77 billion a year between 2013 and 2017). The transport and energy sectors together accounted for nearly three quarters of the total investments made[30].

However, **Africa now needs a significant scale-up in electricity sector investment** in order to guarantee clean, affordable and secure access to electricity, and support continued progress towards sustainable development. The continent currently ranks among the lowest regions in the world in terms of investments in electricity generation and grids, **accounting for just 4% of global power supply investment**[31]. Achieving reliable electricity supply for all would require an almost fourfold increase, to around $120 billion a year through 2040, of which above $100 billion only in the sub-Saharan region.

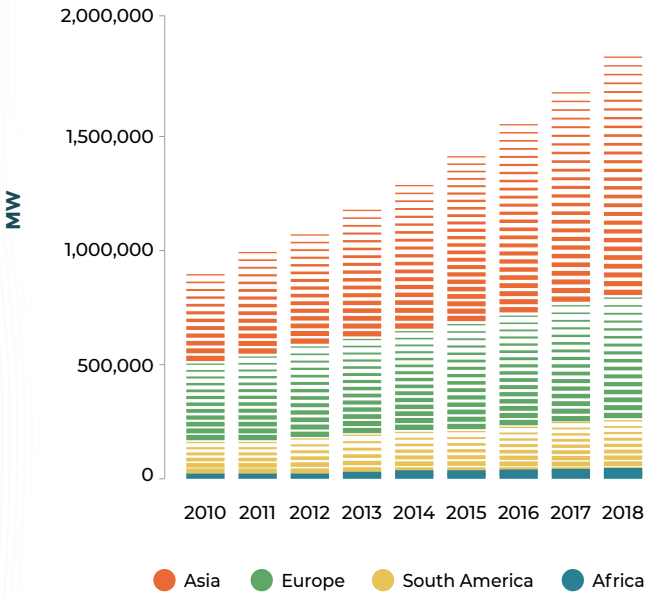
When looking at capacity additions, **global renewable energy capacity installed grew rapidly in the past few years, but in Africa it still amounts to less than 2% of the total capacity** installed in the past ten years. Even when compared to other emerging markets, levels of capacity that have been added in sub-Saharan power infrastructure systems stand below the amounts needed to make a difference: emerging markets saw 107 GW of clean energy come online in 2018 against just 0.87 GW commissioned in sub-Saharan Africa. Renewables make up a small share of new capacity, with large hydro and gas seeing most of the growth in recent years[32].

As a result, **Africa remains at the margins of the renewable electricity sector, despite the vast potential it holds** in terms of demand, competitiveness and natural resources (Figure 5). **The continent is in fact largely endowed with a variety of good renewable resources**. It has, for example, some of the richest solar resources in the world, but to date only 5 GW of solar photovoltaics have been installed in Africa, amounting to less than 1% of the total installed globally. Potential for wind energy is also very large – particularly in northern and southern Africa[33]. **Larger and targeted investment flows in the renewable electricity sector are, however, necessary all across Africa** to address the reliability of electricity supply and to make progress on access to power and uptake.

FIGURE 5

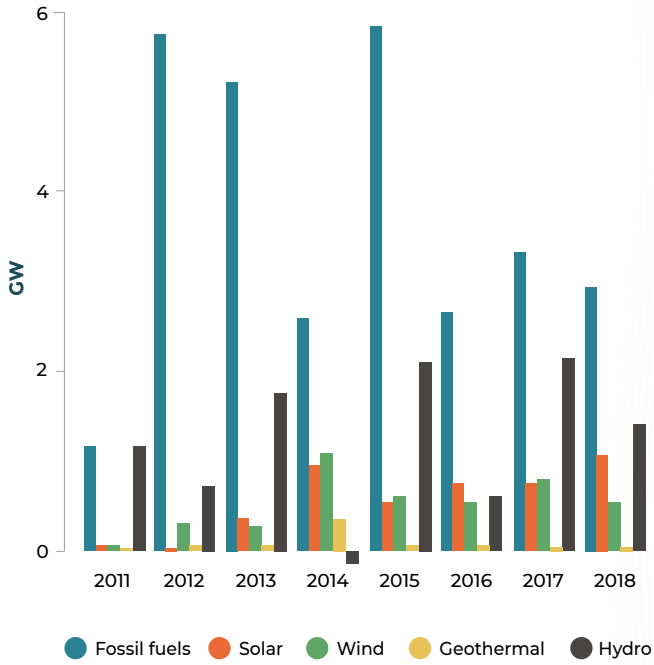
THE EVOLUTION OF RE INVESTMENTS IN AFRICA: A DEEP DIVE INTO THE PAST DECADE

5.1. INSTALLED RENEWABLE CAPACITY IN SELECTED REGIONS (2010-2018, MW)



Source: IRENA (2019)

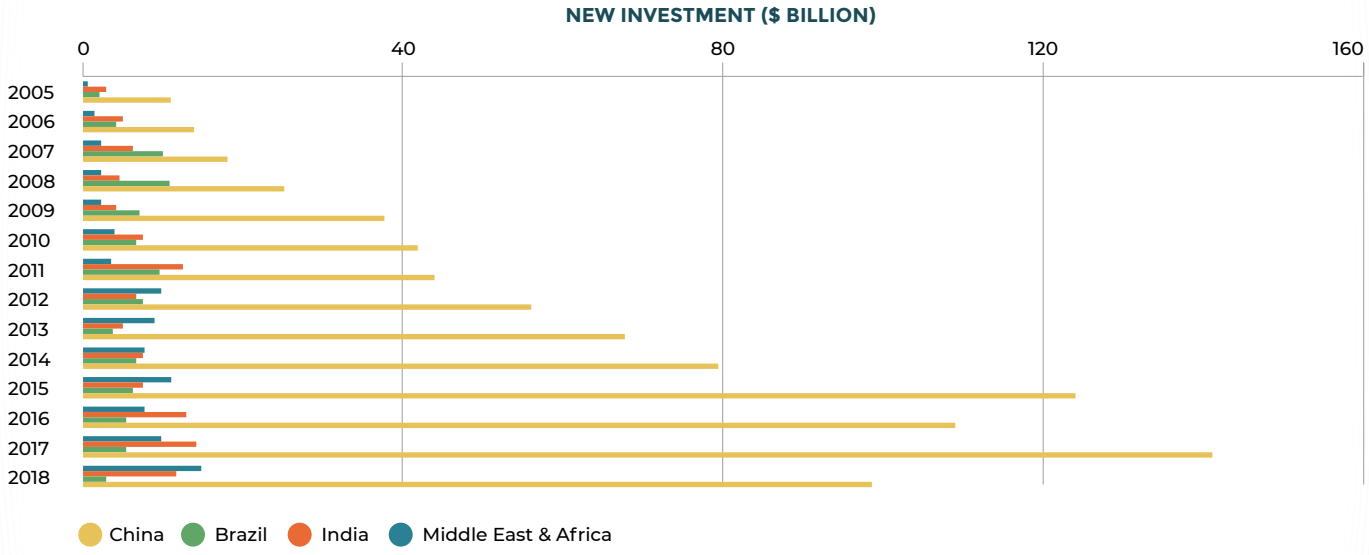
5.2. YEARLY RENEWABLE CAPACITY ADDITIONS AGAINST FOSSIL FUELS IN AFRICA (2010-2018, GW)



Source: BNEF (2019)

AFRICA'S ROLE IN THE GLOBAL RENEWABLE ENERGY MARKET IS STILL MARGINAL.

5.3. TRENDS IN RENEWABLE ENERGY INVESTMENTS IN SELECTED COUNTRIES AND REGIONS (2005-2018, $ billion)



Source: Frankfurt School, UNEP Centre, BNEF (2019)

INVESTMENTS IN RENEWABLE ENERGY ARE INCREASING WORLDWIDE, CONFIRMING VAST MARKET POTENTIAL.

INVESTMENT CAPACITY FROM RECURRENT ACTORS IS CONSTRAINED, CALLING FOR A CHANGE IN CONTEMPORARY STRATEGIES

According to the IEA, "the amount of investments needed for the provision of electricity in sub-Saharan Africa is substantial and well above the level of the current flows into the region's power sector"[34]. As previously mentioned, about $100 billion per year during the 2019-2040 period would be needed for the sub-Saharan region to reach universal electricity access. Of this amount:

- around one half will be needed to finance **electricity network expansion** and enhancement;
- roughly one third will go to **on-grid generation expansion** and roughly one quarter to **off-grid systems and appliances**;
- **renewable-based technologies (excluding hydro) will represent about 75% of the total investments in new generation systems** (both on-grid and off-grid).

For this to happen, there would need to be a major shift in Africa's electricity sector investment paths in the coming decades. A first step to enable this would be to understand the channels that need to be mobilized to enable this level of investment to flow.

The bulk of power sector investments in Africa to date has been financed through public funds coming directly from central government budgets or public utilities, or from development finance institutions. The World Bank reports that during the 1990-2016 period, over 60% of total capacity added in the sub-Saharan region was financed by public resources, while this share reached 80% in the North-Africa and Middle-East region[35]. The IEA reported that about two thirds of all new generation projects with a final investment decision between 2014 and 2018 were in some way publicly financed.

However, increasing constraints on domestic and public budgets as well as the growing financial distress of African public utilities have **reduced the ability of central governments or utilities to invest in expanding, efficiently operating and maintaining power sector infrastructure**[36]. The end result today is a poor performance by the African electricity infrastructure sector and a reduced capacity to mobilize capitals to invest (Box 3). Clearly, this situation cannot continue in the long term.

In addition, if DFIs played – and continue to play – a fundamental role in supporting investments in the expansion of Africa's electricity sector, their expenditure capacity is also insufficient to meet future needs. They do however have a role to play: their power to leverage finance and investment will be fundamental to advance power projects in the continent by **attracting more private capital and actors in the expansion of electricity infrastructure across Africa**.

BOX 3

ACCELERATING PRIVATE INVESTMENT IN AFRICA'S ENERGY SECTOR

UNITED NATIONS ECONOMIC COMMISSION FOR AFRICA (UNECA)

In the pre-Covid period, major shifts are witnessed in Africa's energy sector. Underpinned by economic and population growth, electricity demand has risen rapidly, expected to reach 700 GW by 2040, when Africa's GDP will reach four times its current size. The major challenge of access to electricity is slowly easing, as more than 600 million people lacking access in 2015 dropped to about 540 million in 2019; even though accelerated gains are expected in the next 10 years. Progress in the continent varies. Between 2015 and 2018, we have witnessed Mozambique, Guinea, Sierra Leone, Tanzania, Central African Republic, Mali, Guinea-Bissau and Lesotho achieve access increases between 30 and 50%; Chad, Rwanda, South Sudan, Ethiopia, Liberia and Malawi between 51 and 67%; Kenya by 80%; and Uganda by 131%. If similar rates can be registered in short periods in the rest of the continent, progress can be compounded.

The way Africa produces energy is also shifting, with new sources gaining momentum and off-grid systems coming to the solution mix. By 1990, Africa produced half its electricity from coal, and nearly none from sustainable non-hydro clean sources. By 2017, coal's importance has declined to 30%, while natural gas has increased from 14% to 40%, with an increasing role for solar, wind, geothermal and other clean energy sources. Renewables will need to enter the energy mix significantly, in relation to the current less than 5%, thus constituting the timely focus on a just energy transition.

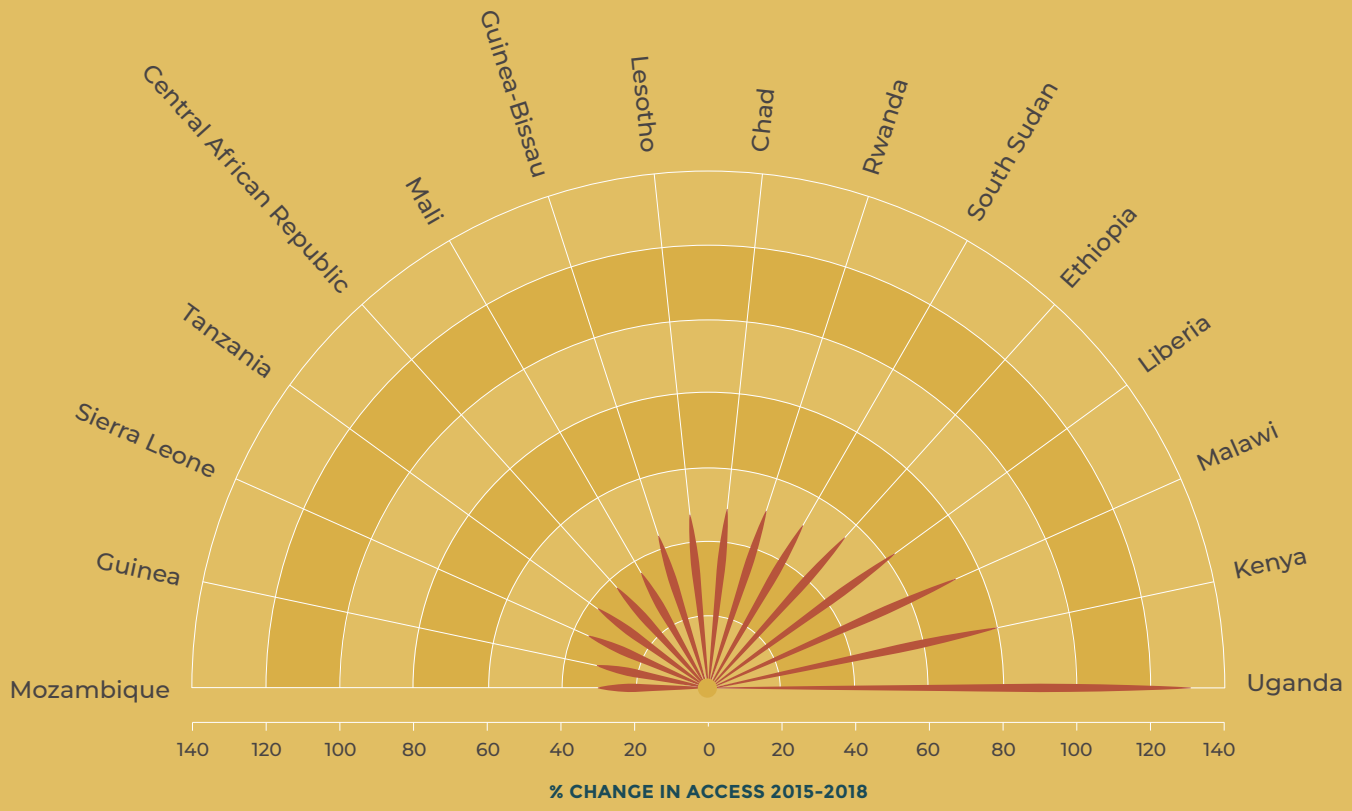
These shifts are mainly driven by public investments, with no more than 15% financing from the private sector. This has, therefore, brought the sustainability of current infrastructure investment models into question, in this Decade of Action, where accelerated and up-scaled investment is required from private and public sectors. The UNECA, in its 2019 Economic Report on Africa, argues that accelerating sustainable growth in the continent will require

increasing investment to 35% of GDP and raising public revenue by 12-20%. It further advocates for crowding in private capital based on the observation that 1% increase in private investment relates to 1.6% growth in real GDP. Therefore, accelerating private sector investment in the energy sector in the next 10 years to 2030 is a fundamental priority given the growing constraint in public finance, largely driven by public debt, and the added strain expected from Covid-19 containment and economic recovery disbursements.

It is within this context that UNECA is partnering with RES4Africa Foundation in completing an electricity regulatory environment assessment to support national regulators to address barriers to accelerating private investment. Along with the transmission, distribution and off-grid system regulations, this includes codes and implied market structures, thorough review of the generation segment of the market. More so in the post-Covid period, the future of Africa's energy sector development will depend on the openness and efficacy of the public sector in enhancing a conducive business climate to attract private capital, and structure public-private partnerships towards the achievement of SDG 7 by 2030.

FIGURE A

CHANGE IN ELECTRICITY ACCESS IN SELECTED COUNTRIES (2015-2018, %)



Source: UNECA

CROWDING IN PRIVATE INVESTMENTS IN AFRICA'S RENEWABLE ENERGY MARKETS

THE PRIVATE SECTOR IS REQUIRED TO PLAY A PROMINENT ROLE IN DELIVERING ON AFRICA'S POWER NEEDS

Historically, private sector participation in African electricity systems has been very limited, also when compared to other developing regions[37]. Less than 20% of sub-Saharan countries allow private sector participation in their electricity transmission and distribution services. More progress has been seen in the generation segment, where private sector participation is currently allowed in more than 60% of African countries, mainly in the form of **independent power producers (IPPs). To date, IPPs are undoubtedly the most successful model for private sector participation in the financing and development of new electricity infrastructure**: around 90 utility scale projects were built in the 2014-2018 period using an IPP model, of which 60% were financed from private sources. The share of private funding for IPP projects in Africa, today, stands between 40% to 80% (in South Africa).

In recent years, the IPP model has been particularly successful in supporting the development of renewables in Africa, becoming the leading model for building new renewable capacities. IPPs, and more generally private finance, were behind more than 60% of all funded solar PV projects between 2014 and 2018, and almost 70% of wind projects. Most notably, the share of private funding is higher for renewable projects than for conventional capacities (fossil or hydro), as evidence of the growing interest of project developers and private capital for the renewable energy market in Africa[38].

IPPs represent the best available option to scale up private sector participation in power sector development across Africa, especially in the renewable segment, and they are meant to become a major player in Africa's electricity sector landscape. However, IPPs still only play a marginal role in Africa's wider electricity landscape (Figure 6). **Their further use faces persistent market challenges** which conspire to prevent the further scale-up of investments. These challenges often include, amongst others:

- an **inefficient governance of the sector** and implementation of policies;

- an **unfriendly business environment**, most notably for foreign investors;
- a **lack of transparent competition** and project procurement **rules**;
- a weak financial sustainability of public counterparts and high-perceived risk environment; and
- a lack of well-identified, investment-ready projects.

While there is a call for the private sector to increase its role and help to fill the current investment gap in Africa's electricity infrastructure, doing so without addressing the challenges above would most probably only result in a muted response and outcome.

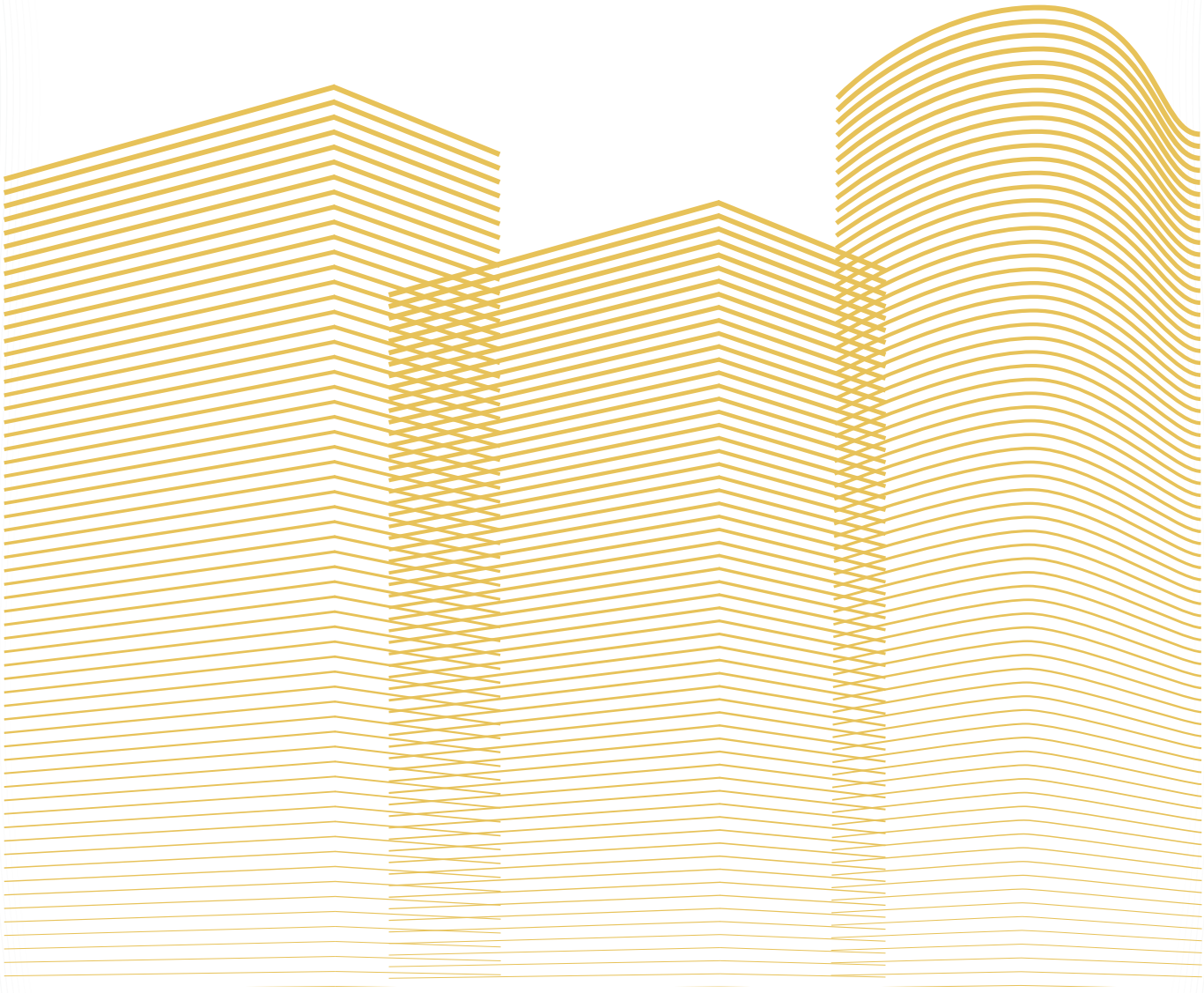
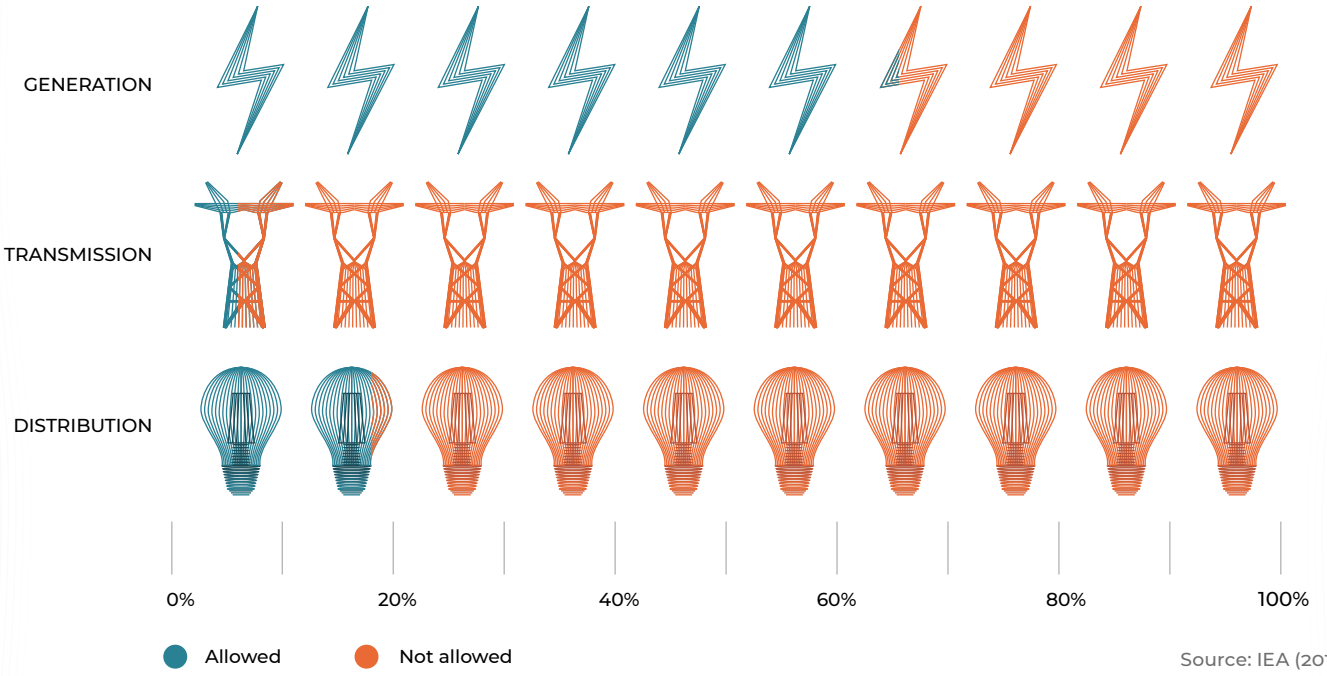


FIGURE 6

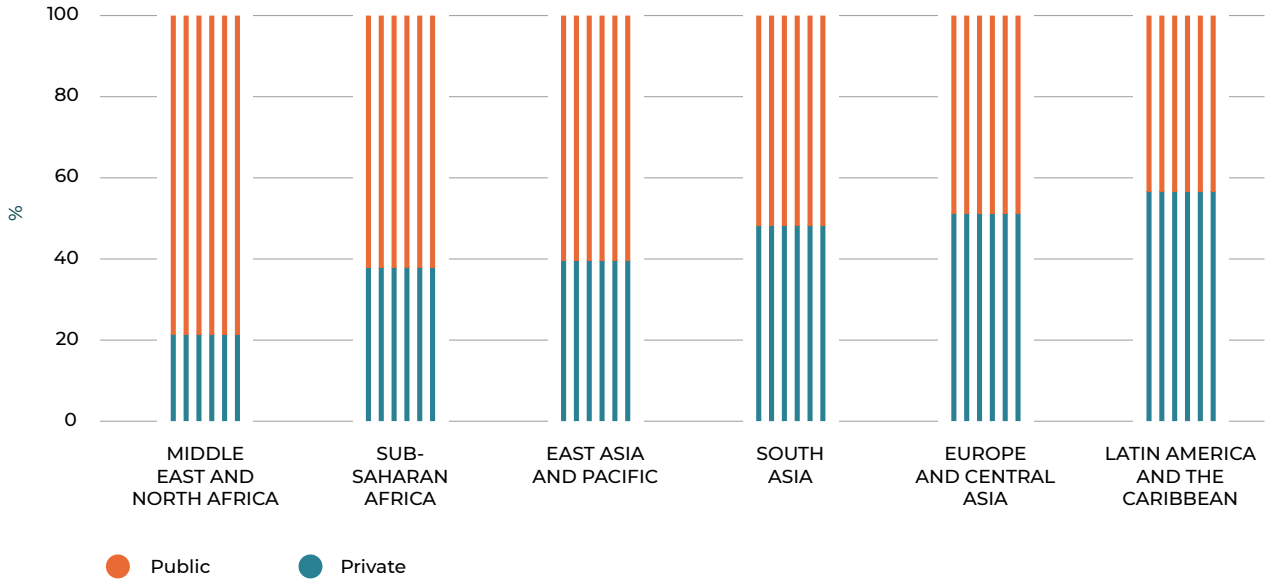
SCALE UP PRIVATE SECTOR PARTICIPATION: INVESTIGATING PRIVATE CONTRIBUTION TO AFRICA'S ELECTRICITY SYSTEMS

6.1. PRIVATE SECTOR PARTICIPATION IN SUB-SAHARAN AFRICA BY ACTIVITY (%)



Source: IEA (2019)

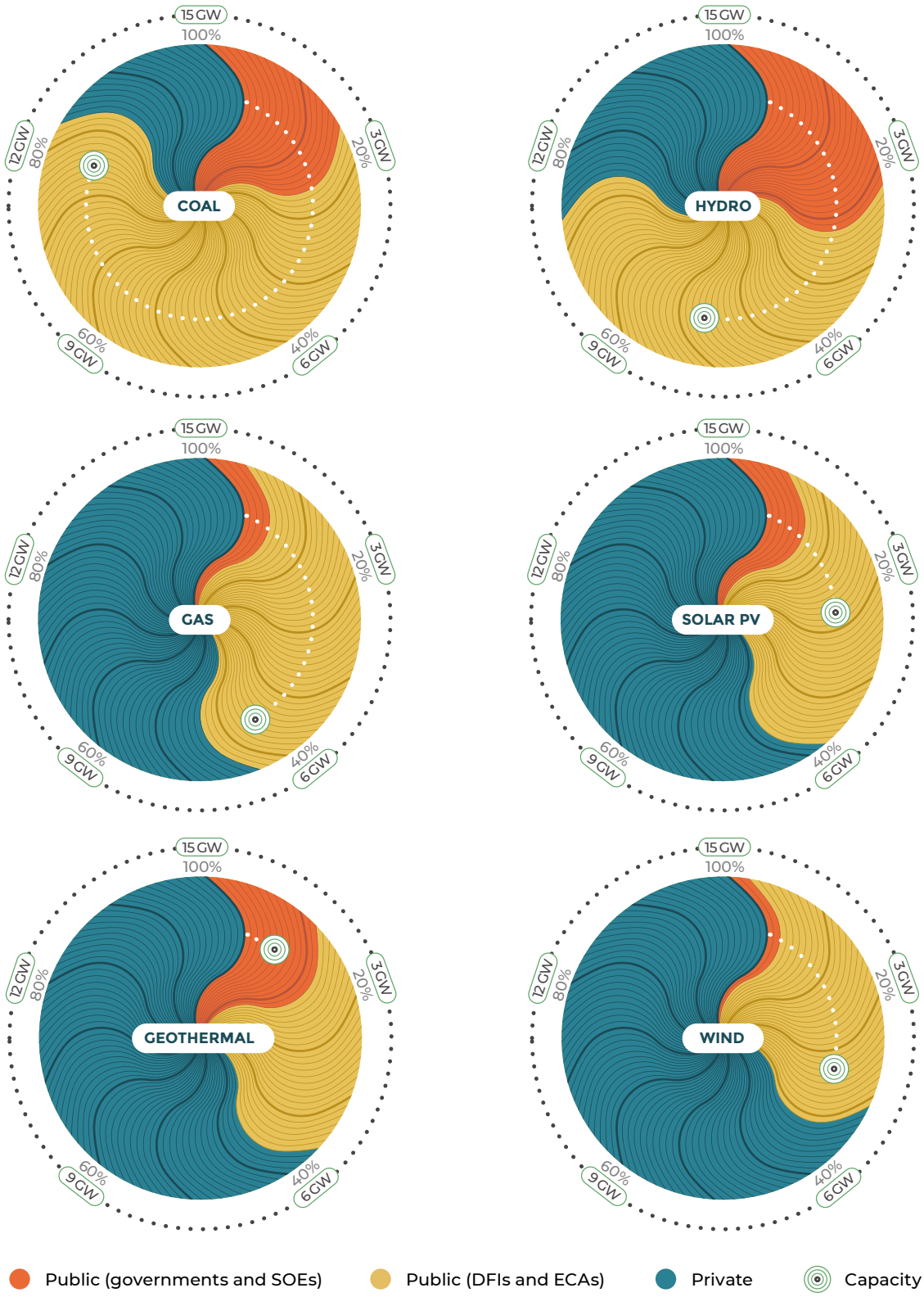
6.2. SHARE OF PRIVATE INVESTMENTS IN CAPACITY ADDITION IN SELECTED REGIONS (1990-2016, %)



Source: World Bank (2019)

PRIVATE SECTOR PARTICIPATION IN AFRICA'S ELECTRICITY INVESTMENTS REMAINS MARGINAL, BUT IT IS INCREASING IN FINANCING GENERATION CAPACITY EXPANSION.

6.3. FINANCING SOURCES FOR POWER GENERATION INVESTMENT BY SHARE, TYPE AND CAPACITY IN SUB-SAHARAN AFRICA (2014-2018, %, GW)



Source: IEA (2019)

THE PRIVATE SECTOR IS BECOMING THE MAIN SPONSOR OF RENEWABLE ENERGY CAPACITY DEVELOPMENT IN AFRICA THROUGH THE IPP MODEL.

NEW WORKING MODELS ABLE TO BRING INVESTMENTS AT SCALE ARE NEEDED

Feedback from the market suggests that more than the unavailability of capital or funding resources, what **today is preventing the scale-up of private investments** in new renewable generation capacity in Africa – along with the lack of a conducive environment for private players – is the lack of projects' pipelines to which private investors and project developers can commit resources[39].

Governments may lack the capacities necessary to convert project proposals into economically attractive opportunities for investors. Investors, on the other hand, may have difficulties in finding investable projects offering a level of return commensurate with their risk appetite which to commit their resources to.

There is a need to **find new strategies and initiatives able to define a working model that allows both sides to play an appropriate role** in delivering the new infrastructure. By allocating risks in the most sensible way and allowing for commercial returns to be generated as desired, such initiatives would play a pivotal role in **ensuring project bankability, attracting new investments at scale**, and building a track record of successfully implemented renewable projects across Africa.

A fundamental part of whether investments succeed will also be understanding what drives, or hampers, the building of a conducive investment environment for IPPs. Private investors, and more specifically IPPs, are affected by a variety of factors related both to the situation of the project-hosting country, as well as to the fundamental characteristics of projects.

They include among others:

- investors' perception of efficiency and reliability of the project-hosting country in terms of market structure, legal framework, currency issues, etc.;
- **coherence and transparency of government policies and regulations** regarding power sector governance and private sector participation;
- **soundness of sectorial development plans** and project procurement rules;
- **weak financial sustainability of public counterparts** and high-perceived risk environment;
- **general lack of technical capacities in local institutions** to efficiently manage project phases, from preparation to operation.

These elements are still too common in many African markets, affecting the private sector's willingness to invest, as well as project bankability. Thus, there is a need to address these challenges to ensure a more conducive environment for the scale-up of private participation in Africa's power systems.

AFRICA AND ITS POWER SECTOR HAVE THE POTENTIAL TO BECOME GREEN

In this chapter we have postulated what the future of Africa's electricity sector could look like. We have also examined current challenges and possible steps that could be taken to achieve the hoped for outcomes.

It is clear that, for this to have a chance, **Africa needs to embark on a decade of significant transformation for its power sector**. Achieving universal electricity access and providing reliable, affordable and sustainable electricity supply to all African businesses and households will require to modify the way power sector's development has been managed until now: from **reforming sector governance to supporting the development of new technologies and services, from ensuring the future viability of its utilities to finding new ways of filling the current infrastructure gap in terms of generation capacities and electricity networks**.

Delivering the supply of electricity to meet future levels of consumption will require a **significant investment effort** across the entire continent's electricity sector value chain. The need for new investments will grow sharply, most notably in the renewable energy sector. However, continuing with the current financing strategies will not enable Africa to meet its expected and required targets. Rather, a **major shift of investment strategies and paths is required, and the private sector will be called to play a much stronger supporting role**.

One encouraging development is that, thanks to their affordability and the abundance of local sustainable resources, renewable electrical technologies can be predominant and cost-effective in future African power systems. These technologies, most notably solar PV and wind, represent one of the most secure, reliable and competitive options to provide universal electricity access in Africa and deliver on set socio-economic targets.
The delivery of IPP projects across Africa over the last decade, especially to develop renewable energy capacities, brings these two developments together in a successful and proven outcome. It also highlights that **there is a growing interest from private companies and funds**, both international and local, for investment opportunities in Africa's power sector.

As a result, **the IPP model has the potential to become a major and scalable vehicle for further large-scale private sector participation**. The speed at which this can be achieved will depend on addressing some of the challenges noted earlier, and finding a better working model for collaboration. One that allows **both the public and the private sector to play an appropriate role in delivering the new infrastructure, whilst also allocating risks in the most sensible way**, and allowing for commercial returns to be generated. In the next chapter we begin to explore the role that project de-risking and the availability of risk-mitigation tools could play in the new working model.

THE ENERGY TRANSFORMATION IN AFRICA

FRANCESCO LA CAMERA, DIRECTOR GENERAL, INTERNATIONAL RENEWABLE ENERGY AGENCY (IRENA)

We are amidst a global pandemic that is devastating communities and livelihoods, including in Africa. While the immediate priority remains to manage the health emergency, Africa's response must also promote sustainable development and support the achievement of climate commitments under the NDCs. RE deployment is therefore a foresighted strategy to ensure a resilient future. RE can cost-effectively supply the electricity needed in Africa's rural communities to power health centres, facilitate the provision of clean water, support agriculture and promote other productive sectors. Africa could meet nearly a quarter of its energy needs from indigenous RE by 2030, with renewables constituting half the continent's total electricity generation capacity. This would require average annual sector investments of $70 billion which is key to Africa's long-term prosperity. The international community can foster cooperation among energy, health and development partners to mobilize high-level political and financial attention and scale up action on the ground. The Global Health and Energy Platform for Action (HEPA) launched by the WHO and UNDP in 2019 with IRENA and other key partners, can help facilitate such discussions. Since 2000, Africa has experienced rapid economic growth and improving social conditions. However, over the same period, global electricity access deficit has become increasingly concentrated in sub-Saharan Africa. Over 548 million people lacked access to electricity in 2018, as shown by the 2020 edition of "Tracking SDG 7: The Energy Progress Report", the preparatory work of which was chaired by IRENA. RE can bridge this gap while generating a considerable social dividend, thanks to their scalability and replicability. Today, close to 300,000 people are employed in the RE sector in Africa, which is expected to grow significantly as regions expand RE deployment. Globally, over 11 million people are currently employed in the sector, 32% of which are women, demonstrating the potential of renewables in promoting gender equality. Africa's electrification calls for an increased coordination among continental and regional organizations. IRENA has adopted a comprehensive approach to promote concerted action at all levels. The objective is to scale up investments by not only supporting the creation of condu-

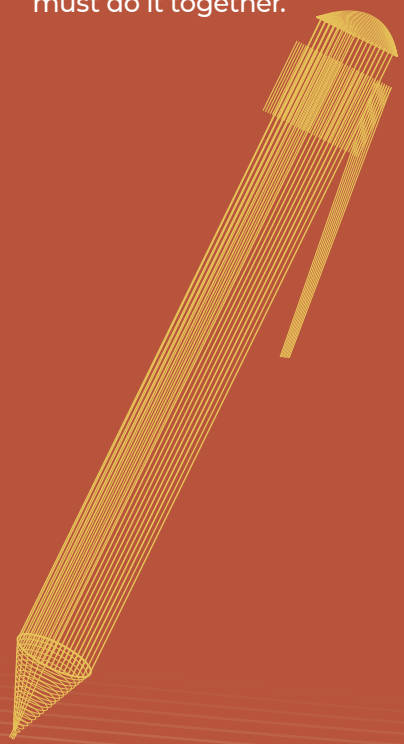
cive frameworks for renewables investments, but also providing project support for improved bankability and facilitating access to sustainable finance.

To date, 14 African countries have assessed the suitability of existing conditions for renewable energy, identifying key actions to accelerate deployment through IRENA-facilitated but country-led, multi-stakeholder Renewables Readiness Assessments. This has led to the design and implementation of activities for capacity building in long-term planning and policy and regulatory areas (i.e. auctions, PPAs, and grid integration). These nationally-driven actions can be supplemented by regional measures to help African countries create larger and more robust power markets, encouraging cross-border trade of renewable electricity. Providing support in these aspects on national and regional levels through the Clean Energy Corridors and on a continental level through the Programme for Infrastructure Development in Africa (PIDA) is a key priority for IRENA.

Decentralized RE solutions also represent a viable option. They can be tailored to local conditions and can to contribute to several development priorities, including provision of essential public services (e.g. education and health), improving livelihoods and alleviating poverty while promoting entrepreneurship. The Renewable Energy Entrepreneurship Support Facility (ECOWAS and SADC) provides training and mentorship to local entrepreneurs for improving their business models and project bankability, while developing the capacities of local financing institutions to understand and appraise RE projects. Such solutions can also improve energy availability and affordability for refugee settlements, as these populations are often left out of national electrification programs and statistics.

High-level political commitment and local leadership are essential for the success of the RE sector. Strong linkages to regional and African initiatives, such as Desert to Power, Coalition for Sustainable Energy Access, Africa Renewable Energy Initiative, and to partners such as RES4Africa Foundation, will be important in consolidating efforts. To accelerate investments, de-risking instruments such as renewAfrica are of key importance. IRENA works with partners (for example, UNDP, SEforAll, GCF, etc.) within the framework of the Climate Investment Platform, which offers an opportunity to translate targets into concrete investments on the ground. The related Investment Forums will provide a framework for platform implementation, aimed at helping help decision-makers create strong enabling environments and help developers prepare bankable projects and access finance.

Africa's energy transformation will yield a substantial climate and socio-economic dividend if done right. It is encouraging to see that 45 African NDCs contain quantified RE targets. 2020 is a critical year for the achievement of the Paris Agreement, and for simultaneously making progress on the UN SDGs. We know now better than ever that this is the time to act. And we must do it together.



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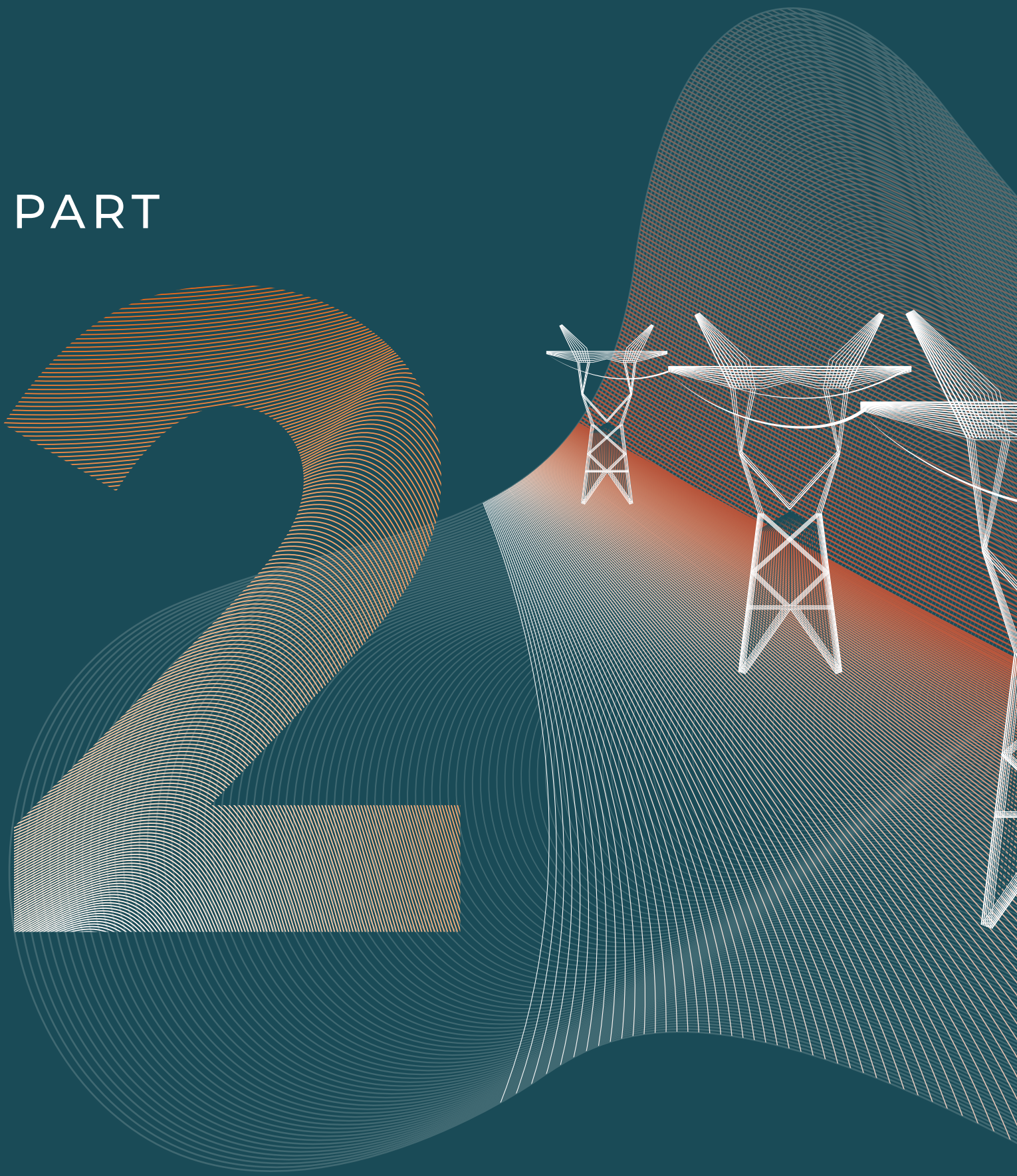
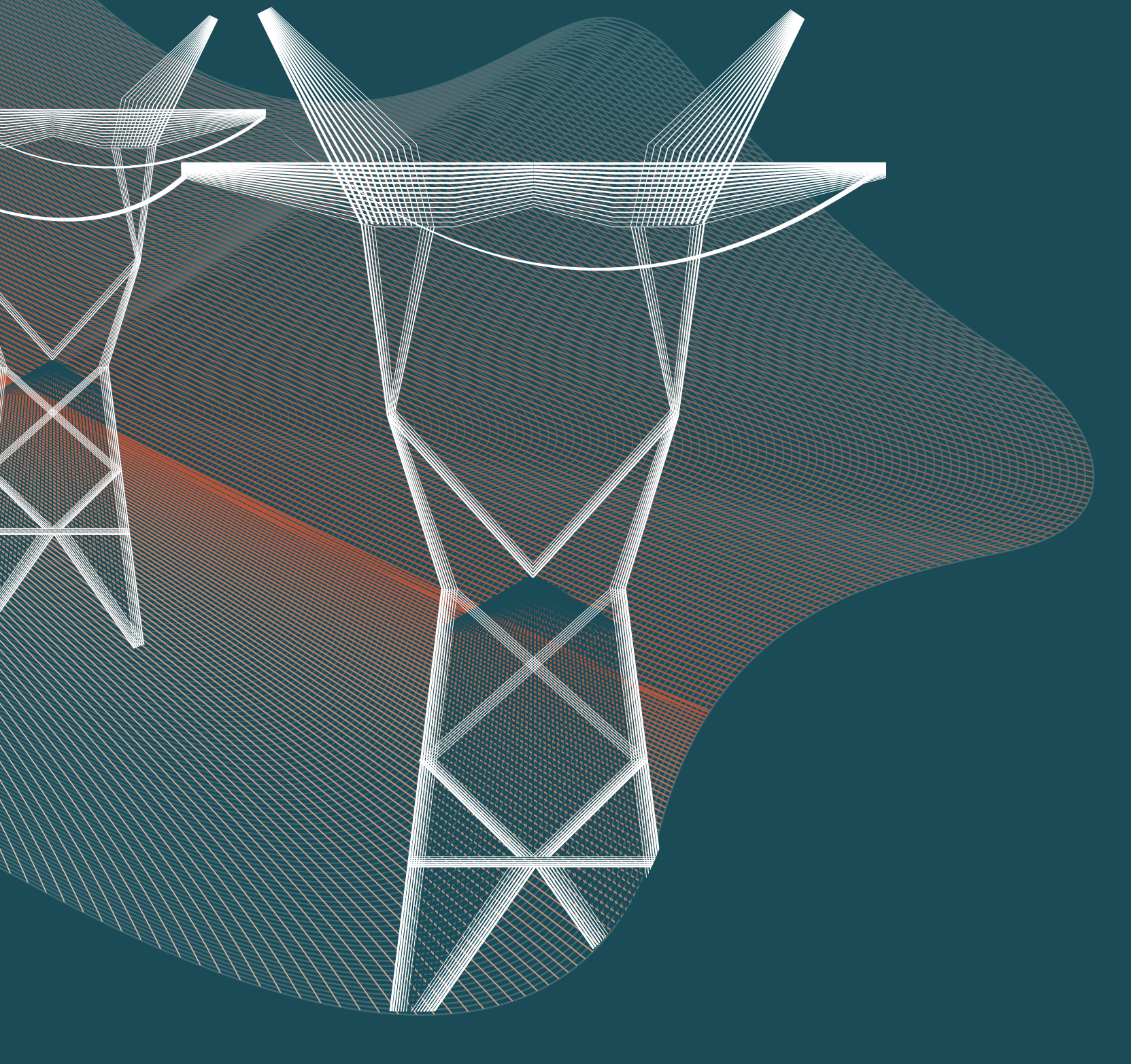


THE ROLE OF DE-RISKING TO UNLOCK AFRICA'S RENEWABLE ENERGY POTENTIAL



TO MITIGATE A RISK, FIRST WE NEED TO UNDERSTAND IT, OR THE MANY FLAVORS OF DE-RISKING

MORGAN LANDY, SENIOR DIRECTOR GLOBAL INFRASTRUCTURE AND NATURAL RESOURCES, INTERNATIONAL FINANCE CORPORATION (IFC) WORLD BANK GROUP

Taking advantage of the many benefits of renewables requires clarity of vision, intent, and purpose. Globally, the private sector has led deployment of renewable energy. It is highly likely this will also be the case in Africa because the needs are simply too large to be met with public funds or official development assistance alone. To date, most large-scale rollouts of renewables in Africa have been the result of well coordinated public interventions to invite and encourage private participation, using competitive processes, as the examples of South Africa and Egypt demonstrate. If we are to witness a substantial scaling-up of renewable energy, the public and private sectors must work in tandem to create the right conditions.

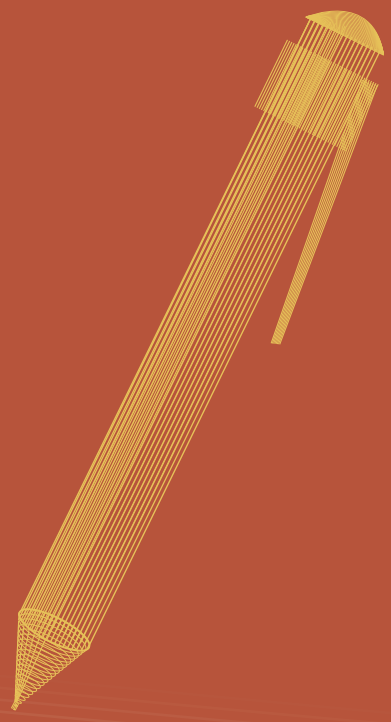
Fortunately, most major investors in renewables are keenly aware of the promise Africa holds, and are willing to invest in Africa. So why do we continue to see an apparent paradox? On the one hand, we see clear needs, economics, and potential; on the other, we see private developers and financiers keen on investing in Africa. And yet, the megawatts (MWs) on the ground are not materializing as fast and as much as expected. Risk is a central piece of the reason why: renewables investment in Africa requires effective de-risking. It may be helpful to consider the many meanings of the concept of "de-risking". Drawing on the Scaling Solar initiative IFC initiated with other World Bank Group institutions in 2016, along with three decades of experience investing in African energy projects, we have learned that financial risk is often used as a shorthand for a larger array of risks.

There is no doubt that financial de-risking is needed in many markets. But it can only work if coupled with measures to address other risks that are slowing down progress towards a greener, electrified Africa. Based on our experience, we find it useful to consider three other main risks[1]: procurement, contractual, and execution risks. Only when these three other risks are properly managed can financial de-risking be effective.

Procurement risk has many nuances. But in simple terms,

[1]In addition to political and macro-economic risks. These are well known and not addressed here directly.

investors and financiers require clarity and visibility on procurement processes. This can be achieved by answering to three straightforward questions:
1. How many MWs are planned? 2. By when? 3. What is the process to procure them?
In general, we have observed that no one benefits when there is ambiguity about these three fundamental points. Private investors and financiers can adapt when there are feed-in tariffs, auctions, or any other lawful alternative, but lack of clarity and simultaneous pursuits of multiple routes only ends up deterring the most serious investors. In countries that have successfully adopted procurement clarity, we've seen a virtuous circle in which more investors are attracted, and prices are also being driven down.
Contractual risk often stems from the nascent state of renewable energy contracts in Africa. To some extent, this is not entirely unexpected. However, continuous changes in contractual terms and the prevalence of multiple types of contracts with differing risk allocations (sometimes within the same market) often lead to protracted negotiations and delays, sometimes even ending in a stalemate. Again, the countries that have adopted some degree of contractual standardization have reaped benefits.
We should also not forget execution risk. Renewable energy projects require transmission lines, sub-stations, and a grid that can evacuate energy without destabilization or curtailments. They also require clarity on environmental and social requirements, grid codes, dispatch requirements, etc. Without clarity on such matters, execution risk remains elevated.
Financial risk remains an essential factor. It is often better understood than the risks discussed above, but the key may be to also consider sector financial risk – beyond immediate direct financial risks to projects. In our experience, the latter has too often proven to be the cornerstone problem: sectors and off-takers that struggle to reach financial sustainability. Managing financial risk through appropriate instruments is required. Fortunately, we are not starting from scratch. Some tools exist already, and innovation is plentiful; one example is IFC's Private Sector Window for guarantees. But this can only work if the other risks – procurement, contractual, execution – are also properly understood and proactively managed. This certainly has been our experience with Scaling Solar. This is why the work conducted by RES4Africa Foundation is important. It draws lessons from past experiences, builds coalitions of willing partners, pilots novel approaches, and performs foundational capacity-building work to disseminate knowledge of what makes renewables work to a broad audience of decision-makers. Together these constitute a promising set of coherent interventions that can help us bring about change at scale. The more we collectively refine our understanding of the top risks hindering private investment in renewables, the more likely we will succeed in designing interventions that work. And the sooner the African continent will light up with millions of new connections.



HIGHLIGHTS

1

Africa's electricity markets are currently perceived as a risky environment for private sector investors: further de-risking is necessary to attract private renewable energy investments at scale and encourage the development of a robust pipeline of bankable renewable energy projects.

2

Although the IPP model has been shown to work in Africa, there remains a range of country-specific and project-related risks faced by equity investors and lenders: together these undermine the private sector's confidence and hamper its more widespread participation in the renewable energy market in Africa.

3

The need for a robust, stable policy and regulatory framework, as well as proper management of country-level risks (for example, asset expropriation, foreign exchange and convertibility, access to land, etc.) and project-specific ones (for example, cost overruns, delays, off-take risk, etc.), call for additional collaboration and targeted de-risking measures.

4

The landscape of existing de-risking instruments, which include technical assistance packages, financing, guarantees and insurances, provided by national and international institutions, private insurances and banks, tends to be fragmented and often incomplete.

5

Unlocking Africa's renewable energy potential requires more holistic de-risking instruments, able to answer both investors' and countries' needs in a comprehensive manner.

6

A new de-risking initiative should focus on strengthening political commitment towards energy reforms and renewable energy expansion, improving the adequacy and predictability of policy and regulatory frameworks, building capacity, managing socio-environmental risks, expanding private and public cooperation, adopting a project lifecycle approach, and increasing the accessibility of financial de-risking products.

UNDERSTANDING DE-RISKING FOR RENEWABLE ENERGY INVESTMENTS

AFRICAN ELECTRICITY MARKETS ARE STILL PERCEIVED AS TOO RISKY FOR THE PRIVATE SECTOR

The previous chapter provided an insight into some of the opportunities and challenges for Africa's electricity sector transition:

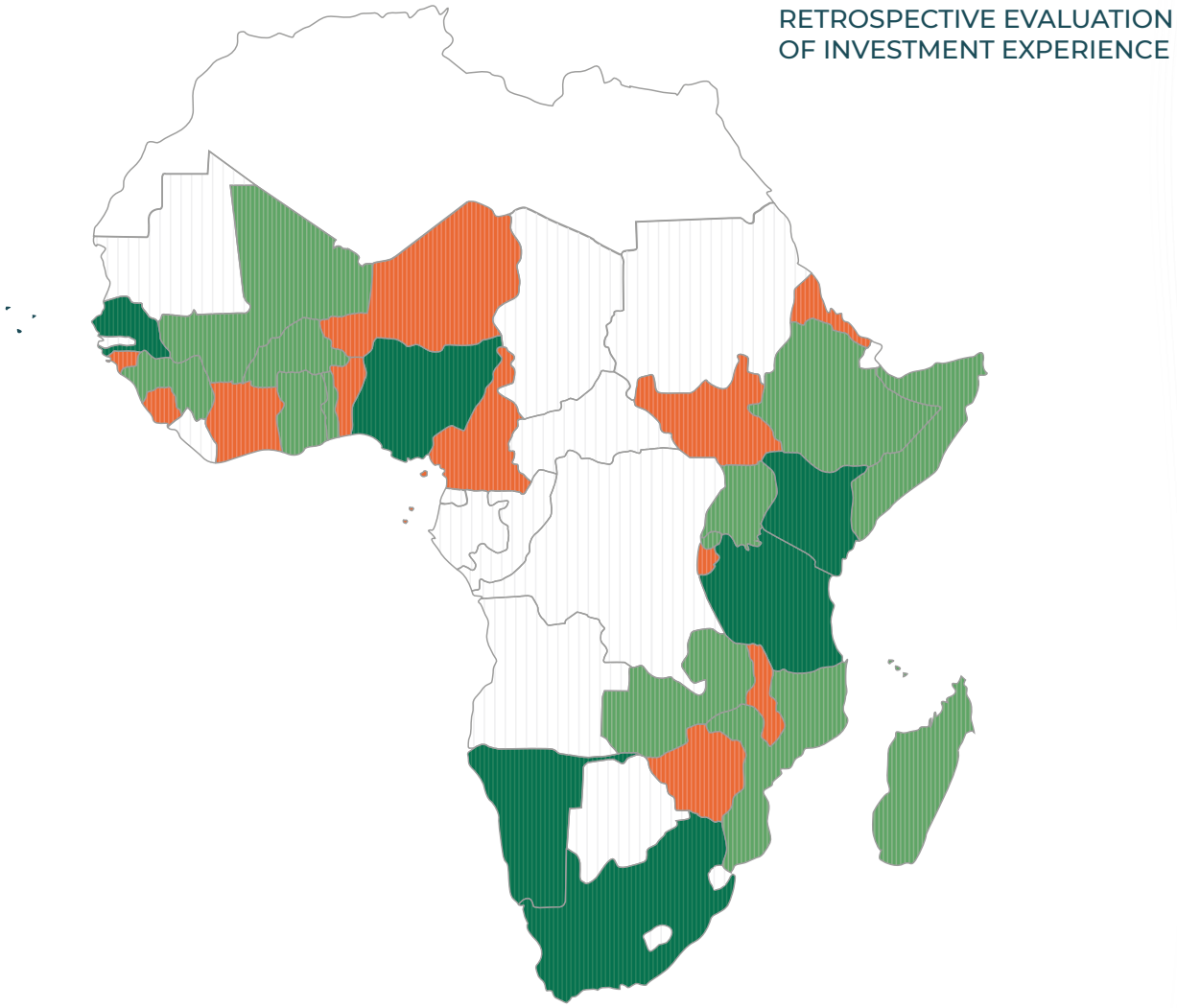
- the provision of a reliable, affordable and sustainable electricity supply to all African businesses and households will be critical to enable the continent's socio-economic transformation in the next 10-20 years;
- while progress has been made in the development of Africa's electricity infrastructure, it is still too slow and fragmented, resulting in day-to-day challenges for Africa's economic growth and human well-being;
- new solutions and models are required to scale up the magnitude of investments and encourage the involvement of more private actors in the financing and development of electricity infrastructure;
- Africa is endowed with abundant solar, hydro, wind and geothermal resources and proven renewable energy technologies represent the most competitive solution to meet Africa's growing electricity needs;
- despite this, Africa still remains at the margins of the global renewable energy market and its ability to attract new investments and put projects on the ground remains well below its enormous potential.

One positive development is that the opening of many African markets to IPPs over the last decades has succeeded in attracting private capital, both in terms of project sponsors and private financing, to support the development of new electricity generation capacities across the continent. In recent years, **IPPs have become the main vehicle through which renewable energy project development takes place in Africa**, proving its potential and its attractiveness to the private sector. However, even this model has not advanced as quickly as hoped. So, what has been impeding the scale-up of further investments across Africa and where should we look at to try to fix this? Most of the biggest, highly specialized renewable energy investors (both large renewable

IPPs and more generally equity investors and lenders) are international companies, which continuously evaluate international markets in their attempts to find attractive countries and project opportunities that best fit their investment criteria. This situation works against Africa, as, even today, investors' understanding and perception of the openness, attractiveness and readiness of Africa's electricity sectors to accommodate private renewable energy investment is only lukewarm[1]. **Most African electricity markets, with a few exceptions, are still perceived as risky environments[2] and, as a result, when compared with other alternative investment locations, struggle to attract private investors at scale** (Figure 7).

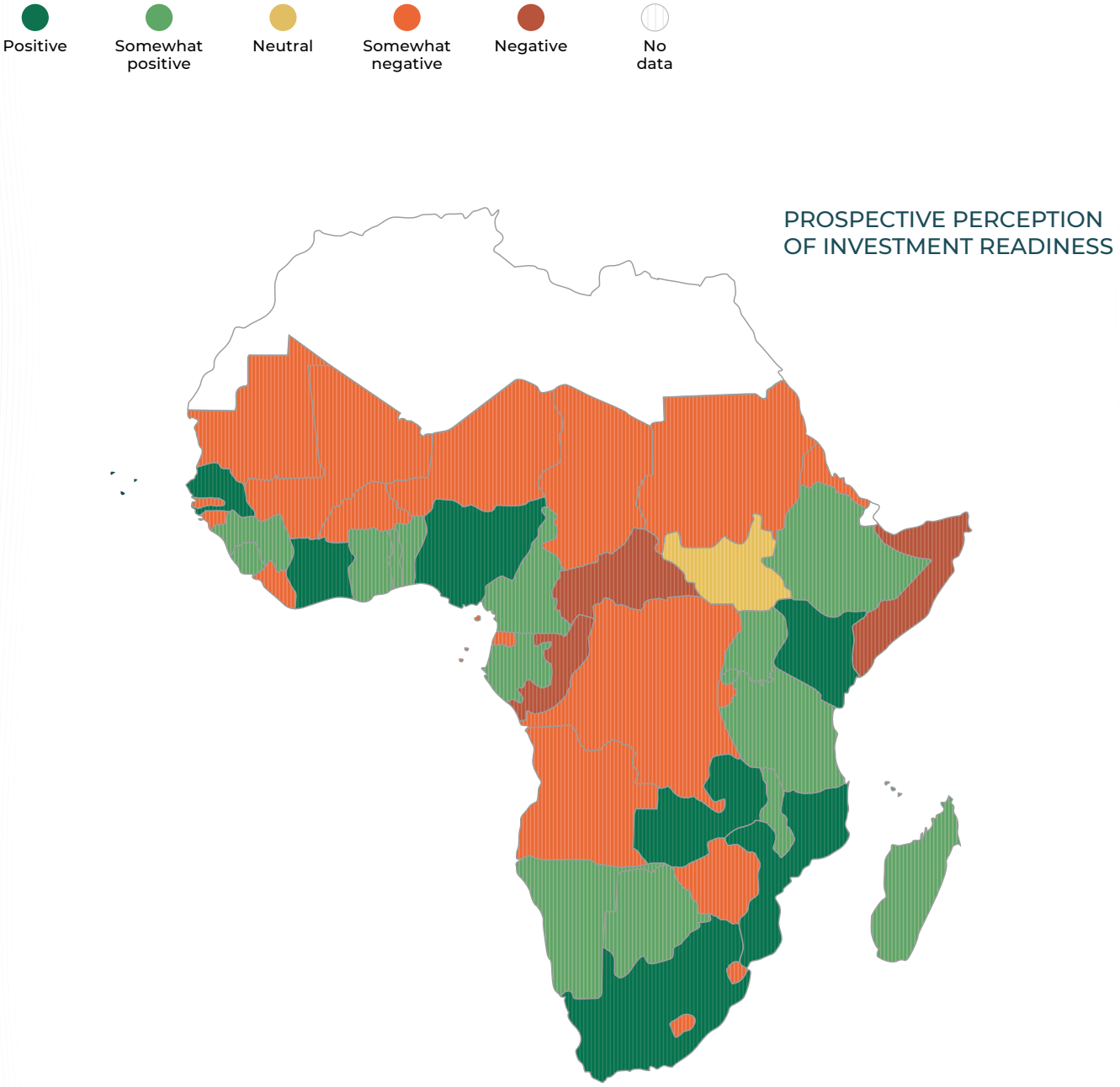
FIGURE 7

RETROSPECTIVE INVESTMENT EXPERIENCE AND PROSPECTIVE INVESTMENT READINESS IN THE SUB-SAHARAN REGION



THERE IS A PREDOMINANT MITIGATED PERCEPTION OF AFRICA'S READINESS TO CROWD IN PRIVATE SECTOR INVESTMENTS.

This chapter examines some of these challenges by exploring the factors that impact the decisions about renewable energy project investments from a private sector perspective, with a particular focus on country and project level risks. With an understanding of these, it then reviews the currently available initiatives, instruments and tools available to overcome these risks and attempts to identify the gaps and challenges that need to be addressed.



Note: the survey involved 51 private investors and financiers. Retrospective evaluation is based on investors' past experiences in countries where they had invested. Prospective evaluation reflects investors' perception of country preparation for investments over the next three years.

Source: Economic Consulting Associates and World Bank (2019)

RE PROJECTS ARE EXPOSED TO RISKS RELATED BOTH TO COUNTRY AND PROJECT CHARACTERISTICS

It is well known that renewable energy projects face a range of risks across all stages of their development and operation. **Some are directly related to the technical characteristics pertaining to a renewable energy project, some to the financing structure of a particular project, while others are strictly dependent on the broad macro-economic environment of the project-hosting country**[3]. What complicates this further is that these risks will also vary from one country to another, and can include: political and economic risks, policy and regulatory risks, convertibility and transfer risks, site selection, connectivity, logistics and an extensive list of other risks.

The mapping of all these risks is then a fundamental first step for any project developer, equity sponsor and lender in their investment valuation processes. All these entities will carry out a comprehensive risk assessment that considers the entire lifecycle of a renewable energy project, from the early stage of preparation up to operation and decommissioning. The result of their investment decision is most often directly dependent on the results of these initial and ongoing risk assessments, and the availability of risk-mitigation instruments and de-risking tools that reduce the risk exposure for both equity investors and lenders (Figure 8).

One way of reducing the steps required to manage these risks is through the use of a standard market model that ensures that a number of risks are mitigated appropriately for the debt and equity providers, as well as for the electricity off-taker. In Africa, the predominant model is the IPP approach, most often declined through a Public-Private Partnership (PPP), where both the private and the public sectors have specific but complementary roles, primarily those of developer/energy producer on the one side, and facilitator/energy purchaser on the other.

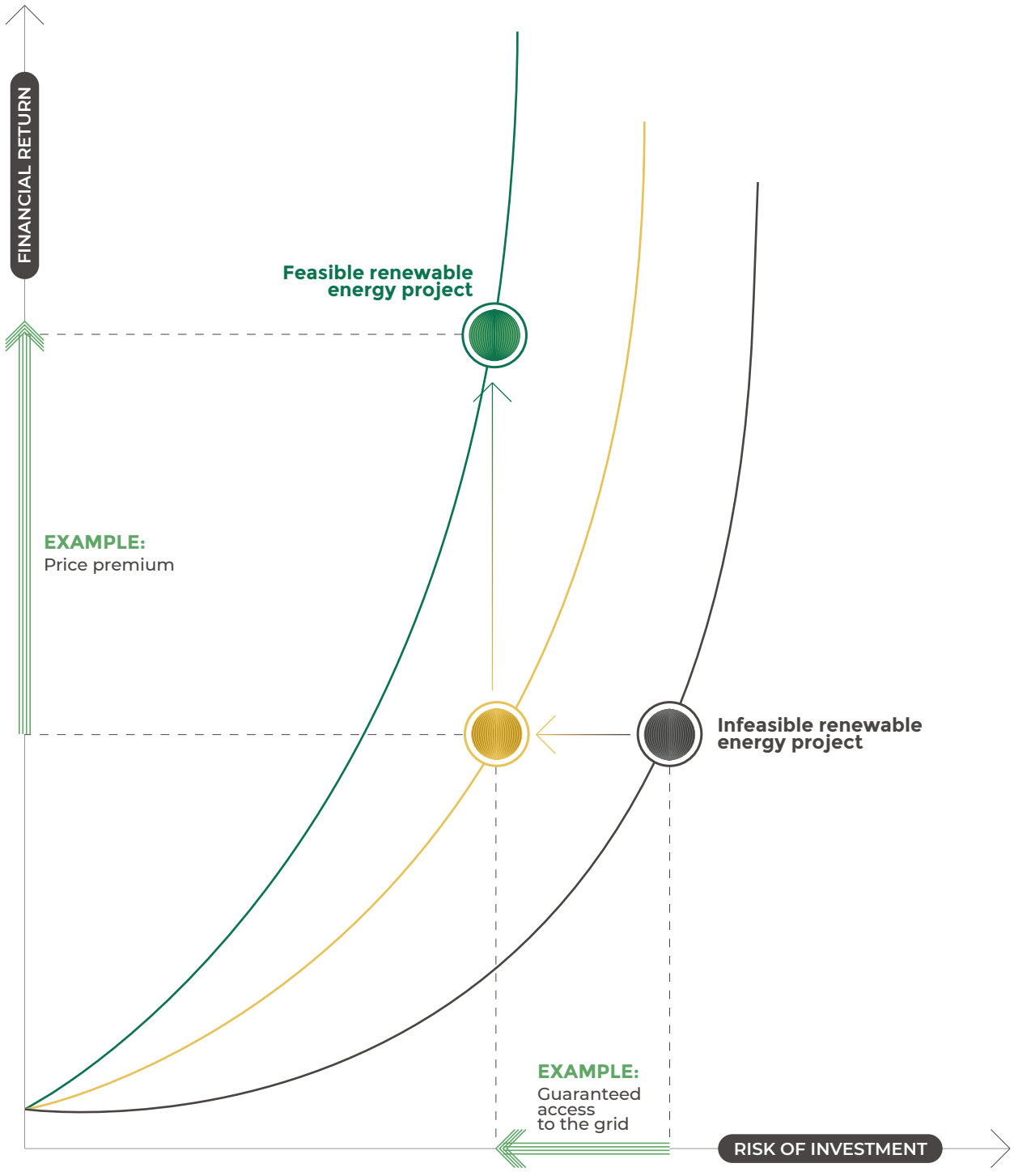
However, even with a proven market model, there remain a range of risks that equity investors and lenders need to address satisfactorily when aspiring to develop renewable energy IPPs in Africa. In the sections that follow, we examine this using two simple broad categories of risk:

- **country-related risks**, which can be further split into two sub-categories:
  - the facilitating market environment that needs to be created,
  - specific country-level risks that need to be addressed and mitigated;

- **project-related risks**, which depend more directly on the specific project being developed and its technical characteristics.

FIGURE 8

SHIFTING THE RISK-REWARD PROFILE OF RENEWABLE ENERGY INVESTMENTS



Source: UNDP (2013)

MITIGATING RISKS IS KEY TO UNLOCK NEW RE INVESTMENT OPPORTUNITIES ACROSS AFRICA.

a. The need for a facilitating environment

The role of a facilitating business, legal and economic environment in advancing private renewable energy projects should not be underestimated[4]. The diversity of countries and the different political structures and approaches make it hard to propose a single environment that meets all requirements. However, there are some common and fundamental aspects that need to be in place in all cases. These include, for example, the need for:

- **governments and public institutions to display a strong and long-term commitment** to the advancement of renewable energy solutions and necessary energy policy reforms;

- **national legal and regulatory framework to be stable, clear and transparent**, avoiding retroactive changes that would impact business models' stability of exisiting projects;

- **consistent and reliable energy planning methodologies**, based on sound technical capabilities, to support the development of an appropriate energy mix and ensure long-term visibility to potential investors on country's strategic choices;

- **the adoption of a transparent and, as much as possible, competitive infrastructure procurement procedures** to allow governments to procure the best infrastructure at the least cost, and to allow project developers to benefit from the advantages of a common and level-playing field.

Mature markets typically have institutional frameworks in place that support the central government to deal with some of these elements.

These institutions include:

- **independent energy regulatory bodies** responsible for defining all relevant regulations for the governance of electricity markets and their correct implementation (i.e. market rules, license issuing, grid codes, etc.);

- **energy planning institutions** dedicated to identifying the necessary investments to meet the projected demand at the lowest cost;

- **public infrastructure procurement departments**, sometimes embedded within other public agencies, dedicated to ensure the overall efficiency of tender processes and to deal with the legal and financial aspects of PPPs.

These bodies can help reduce the risk of an individual project experiencing delays and cost overruns due to inefficiencies in the procurement processes and delays in the authorization processes, or in getting technical clearance for connecting the power plant to the main grid (Figure 9).

In many African countries, the situation may however be very different. Regulatory bodies often do not meet the level of autonomy and independence required to correctly enforce the existing regulation, and may not be equipped with the required technical, financial and human capacities to develop and implement new regulations[5]. Administrative and bureaucratic redundancies are more common and may dissuade or hamper project development. Without the right insight and knowledge, there is often poor, or paralyzed, decision-making.

For example, a government may have to decide whether to adopt a feed-in tariff regime for a particular technology or go down a competitive tender route. If they look around, they would see that governments are increasingly choosing the latter[6], but such process requires functional and effective institutional, regulatory and procurement frameworks able to deal with the complexity of managing a bidding process, ranging from tender preparation and bidding stage to project awarding and financial close. **Strong institutions are also needed to face the possible aftereffects of previous policy choices**. For instance, projects may have been awarded at tariffs that are higher than the ones available in the market at the time the project comes to operation; as a result, the project may face public criticism for passing-on the cost of tariffs considered higher than current levels. This risk will need to be weighed against the potential loss of international credibility for those countries which decide to opt for contract renegotiation.

Private investors typically react to the country-level risks outlined above by requiring further guarantees and assurances. These are often in the form of additional contractual provisions defined in the PPAs that add more layers of complexity to contract negotiation. Most often however, **the general lack of a facilitating environment is enough to redirect investment decisions to other more investment-ready regions**, as investors will not want to go through a cumbersome and expensive process when easier options exist.

Those facts highlight the need for diverse and continued support to governments in areas such as policy-making and implementation, definition of PPP project frameworks, tender execution, as well as in electricity market design and network regulation definition. **Where such support is missing, certain countries will remain at a disadvantage, unable to progress with renewable energy plans and to attract international private investors**.
If available, such support would play a central role in strengthening the political commitment to energy reforms, enhancing institutional capacities and reinforcing knowledge and exerptise around regulatory reforms.
Successful recent experiences in South Africa, Morocco and, most recently, Senegal demonstrate that renewable energy projects can achieve the best possible outcomes in terms of tariff levels and project quality if a facilitating environment is correctly implemented and adequately monitored and maintained.

b. Country-level risks

RE investors also face risks that are more directly linked to country-specific situations and that can be aggravated by local factors, such as the risk of asset expropriation or nationalization, foreign exchange and convertibility restrictions, access to land or taxation, connectivity issues, as well as overall political stability. The effective identification and mitigation of these (and other) risks is fundamental to ensure that business cases make sense and asset values can be protected. Steps taken to address these areas often include:

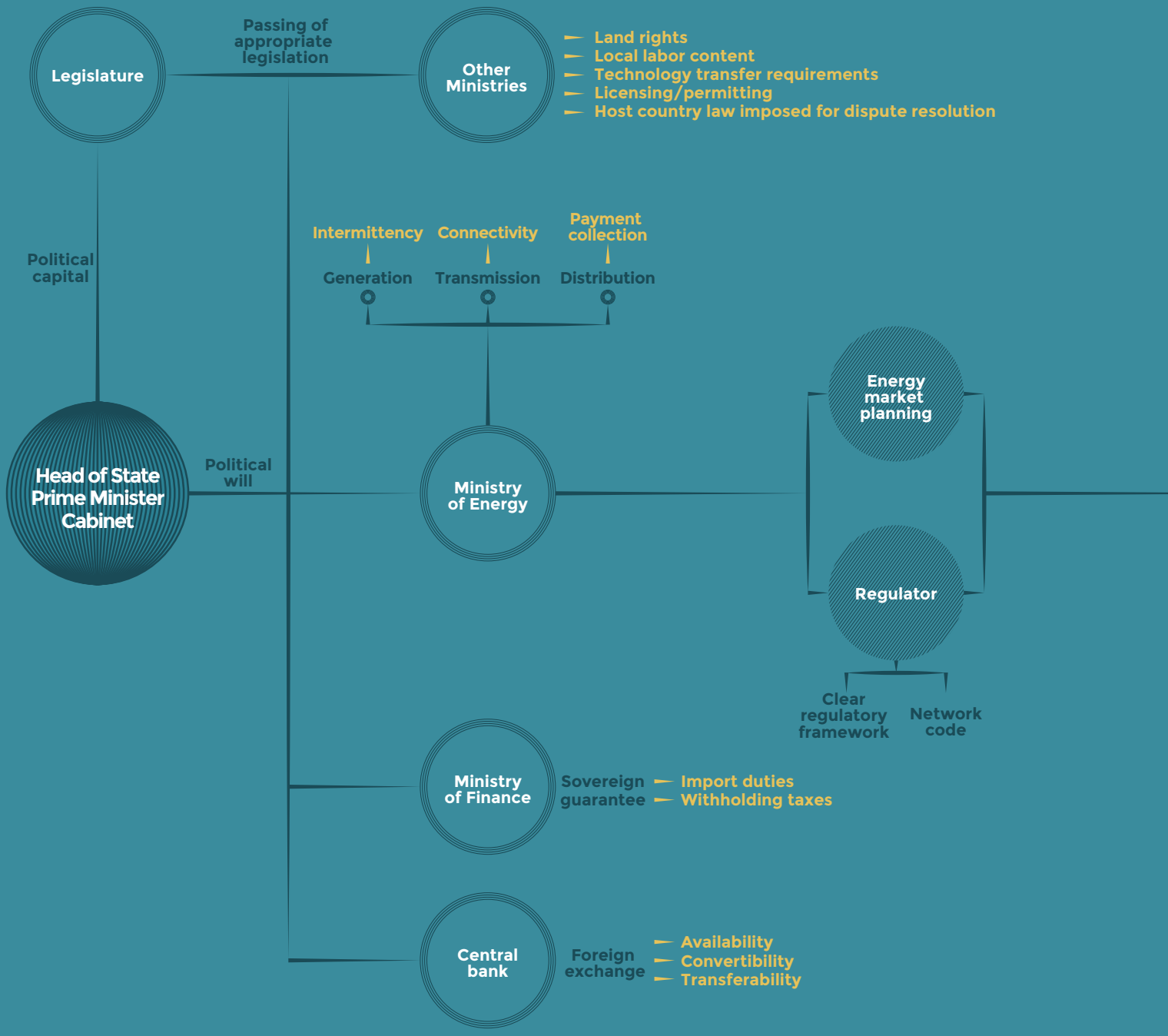
- **adopting investment laws that provide a level of protection required by private and international investors** in terms of equal treatment, asset property, boundaries for state intervention, and that define dispute resolution mechanisms between asset managers and national governments;

- **providing convertibility guarantees or foreign-currency denominated contracts** that

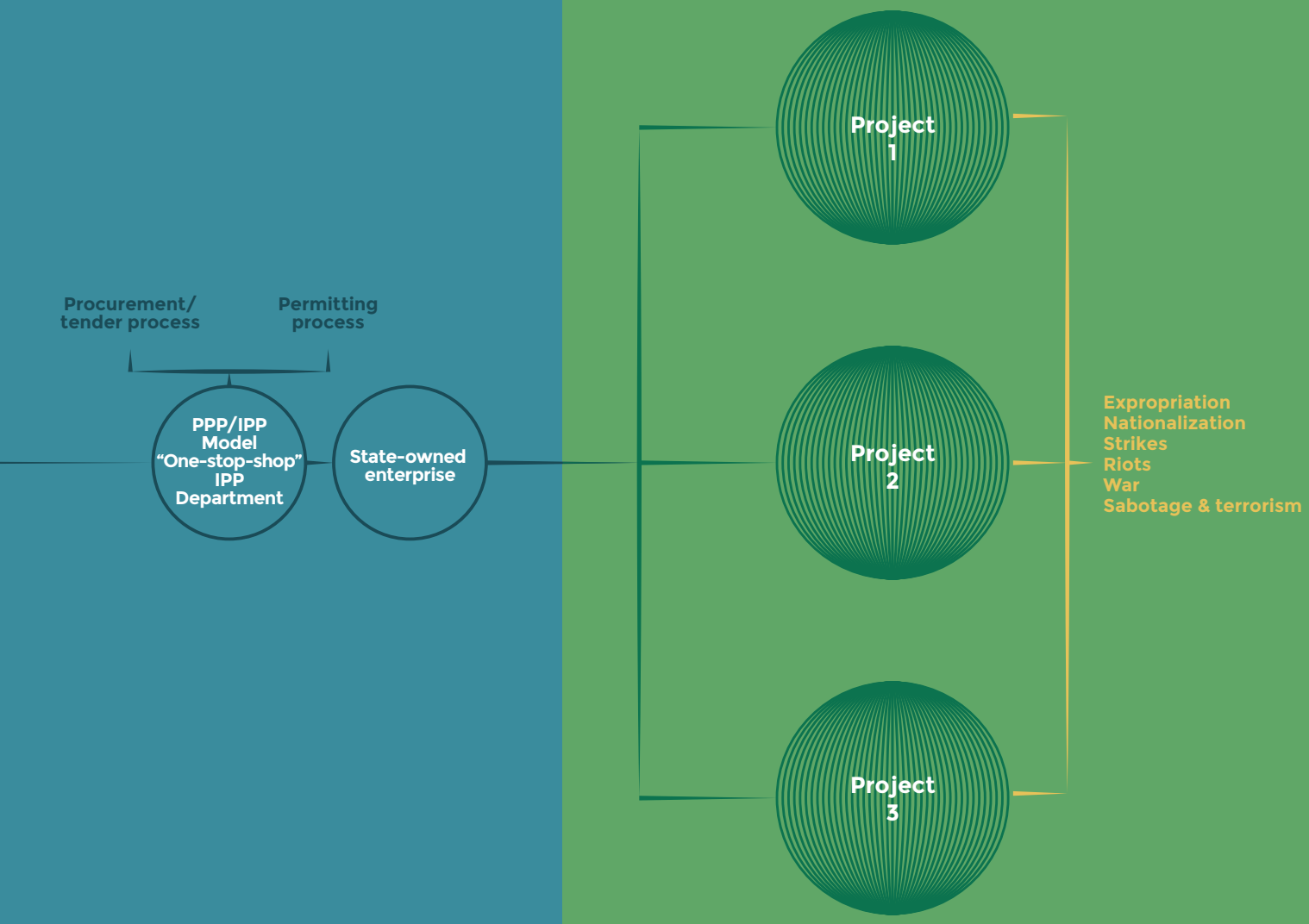
FIGURE 9

CHARTING COUNTRY-RELATED RISKS WITH REGARD TO RENEWABLE ENERGY PROJECT DEVELOPMENT

Public Sector



Private Sector



Competences Risks

Source: Intesa Sanpaolo (2020)

protect investors from the potential mismatch between project revenues and liabilities in markets with illiquid or restricted forex markets;

- **procuring insurance cover for political risks, as well as force majeure events**, able to protect investors from events that adversely impact the value of the investments and yet are beyond their direct control;

- **implementing clear and transparent grid access rules, and grid codes**, which if present could reduce delays and accelerate the start of project operations.

One challenge for achieving this outcome is that often the ability of individual project stakeholders to efficiently manage these risks will vary, depending on an individual country's circumstances. For example, servicing hard/foreign currency debts is difficult for many African countries as their foreign currency reserves are often limited, or their public budgets may not have the flexibility to commit to additional debt in hard currency. Moreover, even when foreign currencies are available, significant exchange control restrictions, as well as capital transfer limitations, might limit free convertibility of local to foreign currencies.

One piece of good news is that **nationalization and expropriation risks for investors have reduced significantly across all Africa**. These unilateral actions have tended to be counter-productive and are now much less likely due to the adoption of relevant investment codes and laws[7]. However, a risk that remains is that, while foreign investors will prefer to have the right to resort to international law and/or arbitration for investment dispute resolution and settlement purposes, national governments are often against such options.

From a taxation point of view, another common issue arises when African countries look to charge a withholding tax on interest payments. This leads to a situation where some lenders are better off (if their home country has a favorable double taxation treaty with the importing country) whilst others, whose country does not have such a treaty, are then at a relative disadvantage. Sponsors will obviously try to minimize any gross up of payments that may be required, and thus may choose lenders that minimize the need for this. One way around this is for national governments to consider providing individual projects with incentives, such as partial tax breaks and exemptions.

At a more practical level, developers may also face overly bureaucratic and redundant licensing and permitting requirements, all of which need to be obtained from a number of different governmental departments. All together this represents time delays and extra-costs, further eroding the business case and competitiveness of the project.

Other hindrances can include the absence of clear rules, such as grid codes, to assess national grid capacity to integrate intermittent renewable energy capacities, to allow for grid access, and to set appropriate grid connection costs. The intermittency of wind and solar energy production is often highlighted by system operators as a potential risk for grid stability in Africa and raised as an issue to justify delays in the connection of new renewable plants to the main grid.

More generally, whilst answers exist to address all the areas above, leaving them unaddressed will have the effect of increasing project risks and delaying the start of operations. Unfortunately, it will also reinforce amongst investors

and developers an enhanced perception of risk when looking at African countries compared to other developing economies. Long-term credit ratings assigned by the major credit rating agencies (S&P, Moody's, Fitch) reflect this: only 5%-11% of African countries, depending on the rating agency, benefit from an "Investment Grade" rating (above BBB-; Baa3; BBB-) relative to 41%-47% of the other EMEA developing countries.

c. Project risks

Having examined generic and more specific country-level risks, this section looks to review some of the most common project-level risks. The differing nature of the various power generation technologies (and associated technical characteristics) means that their owners also vary in their ability to manage project-related risks. **Project risks are generally split between pre- and post-completion risks**. Pre-completion risks are typically cost overruns, delays, as well as shortfalls in performance. Post-completion risks are mainly focused on off-take risk, which refers to the ability of the "client" to purchase and pay for the electricity produced by the project. To a lesser extent, these are also focused on other risks than can disrupt the project's revenue stability, such as curtailment. **While country-related risks are mainly addressed, or mitigated, by broad measures and policy initiatives, project-related risks are mainly handled by the contract structure underpinning a specific project, which distributes risks to the part best equipped to handle them**. Examples of ways to manage some of the individual risks include:

- **an EPC contract (engineering/procurement/construction)** that envisages penalties and liquidated damages for a delay in the construction or cost overruns, and ensures that these risks are totally or partially transferred from the project to the EPC contractor;

- **a PPA to define and secure project revenue streams**, typically requiring the off-taker to buy all or the majority of the electricity produced at a pre-determined price;

- **some forms of indexation, either to a hard currency and/or to inflation**, to ensure the adequacy of revenue streams defined by the PPA;

- **other important contractual provisions**, most often also considered inside the PPA structure, to deal with some other important risks, such as curtailment compensation, force majeure (typically exempting both parties from their obligations for a limited period) and termination (covering the default risk from either the off-taker or the generator side).

The negotiation of bankable legal documents (starting with PPAs) can be a lengthy, complex and cumbersome process even in countries that have extensive experience with project finance and IPPs.

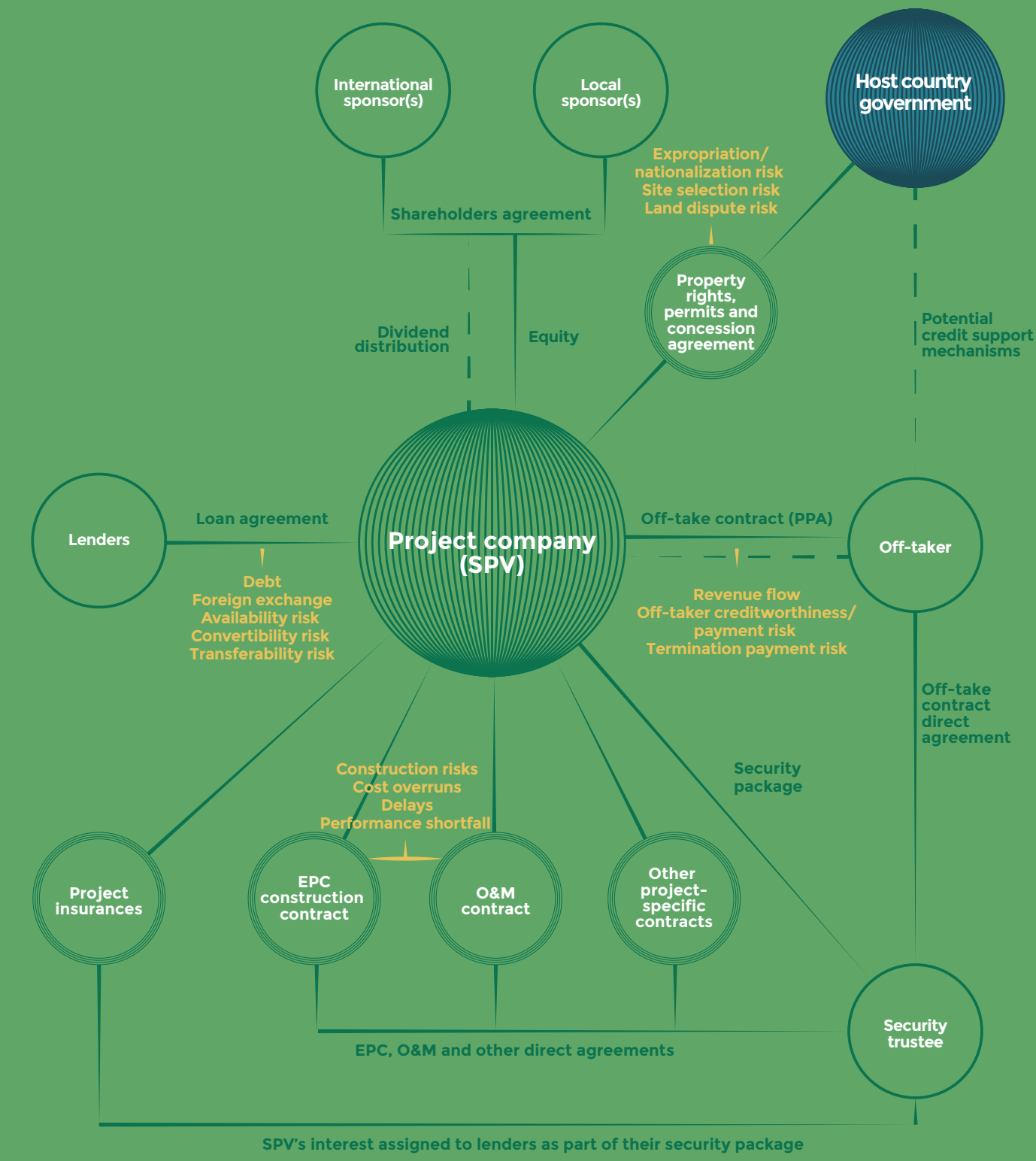
Whilst these approaches will go some way in addressing some of the risks that are prevalent in the African market context, other risks will need to be evaluated and responded to individually. For example, the selection of a project's location, which is often predetermined by national governments, may be driven by reasons that do not prioritize renewable energy resource availability, connectivity needs or social acceptance. The choice of location may also create risks related to property and concession rights, leading to potential land disputes, the end result being signif-

icant cost addition and logistical challenges. To ensure that these risks do not derail the commercial success of the project, it is fundamental that the EPC contractor, which finally bears most of the risks related to the project construction phase, is not only in good financial standing but also has a significant track record of constructing similar projects. This would serve as a partial guarantee of its ability to avoid cost overruns, performance problems and potential delays.

The creditworthiness of the electricity output purchaser (the off-taker), which in the African context is often a state-owned enterprise (SOE), is key to ensure the stability of project revenues. As mentioned in Part One, **public utilities in Africa face a multitude of challenges which undermine their financial stability**. One way of addressing this is for governments to provide public counter-guarantees on the off-take payments. These guarantees are meant to ensure the reliability and predictability of project revenue streams to developers and lenders, ensuring that these are sufficient over the life of the project to both repay debt and provide an appropriate equity return. However, some governments may be reluctant to provide such guarantees, and instead will only look to provide letters of support, which then create challenges in terms of backstop guarantees and insurance cover. The discussion has highlighted how broad this area can be, and this section has only touched upon selected examples of how certain project-level risks can be managed. What does emerge is that there are some principles that can direct actions: **(i) project risks are typically best addressed by those entities most suited to bear and manage them, and (ii) whilst finding appropriate risk coverage is clearly fundamental to the ultimate success or failure of a project, successfully achieving this will also require a high degree of collaboration and cooperation amongst all project stakeholders** (Figure 10).

FIGURE 10

CHARTING RENEWABLE ENERGY PROJECT CONTRACT STRUCTURE



Source: Intesa Sanpaolo (2020)

ADDRESSING PROJECT RISKS REQUIRES A HIGH DEGREE OF COLLABORATION AND COOPERATION AMONGST ALL STAKEHOLDERS INVOLVED.

RISK MITIGATION AND DE-RISKING ARE KEY TO ACHIEVE RE PROJECT BANKABILITY

Equity investors and lenders will often look at the same elements of a renewable project, and while their interests can be aligned, their risk appetite and their expected returns will be different. The reason being that lenders are expecting fees, interest and the repayment of principal as predetermined amounts and/or with a predetermined calculation methodology. Equity investors expect dividends and a return that can be a multiple of the original amount of capital invested in a positive scenario, reflecting the risk of losing their remuneration and even their capital in an extremely adverse scenario.

Lenders and equity investors aim to accurately price investment risks into their financing conditions. They will therefore adjust their required risk/return profile to take into account the risks in the investment environment: the degree to which investors price barriers and risks into their financial return, again, depends both on project characteristics and countries' situation. This then directly translates into a higher cost of debt and equity: the larger the risk, the higher the return that will be required by equity investors and lenders. The result is an increase in the weighted average cost of capital (WACC) for renewable projects in riskier countries (Figure 11). If these risks are not addressed in an adequate way to reduce the WACC, individual projects and, on occasion, entire auction/tender processes may lead to uncompetitive prices (high PPA tariffs) or simply not proceed due to the lack of available financing (lack of project bankability).

One positive development in recent years has been the ongoing decrease in renewable energy technology costs and the continued growth in international capital flowing into low-carbon infrastructure. However, this on its own is not enough to encourage the development of renewable energy projects and investments at scale, as the perception of Africa as a high-risk environment is still a far more powerful driver in influencing investment decisions. It is not hard to find examples from the field that illustrate such market reality. In Egypt, for instance, the government proposed that the tariff for a recent renewable energy program was to be paid in Egyptian pounds and that the applicable law for arbitration was Egyptian law[8]; ultimately, it had to review its decision.

However, a large number of perceived and actual barriers and associated investment risks can be mitigated, or insured, by a range of public and private instruments (Case Study 1 and Case Study 2). Successful programs, such as those in Morocco or South Africa, bear testimony to how well-structured infrastructure procurement models can draw in substantial investment to create significant renewable energy capacity, even though some of the underlying market conditions are no different from other African countries. These successful programs have been able to build a robust renewable energy project pipeline, through the provision of strong de-risking products, such as: take-or-pay guarantees, change in law and force majeure protections, termination payment guarantees covering the full projected amount of the debt owed to project lenders in all cases.

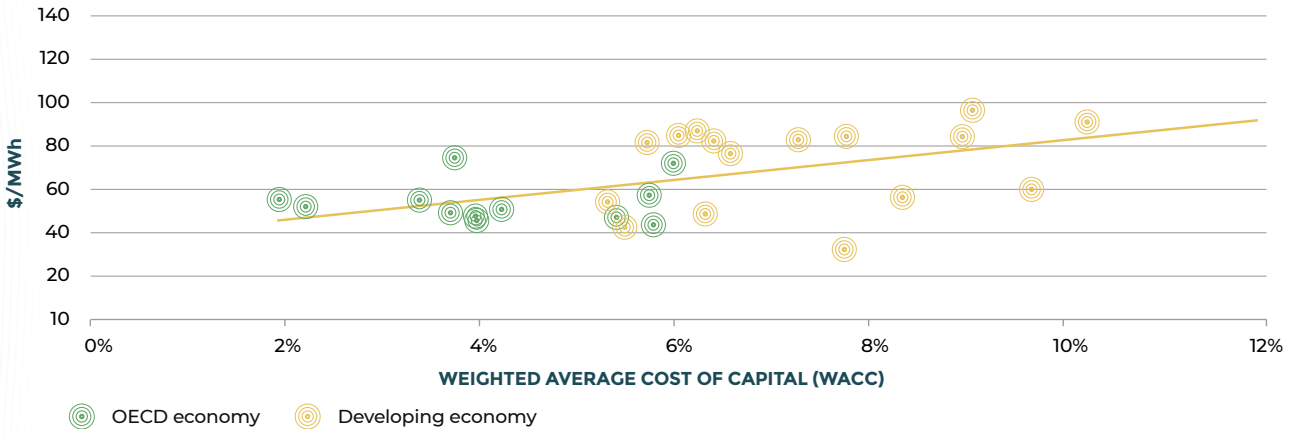
When looking at the rest of the African continent, it is clear that effective and locally fit-for-purpose risk mitigation products and de-risking instruments will be fundamental

to build other success stories. The provision of these products and instruments can then create the market conditions for more attractive risk/reward profiles, helping to shift an unattractive investment opportunity into a commercially attractive one in the minds of private investors.

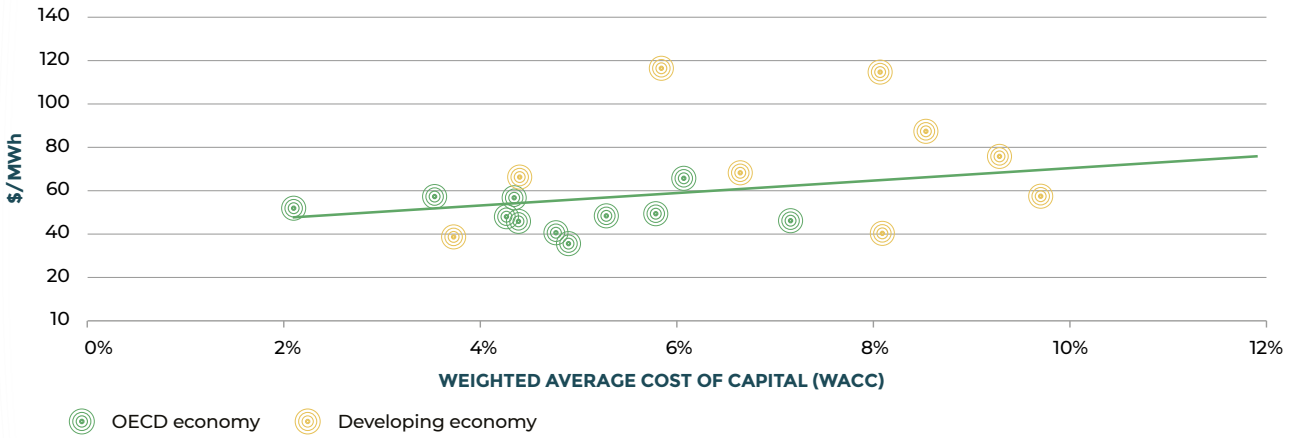
FIGURE 11

THE EFFECT OF FINANCING COSTS ON THE LEVELIZED COSTS OF ELECTRICITY FOR WIND AND SOLAR ENERGY

11.1. THE EFFECT OF FINANCING COSTS ON THE LCOE FOR UTILITY-SCALE PV PLANTS ($/MWh, 2018 REAL)



11.2. THE EFFECT OF FINANCING COSTS ON THE LCOE FOR UTILITY-SCALE ONSHORE WIND FARMS ($/MWh, 2018 REAL)



Source: Bloomberg NEF (2020)

MITIGATING RISK EXPOSURE IS FUNDAMENTAL TO ENSURE RENEWABLE ENERGY COMPETITIVENESS.

CASE STUDY 1

DE-RISKING OF NGONYE PV PLANT PROJECT IN ZAMBIA

ENEL GREEN POWER

Context and introduction

In 2015, the government of Zambia announced its plan to develop up to 600 MW of solar generation to increase the reliability of electricity supply, mitigate electricity deficits and diversify its energy generation mix. The business environment lacked structured, transparent, and competitive tender processes, bankable project documentation and technical expertise. Political stability issues, limited institutional capacity, financial distress of the off-taker and convertibility limitation affect project bankability and limit investors' accessibility to funding. In order to mitigate these risks and attract international investors, the government asked for the support of the World Bank Group (WBG) Scaling Solar (SS) Program. Scaling Solar-Zambia was the first rollout of such program ever conducted.

De-risking approach and tools

The Scaling Solar program was developed as a one-stop-shop, providing a package of advisory services, contracts, financing, guarantees, and political risk insurance presented as mitigating instruments to attract IPP investment in low-income countries. It was developed to employ auctions for industrial-scale solar projects to generate lower tariffs through a structured and transparent bidding process. The program in Zambia was organized in two phases. Phase 1 tendered two PV projects for a total capacity of up to 100 MW. Phase 2, still to be launched, aims to procure up to 300 MW. The package developed included technical assistance, a data room with technical and legal documents, pre-negotiated and pre-approved standard documents (including a PPA, and Government Support Agreement), WBG debt financing, payment guarantees and insurance as de-risking instruments. Investors were able to choose whichever instrument they needed to help make the projects successful. Under the PPA, the off-taker (ZESCO) was required to provide payment security via a letter of credit (LC). To help ZESCO provide that security, IDA (International Development Association) provided them with payment guarantees. Without IDA guarantees, ZESCO would have not been able to issue the LC and therefore ensure the PPA's bankability.

Roles and responsibilities of key players

The IDC (Industrial Development Corporation), under the Ministry of Finance, acted as tender authority and managed the bid documentation with the support of the IFC (International Finance Corporation). The set of information

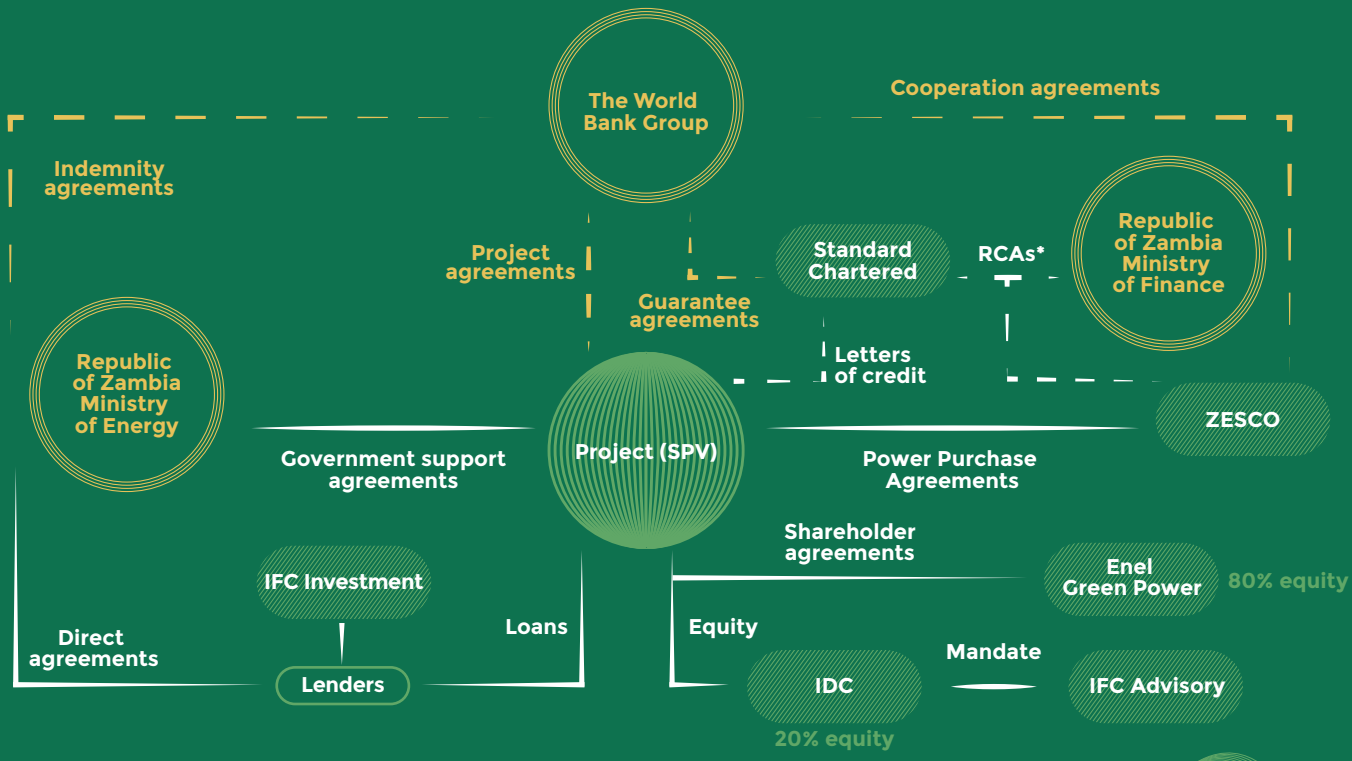
provided allowed investors to properly evaluate the relevant project risks. EGP participated in the first round tender, a process requiring strict technical and financial pre-qualification, and was awarded as the winner of the 34 MW Ngonye PV plant in June 2016. Ngonye was structured under a project finance non-recourse scheme needing complex project and financial documentation. IFC worked alongside the investor and the authority to facilitate the negotiation and conclusion of the agreements, fast tracking the statutory authorizations and ultimately ensuring full transparency and consistency within applicable laws. Ngonye solar plant is owned by a special purpose vehicle (80% EGP and 20% IDC) and supported by a 25-year PPA with ZESCO. Equity was injected by Enel and IDC. Senior loans were extended by DFIs, namely the IFC, the IFC-Canada Climate Change Program, and the EIB (European Investment Bank).

The overall investment for the construction of the plant exceeded $40 million.

Results and impact

The Zambian project gained the attention of investors worldwide. With risk mitigation instruments and advisory support, the WBG helped to build bankable projects that would have otherwise not been pursued. The program was able to achieve many positive outcomes:

- quickly implement a successful, first-of-its kind renewable auction in Zambia;
- mitigate the international investors' development risk perception;
- achieve record-competitive tariffs;
- support capacity building, through the appointment of the IFC Advisors to IDC, to manage the very complicated project financing process;
- ensure scalability in RE growth.



*Reimbursement and Credit Agreements

CASE STUDY 2

MANAGING SOCIO-ECONOMIC RISKS THROUGH SUSTAINABILITY APPROACHES IN SOUTH AFRICA

SIEMENS GAMESA

Context and introduction

South Africa had an installed capacity of over 2 GW of wind power at the end of 2019, and more than 3.3 GW of wind projects have been awarded contracts in the tender rounds under the renewables procurement plan (REIPPP). The Integrated Resource Plan (IRP), released on October 2019, plans to install 1.6 GW of new wind capacity per year between 2022 and 2030, more than any other energy source in the IRP. By 2030 wind is forecast to contribute 17.8% of annual electricity generation, second only to coal. Bidding companies in the REIPPP tenders are asked to comply with the stringent requirements of the Broad Based Black Economic Empowerment (B-BBEE) program, aiming to ensure that South Africa economy is structured and transformed to enable the meaningful participation of the majority of its citizens and promote the entry of black entrepreneurs into economic activities. In this connection it is crucial that companies structure their governance structure, operational models and corporate social responsibility actions in accordance to such governmental regulation.

De-risking approach and tools

The 2013 B-BBEE Codes of Good Practice define the framework for the measurement of compliance with the B-BBEE requirements, based on five new measurable scorecard elements: (i) Ownership, (ii) Management Control, (iii) Skills Development, (iv) Enterprise and Supplier Development, (v) Socio-Economic Development. Siemens Gamesa has been able to become a role model in adhering to these requirements. This approach is a key pillar of Siemens Gamesa's de-risking strategy to not only ensure sustainable solutions are provided to its clients and society, but also the continuation of sustainable business operations. Beyond Siemens Gamesa's CSR Strategy, the company is fulfilling in the most optimized way the requirements of the B-BBEE. Not only has Siemens Gamesa in South Africa 30% black ownership, but it is also leading the industry in the field of exceeding localization, industrialization and social commitment requirements: supporting sustainable development and empowerment of small and medium-sized enterprises, conducting several CSR activities focused on the empowerment of local communities and those in need, assisting and consulting local entrepreneurs to establish businesses who can serve the company and other OEMs wind projects.

Roles and responsibilities of key players

Siemens Gamesa is deeply rooted in the societies in which it operates by contributing to their sustainable development. In the South African case this has been achieved so far by promoting local suppliers in the field of transportation, steel tower supply and structural components, driving entrepreneurial activities in nearby towns, supporting local communities public and social services (schools, sport centers). Thus, Siemens Gamesa is not only supporting the intentions of the government and securing valuable business but, foremost, directly benefiting the employees and, at the same time, retaining a motivated and highly-skilled local workforce. By pursuing a lasting social and environmental impact, both through standard commercial activities and innovative non-business channels, Siemens Gamesa has been able to drive business growth and demonstrate that fully integrating sustainability within the DNA of the business strategy is the only way forward. For that purpose, Siemens Gamesa collaborates with a variety of stakeholders, such as institutions, administrations, and organizations in civil society, carries out preliminary consultations and keeps active channels of dialog open with the affected communities and stakeholders to identify and address their concerns and interests. All described elements are part of Siemens Gamesa roadmap for responsible growth, also defined in its corporate social responsibility pledge.

Results and impact

Thanks to a sound visible pipeline of wind projects and related enforcement mechanisms established by the government, Siemens Gamesa in South Africa is 95% localized, which is an industry leading standard. With 890 MW installed in South Africa, Siemens Gamesa is a leading wind turbine manufacturer in the country and in 2020 the local entity has achieved a Level 3 B-BBEE certificate, also industry leading record. This approach of inclusion is generating a positive relationship between communities with the wind farms and most importantly jobs. This supports a sustainable foundation to also secure a long-term success of the project. Experience shows that this strategy resulted in:

- competitive service offerings contributing to supply clean and renewable energy to the equivalent of 630,000 South Africans;
- reduced risk of being dependent on international suppliers which may not be familiar with local capabilities, conditions and lacking a network in remote regions;
- build-up of a South African supplier base for components and services required for the installation and maintenance of the wind farms (for example, components such as towers, cables, structural components for towers and foundations, fluids such as oil and other lubricants, transportation and work force have been localized to nearly 100%).

Along its 20 years-presence on the African continent, Siemens Gamesa has been able to implement sustainable best practices throughout the entire RE value chain while maximizing local value and commitment. As an entrepreneur in this field, it has created a positive experience regarding quality and reliability. A reliable continuation of a wind industry in South Africa would enable local companies and entrepreneurs as well as global OEMs to strengthen what has been achieved so far and to go beyond.

BOX 4

THE EU BANK DE-RISKING RE INVESTMENTS IN AFRICA

EUROPEAN INVESTMENT BANK (EIB)

SDG 7 calls for ensuring access to affordable, reliable, sustainable energy for all, in the recognition that, in the words of former UN Secretary-General Ban Ki-Moon, "energy is the golden thread that connects economic growth, social equity, and environmental sustainability". However, despite its vast RE potential, sub-Saharan Africa lags behind in making progress towards universal electrification by 2030. Underinvestment is one of the root causes of this alarming observation. IPPs can contribute to eliminating energy poverty by mobilizing capital towards the increase of the production of clean, reliable and competitive electricity. To this end, DFIs, in partnership with African countries, have to step up their efforts in Africa. Here we highlight two main drivers of underinvestment, along with the European Investment Bank's response to mitigating these drivers.

Critical risks in today's RE-IPP projects in Africa include the financial sustainability of electric utilities and the associated perceived revenue risk. Depending on the country, political risk and currency convertibility/transferability introduce challenges, as do uncertainties regarding grid stability and the adequacy of the regulatory framework. Equally important is the need of continued commitment of (local) stakeholders to make a project successful. In recent years, effective risk insurance has been a challenge. In response, the EIB initiated the Africa Energy Guarantee Facility (AEGF) launched in 2017, an innovative, first-of-its-kind guarantee initiative, aimed at normalizing private sector investments. The initiative was designed to mobilize European reinsurance companies for the provision of political and (sub-) sovereign risk insurance in the region through local primary insurers. EIB's leading role and $50 million investment ultimately is to catalyze up to $1 billion in reinsurance capacity to support green energy projects.

Capital allocation to infrastructure requires solid groundwork in the form of project preparation and development, which proves more challenging in Africa than in other markets. Solutions are necessary both on a deal-by-deal basis, as well as at the structural level with more programmatic approaches. On the latter, the EIB is a strong supporter of sound project development combined with open and competitive procurement practices, pushing market participants to optimize their business case for the ultimate benefit of consumers. EIB is proud to have been among the early supporters of the World Bank's Scaling Solar Program, successfully rolling out competitive tendering in Africa. These successes demonstrate how solid project preparation can reduce perceived project risks and, together with competitive tenders, can bring to Africa substantial cost reductions.

At the individual project level, every operation faces its own challenges. This is particularly applicable to first-of-a-kind projects in a given market. The EIB has continuously sought to be at the forefront of RE rollout and financed the first RE projects in various markets inside and outside the EU. EIB was for example among the first lenders to finance large-scale offshore wind farms, and financed the very first African IPP wind farm in Cape Verde. Our lessons learned carry from project to project and one key observation is that well-prepared projects not only minimize avoidable risks but also provide a good basis for resolving unforeseen circumstances. One example from EIB operations is Africa's largest wind farm (310 MW) in Kenya. Located in a remote area, the project presented unique challenges, including the construction of a 430 km transmission line to evacuate project electricity outputs. To fund the $680 million project costs, EIB successfully mobilized commercial banks by offering a tailored political risk structure, and raised a further €25 million in quasi-equity from the EC with a bespoke remuneration structure designed to partially de-risk both debt and equity holders under specific scenarios. Serving approximately 2 million Kenyan households, the project was officially inaugurated in July 2019.

As the financing arm of the EU, the EIB has grown to be the largest multilateral lender and a leading financier of climate action. EIB supports the EU common efforts towards advancing external policy objectives and nearly €8 billion of €63.3 billion in new lending for 2019 was outside the EU. Of these €8 billion, 43% were climate-related investments. The EIB places sustainable development at the core of its strategy in Africa and is committed to contributing to RE deployment in new and innovative ways. Along with its EDFI partners and with the EC, the EIB will seek to secure, under the European Guarantee for Renewable Energy program (EGRE), the deployment of EU development funds for project preparation, development of risk-mitigation instruments, combined with technical assistance to help target countries adopt and implement policy, regulatory and other reforms necessary to attract private investment. Finally, the Bank is supporting the renewAfrica Initiative, which, through its holistic approach, will enable the tendering of bankable RE-IPP projects in Africa.

THE RELATIONSHIP BETWEEN AVAILABLE DE-RISKING INSTRUMENTS AND MARKET DEMAND

The view of this report is that better focused de-risking will enable African countries to crowd in private renewable energy investments at scale, and encourage the development of a robust pipeline of bankable renewable energy projects. Of course, a range of de-risking instruments already exists, comprising a plethora of products such as technical assistance packages, financing (for example, grants, concessional debt and equity participation), guarantees and insurances, all with specific features. **The instruments that are currently active are provided by a variety of national and international institutions, as well as by private insurances or banks**. While the aim of all these is to address the risks faced by developers, equity investors and lenders to enable projects to be financeable, **many of them have limitations (for example, fragmentation, partial coverage, etc.), which can contribute to unsuccessful outcomes and slow progress**.

FRAGMENTATION OF EXISTING INSTRUMENTS REDUCES THEIR EFFECTIVENESS AND DISCOURAGES POTENTIAL CLIENTS FROM USING THEM

Examples of institutions that are involved in providing and boosting RE investments in Africa include:

- **International and Multilateral Financial Institutions (IFIs/MFIs)** such as: the African Development Bank (AfDB), the World Bank and its affiliates (for example, IFC and MIGA), the European Investment Bank (EIB), and the European Bank for Infrastructure and Development (EBRD);
- **Development Finance Institutions (DFIs)**, such as: Cassa Depositi e Prestiti (CDP), the Netherlands Development Finance Company (FMO), KfW, Proparco, etc.;
- **Export Credit Agencies (ECAs)**.

Within their remit, these institutions all offer products to mitigate and reduce investors' risk exposure. As a result, **an almost bewildering array of instruments are available, which vary**

significantly in terms of the budget, scope, geographies and technologies that they cover. In 2018, a RES4Africa Foundation working group led by PwC conducted a research[9], based solely on publicly available databases (mainly targeting Africa-EU Energy Partnership and the Sustainable Energy for All Africa Hub, and the Africa-EU Renewable Energy Cooperation Programme), to scrutinize a total of a 100 European financial instruments that looked to promote RE investments in Africa. After an initial screening process, 75 of them were deemed to be active. Further research was carried out to gather additional information on the key features of these instruments, including: key stakeholders, geographical scope, technology coverage, fund size, financial support, risk mitigation products, as well as capacity building activities.

Once this information was compiled, the list was then filtered based on the “four dimensions criteria". Instruments had to: (i) support large-scale RE generation (above 50 MW); (ii) be a European instrument or have European support; (iii) provide any type of financing (i.e. debt, equity or grants) plus any of the following elements: risk mitigation tools, technical assistance, capacity building, or involve a tendering process; (iv) be available to be used in at least three different African countries.

These criteria helped to narrow down the list to a final panel of 17 instruments (Figure 12) which matched all of the desired criteria.

A key finding of this analysis was that, overall, existing EU renewable energy support schemes are characterized by a high level of fragmentation that does not encourage their use. Whilst created with good intentions, the net result is a confusing and highly fragmented landscape for investor support and protection[10]. The range and number of existing instruments is also likely to dissuade potential debt and equity clients from using them, exacerbated by the piecemeal nature of these instruments in terms of the kinds of financial support, types of risk mitigation, technologies and geographies that they cover.

FIGURE 12

DE-RISKING INSTRUMENTS CATEGORIZED THROUGH THE "FOUR DIMENSIONS CRITERIA"

NAME	FINANCIAL INSTRUMENT	FUNDING DATA
EU External Investment Plan	Debt, equity, guarantee, grant	Fund size: €4.1 billion
Scaling Solar	Debt, equity, guarantee, insurance, grant	Not specified
Public-Private Infrastructure Advisory Facility	Grant	Not specified
NEPAD Infrastructure Project Preparation Facility	Grant	Not specified
FMO Infrastructure Development Fund/Direct Investments	Debt, equity, grant	Fund size: €326 million Investment size: €5-50 million
ACP - EU Energy Facility	Grant	Fund size: €200 million
EU - Africa Infrastructure Trust Fund	Debt, equity, guarantee, insurance, grant	Fund size: €812 million
Southern African Development Community	Grant	Not specified
Clean Technology Fund	Debt, guarantee, grant	Fund size: €5.4 billion
Climate Investor One	Equity, grant	Fund size: €535 million Investment size: €80-100 million
Danish Climate Investment Fund	Debt, equity, grant	Fund size: €180 million Investment size: €2-50 million
Africa Energy Guarantee Facility	Insurance, guarantee, grant	Fund size: €1.4 billion
West Africa Clean Energy Corridor	Grant	Not specified
Energy Sector Management Assistance Program	Grant	Not specified
The NEFCO Carbon Fund	Debt, equity, guarantee, grant	Fund size: €165 million Investment size: €4-5 million
FISEA Invest and Support Fund for businesses in Africa	Equity, grant	Fund size: €250 million Investment size: €1-10 million
Terawatt Initiative	Equity, guarantee, insurance, grant	Not specified

AVAILABLE DE-RISKING INSTRUMENTS VARY WIDELY IN TERMS OF SCALE, FOCUS AND OFFER.

TECHNOLOGY COVERAGE	PROVISION OF SUPPORT SERVICE			
	FINANCIAL	TECHNICAL	CAPACITY BUILDING	STANDARD DOCUMENTATION
All	●	●	●	
Solar	●	●	●	●
All		●	●	
Wind, solar, hydro		●	●	
Wind, solar, hydro, geothermal, biomass	●	●	●	
Wind, solar, hydro, biomass		●	●	
All	●	●	●	
Solar, hydro		●	●	●
All	●	●	●	
Wind, solar, hydro	●	●		
All	●	●	●	
Wind, solar, hydro, geothermal, biomass		●		
Wind, solar		●	●	●
Wind, solar, geothermal		●	●	
Wind, solar, hydro, geothermal, biomass	●	●		
Wind, solar, hydro, geothermal, biomass	●	●	●	
Solar	●	●	●	●

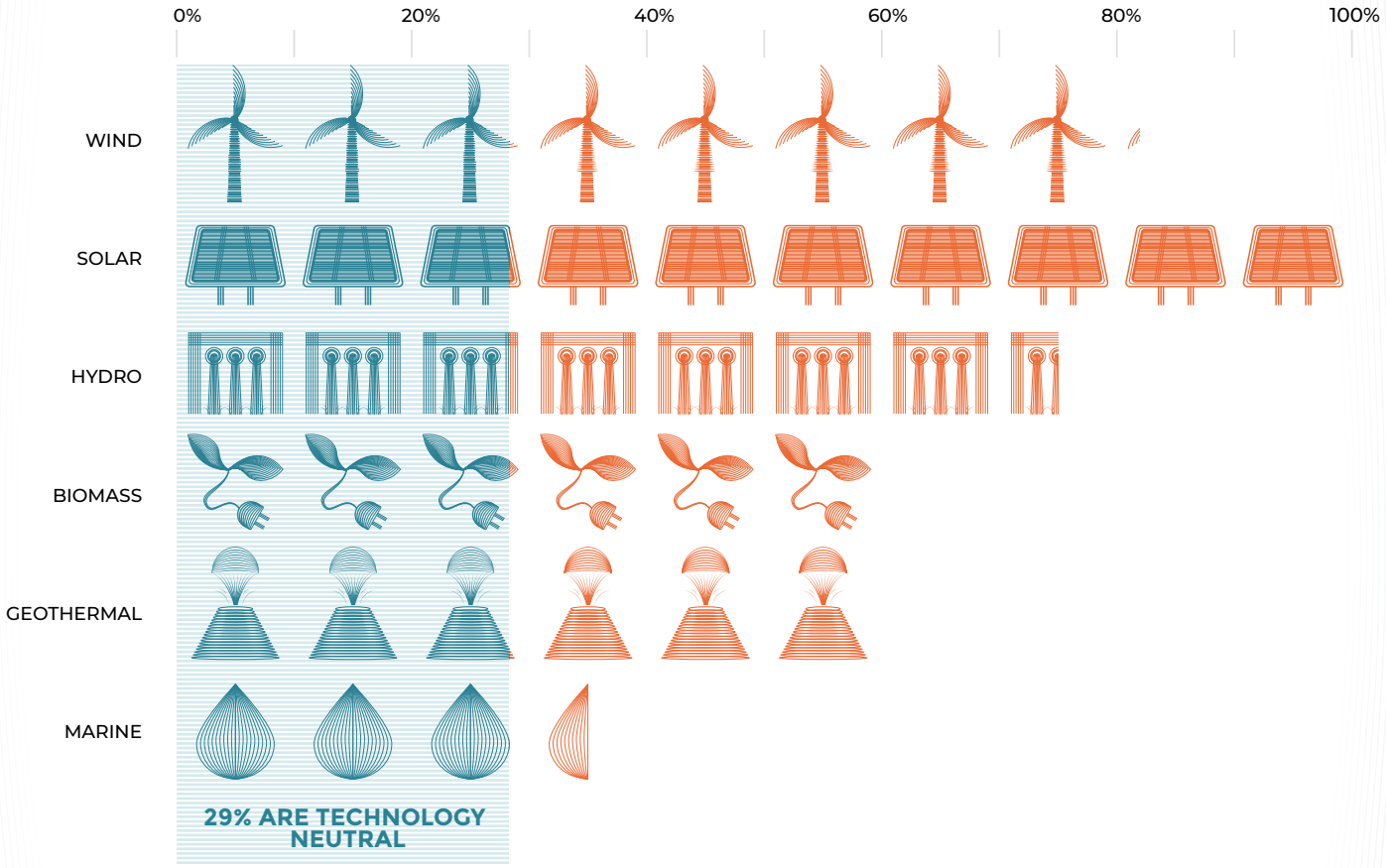
Source: RES4Africa and PwC (2019)

MOST INSTRUMENTS FOCUS ON DE-RISKING EARLY PROJECT PHASES AND FINANCING AND LEAVE CORE PHASES LARGELY UNCOVERED

Some other findings of the review also raised concern (Figure 13). Of the 17 assessed instruments, less than half provide a full financing package or at least one insurance instrument, while only 29% are technology neutral, and less than one third cover all African countries. Only 41% provide all types of financing support, with only 47% offering debt support. Furthermore, only 7 (41%) offer at least one form of risk coverage product (3 of them as guarantees and 4 of them as guarantees and insurance). More critically, technology coverage of the instruments seems to be unequal, with wind and solar being covered by 82% and 100% respectively while less support is available for other renewable technologies. In terms of geographical coverage, the 17 instruments mainly

FIGURE 13
RISK COVERAGE OF ASSESSED INSTRUMENTS

13.1. SHARE OF COVERAGE BY TECHNOLOGY

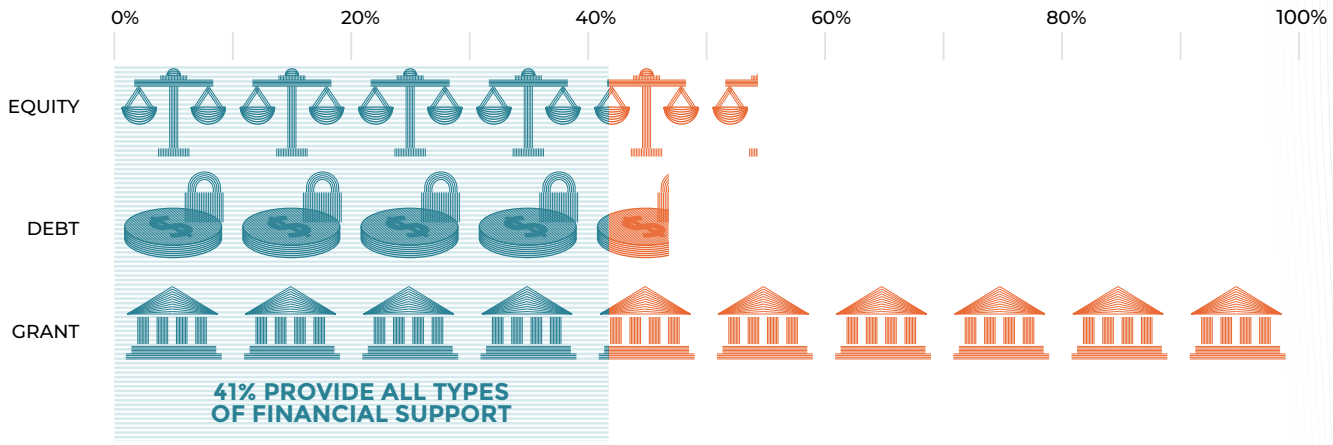


cover north and sub-Saharan Africa, while only 5 instruments (35%) cover all African countries.

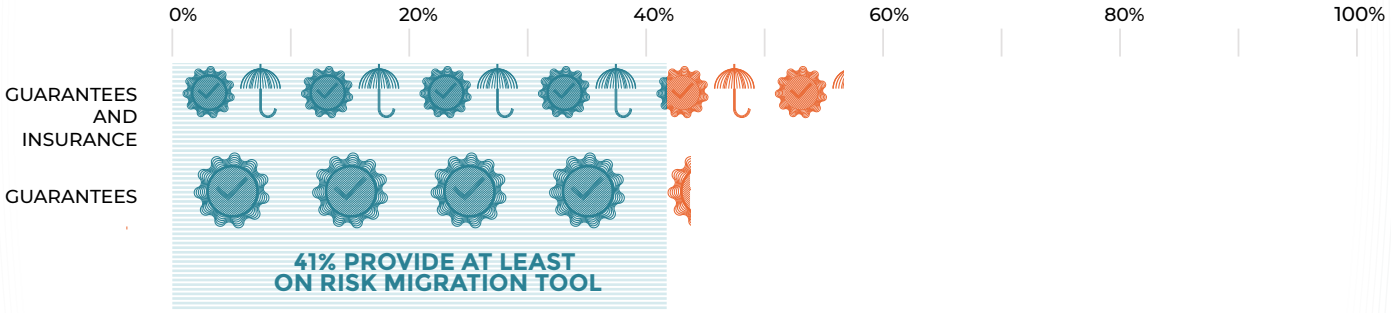
Whilst the analysis above is useful, what it is also important to understand the extent to which existing instruments cover the key phases of the investment process: project preparation, procurement procedure, financial close, construction and operation.

The overall results of this analysis are concerning and they clearly highlight that the instruments do not provide the much needed coverage across all project phases. It is positive to note that all instruments focus on the early stages of the process, aiming to provide support on the development of feasibility studies and/or capacity building activities; however, it is highly problematic that the procurement process and the financial close phases remain largely untouched. Moreover, only 41% of instruments provide support in the construction and operation phase (for example, providing technical advice, project development tracking and/or capacity building). **There is clearly a need for a comprehensive instrument that supports the needs of the key stakeholders across all the main phases of the project cycle thereby helping to reduce the risks associated with the overall project**.

13.2. SHARE OF COVERAGE BY FINANCING TYPE



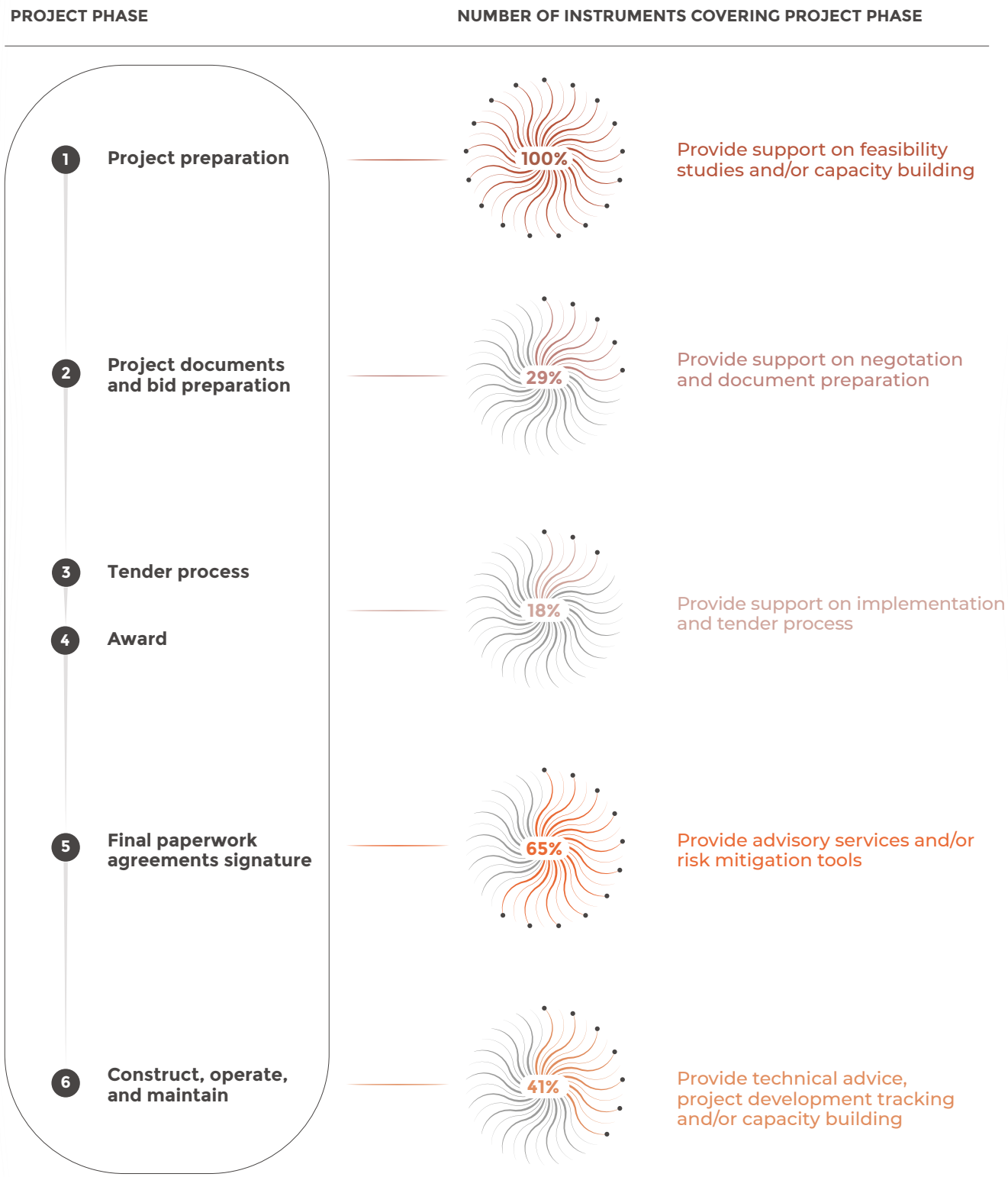
13.3. SHARE OF COVERAGE BY RISK MITIGATION TYPE



Source: RES4Africa and PwC (2019)

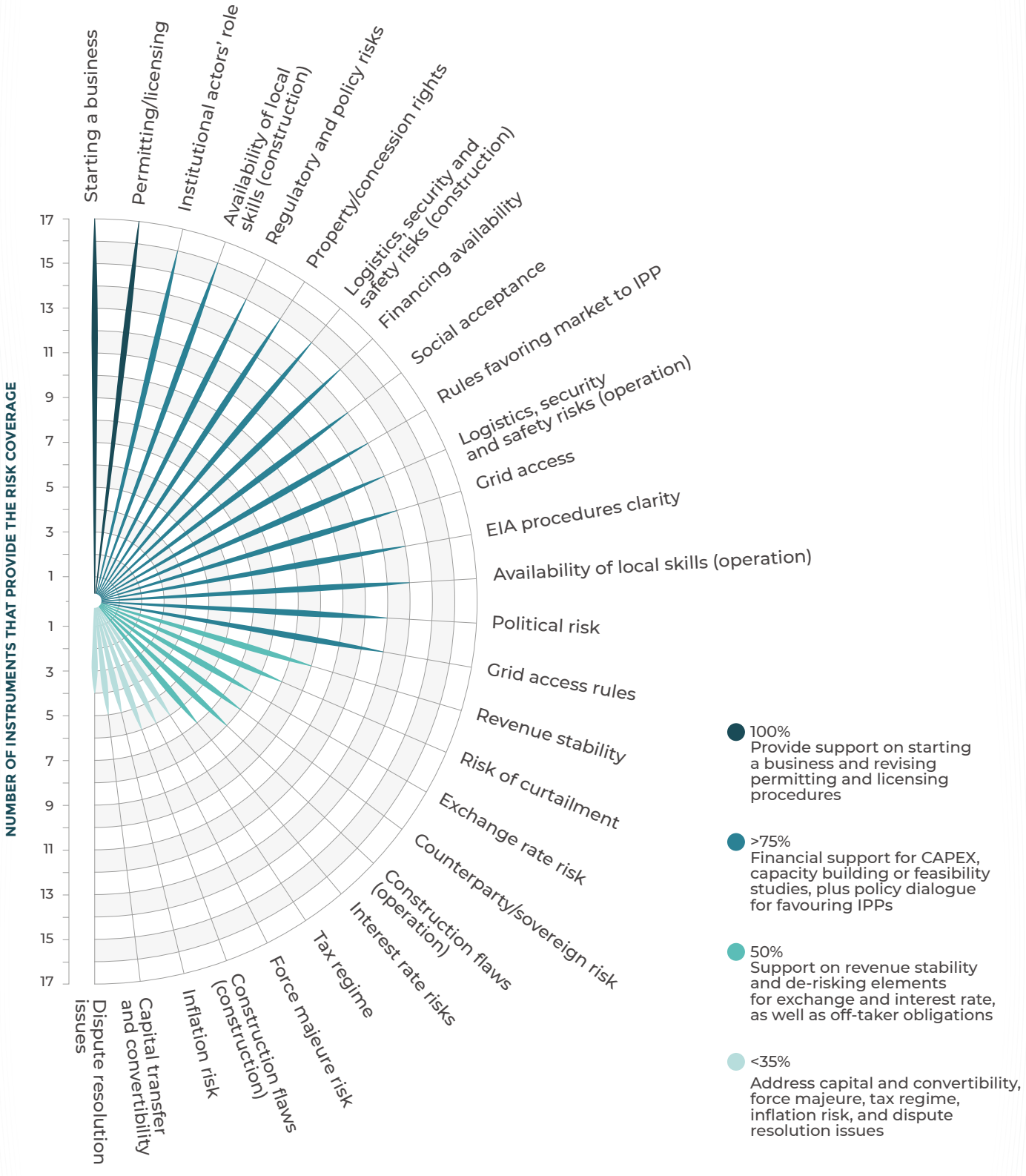
DE-RISKING INSTRUMENTS ARE FRAGMENTED AND DO NOT PROVIDE COMPREHENSIVE RISK COVERAGE TO INVESTORS.

13.4. SHARE OF COVERAGE ALONG THE RENEWABLE ENERGY PROJECT CYCLE



Source: RES4Africa and PwC (2019)

13.5. NUMBER OF INSTRUMENTS PROVIDING RISK-SPECIFIC COVERAGE



Source: RES4Africa and PwC (2019)

A NUMBER OF IMPORTANT INVESTMENT BARRIERS REMAIN CHRONICALLY UNADDRESSED

Based on a comprehensive list of risks developed by a precedent RES4Africa study[11], which provided a breakdown of the risks analyzed in the first section of this chapter, the 2018 study also cross-checked the extent to which the existing instruments were able to comprehensively address renewable energy project risks during all phases of the project cycle.
The results can appear almost counter-intuitive. **Support was available and strongest for the risks rising during the earlier phases and weaker during the later phases**. It was confirmed that 100% of the instruments provided support to start a business and to revise permitting/licensing. More than 75% of instruments provided financial support for capital expenses, feasibility studies, and capacity building activities complemented with high-level dialogue to strengthen the political and regulatory framework required for IPPs. Approximately 50% of the instruments contributed to maintaining revenue stability and de-risking elements for exchange and interest rates, and off-taker obligations. Less than 35% of the instruments covered capital transfer and convertibility risks, force majeure events, tax regime, inflation risks, and provided assistance for dispute resolution issues.
Looking ahead new support schemes must look to address these as comprehensively as possible in order to be effective.

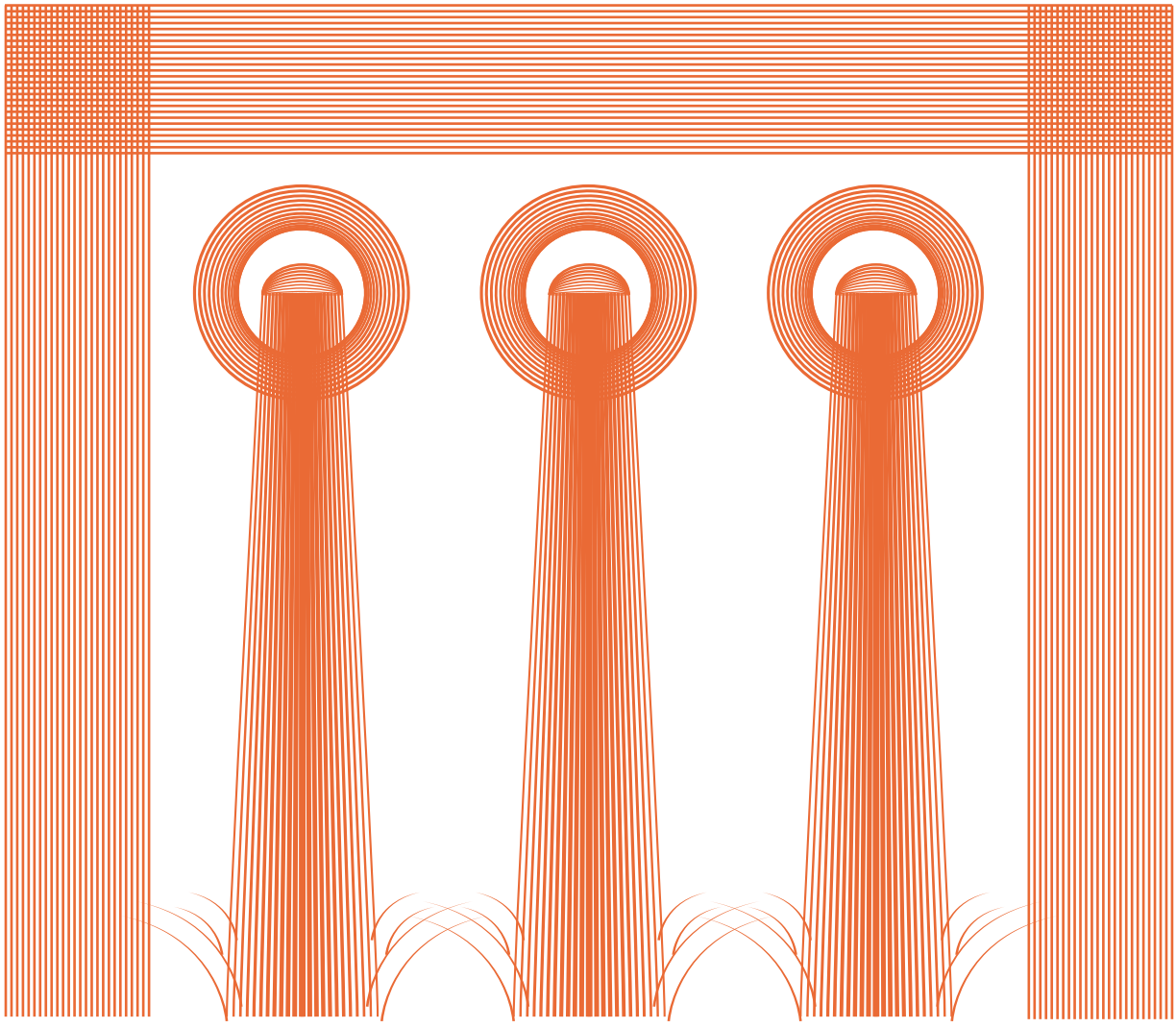
AVAILABLE DE-RISKING PROGRAMS DO NOT FIT WITH BOTH INVESTORS AND COUNTRIES REQUIREMENTS IN A COMPREHENSIVE WAY

After having identified the risks that affect renewable energy projects in Africa and assessed the scope and shortfall of the existing schemes, it is also important to examine and better understand the perspectives of individual stakeholders. The interviews conducted by the RES4Africa project team for the 2018 study with stakeholders from renewable IPPs and manufacturers provide some interesting results[12].

IPPs and manufacturers deploy all types of financing instruments, mainly risk capital and debt. In addition, by blending finance (i.e. finance that is from a combination of public and private sources) they felt they could support the project whilst also reducing the risk, and by utilizing grants for initial expenditures, feasibility studies, technical assistance, and even guarantees they could lower the project costs. When the IPPs were asked about their experience of using existing de-risking instruments, it emerged that some of them had been successfully applied, such as the Clean Technology Fund (CTF) as well as comprehensive support programs like Scaling Solar from the World Bank, and GETFiT from the German development bank KfW. Industrial players remarked

that such instruments could sometimes help save time spent on negotiations and facilitate project bankability.

However, the interviewees also pointed out that **the existence of such a large number of instruments for Africa, the complexity of the instruments and their lack of familiarity with them discouraged their use and minimized their attractiveness**. Not surprisingly, IPPs highlighted their preference to maintain a close relationship with only a few IFIs and DFIs, and using previously employed instruments rather than always exploring the entire universe of available instruments to find the best-suited one for their project.



DESIGNING CONSIDERATIONS FOR EFFECTIVE DE-RISKING INSTRUMENTS

HOLISTIC AND COMPREHENSIVE DE-RISKING INSTRUMENTS ARE REQUIRED TO UNLOCK AFRICA'S RENEWABLE ENERGY POTENTIAL

The fragmentation of existing instruments, their lack of coverage across the key phases of the project and their gaps in covering key risks for investors clearly act as disincentives to project developers, equity investors and lenders involved in African renewable energy projects. Therefore, in the current market landscape, **there is space for new initiatives aiming to accelerate renewable energy development in Africa and scale-up private sector contribution**. But which principles should guide the design of such an initiative? Some useful guidelines are evident from the analysis undertaken.

a. Strengthen political will and commitment to energy policy reform

Change needs to be driven from the top. **Broad national political commitment is an absolute necessity for a country to face the challenge of transforming its energy system, integrating and scaling up the use of renewables**.
Any new instrument should be dedicated to the countries that demonstrate sound political will, interest and commitment, but need additional help to adopt the policy reforms needed to accelerate the development of an energy system based on renewables, that can respond to the growth in energy demand and sustain economic development.

b. Improve the adequacy and predictability of policy and regulatory frameworks and ensure that these are integrated with wider socio-economic plans

Political leadership is also key to support the creation of a proper policy and regulatory framework and to allow renewables to be integrated into the existing electricity grid. **Much work still needs to be done in most African countries to create the appropriate facilitating environment, but effort and support is also required at a project level**. Political leadership is required to ensure the adoption of consistent site-selection methodologies, based on sound resource and social assessments, and support the acquisition or directly provide the land rights for the site. Authorizations, consents and permits need to be granted in a timely manner. Public authorities are to ensure the design and implementation of transparent tender process for awarding the rights to develop the project, and define a satisfactory revenue model.
The importance of the political and public au-

thorities also lies in their ability to support the right consensus among the local communities where the plant will be located, and to assess its economic, social and environmental impact in close partnership with local communities and investors. Projects need to demonstrate how they fit with the local social and economic planning in terms of avoiding land disputes, not interfering or impeding daily lives and customs, and providing the benefit of electricity to local communities. Consultation and preferably active involvement by authorities with the other stakeholders creates a sense of partnership that will help resolve issues throughout the various phases of the project.

Any new initiative must also be able to support national governments or SOEs, so that they are able to complete all the necessary steps that have been proposed to successfully launch their renewable initiative domestically.

c. Capacitate and empower the local workforce through enhanced training and capacity building activities

A key element to enabling the above-mentioned support for project development and implementation is to **foster the empowerment of the local workforce through specific training and capacity building activities**. Identification of key skills and experience to support the development of renewable energy projects can be done in advance to enable academic and private sector organizations to develop programs that allow a project-ready local workforce to be in place as projects are proposed and developed.

d. Manage environmental and social risks

In this decade of UN Sustainable Development Goals implementation, **it is critical that environmental and social risks are carefully managed by a proposed innovative scheme**.

This will not be without its challenges, as in many countries the environmental laws still need to be enacted and therefore it is difficult to predict what form they will finally take. Many financial institutions (including DFIs, ECAs and international banks) already have guidelines and rules that must be applied to the projects that they support, such as the Equator Principles, which are an industry standard for determining, assessing and managing social and environmental risks in project financing. On a positive note, as these have been in place for a while, so the concept of environmental and social risk management are familiar to many of the stakeholders that will be involved in renewable energy projects.

e. Expand private and public stakeholder engagement and commitment

There is clearly also a need for greater alignment and convergence by private and public-sector stakeholders. This could on the one hand look to delineate areas of respective comparative advantage (for example, MFIs/DFIs are perhaps better placed to enable early-stage investments in immature markets), and on the other hand encourage more collaboration to develop schemes that are consequently more holistic and comprehensive. **Sharing expertise, agreeing responsibilities and identifying areas of maximum competency will be key to come up with solutions that look to overcome the *status quo***. For instance, one potential outcome of such dialogue and cooperation might ultimately be that the public sector will tend to focus mainly on provision of guarantees/insurance while the private sector may provide the funding.

f. Extend coverage also on the construction and operations phases by adopting a project lifecycle approach

It remains helpful to clearly map out the support that is available to projects in the early stages of their development. **What becomes a priority now is to ensure that support schemes cover, at the required level, the later stages of project development, in particular the construction and operation phases**.

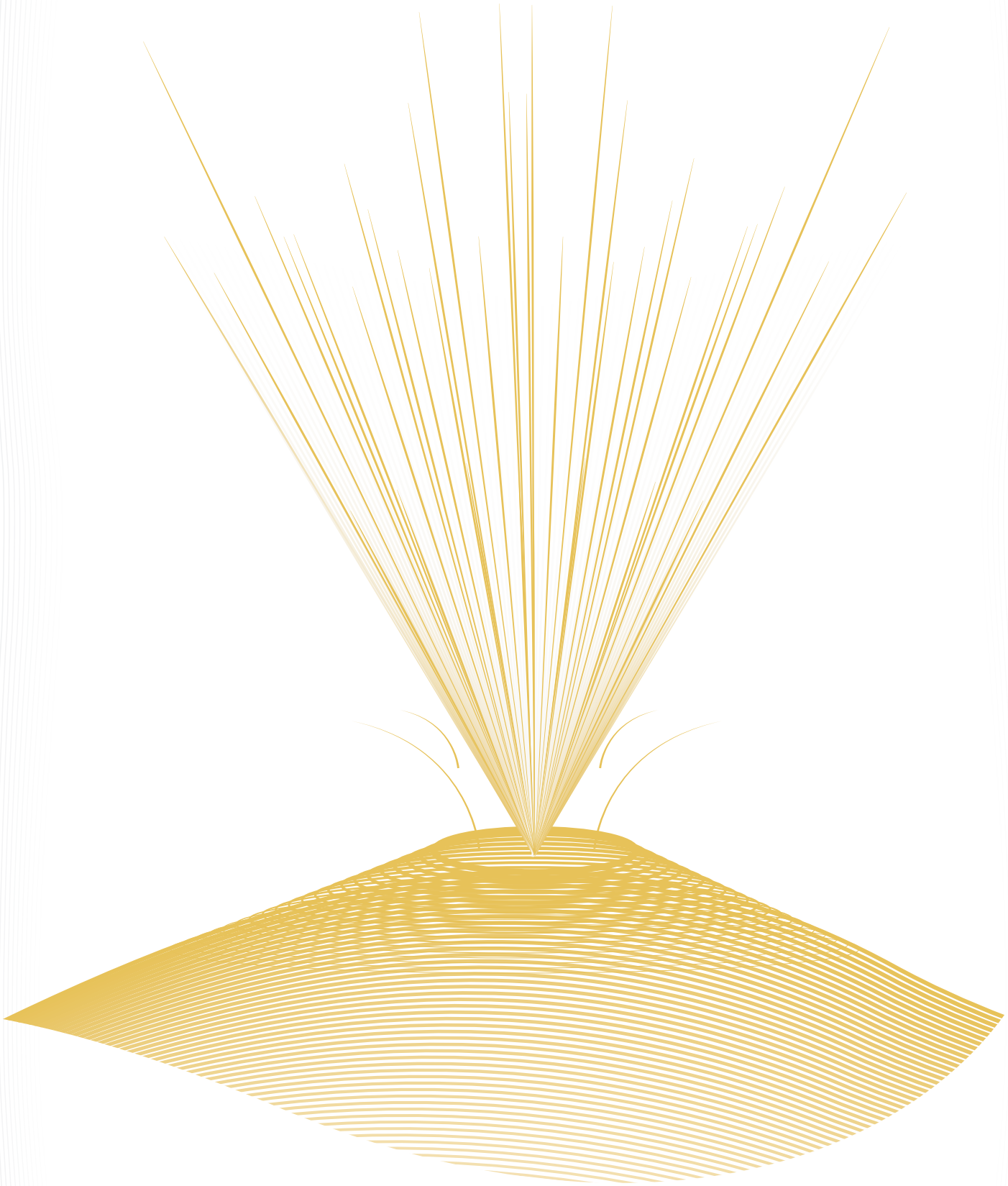
Construction is the usually riskier phase. One suggestion is that potential requirements envisage an EPC contract in line with the best international market practice, preferably with a single point responsibility, limiting any sub-contractor risk as the basis for any project development. As the selection of the EPC contractor will be critical, it can be done using pre-agreed criteria, with a particular focus on the EPC being an experienced and creditworthy operator. The contract should also envisage robust completion tests to demonstrate the performance for a period of 6-12 months after the completion guarantees are released. Finally, it should clearly and extensively envisage indemnification for delays, increased costs or underperformance.

For the operational phase, the importance of having a solid O&M contract should not be underestimated. Preferably, this would be based on the best current international standard practice, properly regulating the operator's obligations, clearly stating the scope of the services and the performance standard to be achieved, the limitation of liabilities and the level of any liquidated damages. And again, the operator would need to be a creditworthy counterparty with a significant track record in similar work environments.

g. Increase the accessibility of financial de-risking instruments and products

This chapter has highlighted how a combination of inputs from the private and the public sector has the potential to efficiently and comprehensively identify the issues and risks that need to be addressed, and agree on a way in which these can most effectively be resolved. **If supported by the right instruments and products** (whether these are new ones, a selection of the most successful existing ones, or a merging of new and existing), **a holistic and comprehensive program, that standardizes and accelerates private-sector involvement and investment into utility-scale renewable energy projects in Africa, can be developed**.

For this to work, a key change is perhaps that the design of the scheme needs to take into account the needs of the main stakeholders and the key risks affecting developing renewable energy projects in Africa, while looking to remove duplication and redundancies. Addressing many of these needs in a holistic fashion is a core component of the "renewAfrica Initiative", as we will see in Part Three.



THE ROLE OF THE PRIVATE SECTOR FOR AFRICA'S SUSTAINABLE DEVELOPMENT

VERA SONGWE, UNDER-SECRETARY GENERAL OF THE UNITED NATIONS AND EXECUTIVE SECRETARY OF THE UNITED NATIONS ECONOMIC COMMISSION FOR AFRICA (UNECA)

The existential and economic threats posed by the Covid-19 pandemic and the climate crisis put the world on the cusp of a new global order that either makes countries more resilient and prosperous with no one left behind going forward, or results in an even more unequal world on a steep slope to self-destruction. Which of these pathways the world takes as it emerges beyond that cusp will very much depend on the new multilateral, financial and investment frameworks adopted by countries to reboot their economies. The right pathway, particularly for Africa – which remains the last frontier for transformative clean energy investments – is one that focuses on low-carbon climate-resilient development options that not only create decent jobs, address energy access and respond to climate change but also result in multiple wins for economies, societies and the environment. This will require transformative investments – both foreign and domestic. However, against a background of limited fiscal space, particularly in the case of Africa economies, the role that the private sector can play to support African countries achieve sustainable economic growth in a globalized world that is increasingly threatened by climate extremes and other global uncertainties becomes a matter of priority for governments. It is indeed the case that the private sector is the engine of growth because it drives productivity, innovative financing and inclusivity of participation, which in turn drive inclusive economic growth. Yet, private sector is today, more than ever, put to test by the tragic economic and social impacts of exogenous shocks such as climate change or health pandemics. The United Nations Secretary-General, Antonio Guterres, keeps reminding us that we are losing the race to keep climate change at bay, unless there is concerted efforts globally to step up action. In January 2020, the World Meteorological Organization (WMO) confirmed 2019 as the second hottest year on record, second to 2016. WMO also confirmed that the consecutive five-year (2015-2019) and ten-year (2010-2019) periods were the highest on record. To reach the Paris Agreement's temperature goal of 1.5 degrees, the 2019 Emissions

Gap Report by the United Nations Environment Programme shows that globally emissions must be reduced by at least 7.6 percent every year until 2030. Transformative investments in clean energy in Africa can make contributions to this goal. Otherwise, climate change stands to derail development gains and efforts in Africa. Climate change – resulting in more frequent and intense extreme weather events (e.g. heatwaves, floods, droughts and cyclones), shifts in habitats and agro-ecological zones, and increase in food security challenges – can trigger cascading effects across economies. Estimates of existing economic impacts of climate change average between 2 and 3% across Africa, while in future some countries could lose up to 15% of their GDP by 2050. Furthermore, it is estimated that African countries are spending between 2 and 9% of their GDP on unplanned adaptation and response to climate change impacts. However, climate change offers opportunities for African countries to transition towards green and inclusive growth, which can ensure meaningful jobs, sustainable agriculture and ecosystems as well as regional trade through the promotion of value addition for the continent's abundant natural resources. For instance, while stranded assets present a threat to African resource-rich countries that are heavily dependent on revenue windfall from natural resources, they do offer Africa opportunities to prioritize development policy solutions and the potential for the private sector to play a key role in resource diversification, resource governance, value-chain development, and renewable energy generation and distribution.

The Covid-19 pandemic has further exposed the vulnerabilities in African economies owing to long-term underinvestment in key sectors such as health, energy and education, among others. For example, even where hospitals and the needed equipment exist to treat people affected, without access to secure, affordable and reliable energy, the system fails, and casualties increase. How African countries emerge from Covid-19 and respond to their increasing energy demand under changing climate will be fundamental to the performance of their economies and the realization of their development aspirations as embodied in various national development plans, the United Nations 2030 Agenda for Sustainable Development and the African Union's Agenda 2063.

The good news is that the compelling case for clean energy investments in Africa has never been stronger than now, with so much demand for energy owing to population growth, increasing urbanization, industrialization and trade, and climate change, among other factors, and starting from an unacceptably low access rate to energy on the continent. The political and governance environment across the continent is improving, with a good number of countries continually improving their ease of doing business performance scores through business regulatory reforms, particularly with regard to contract enforcement. The learning curve for clean energy deployment in Africa is getting better, against a background of dramatic declines in the cost of renewable energy technologies, with transformative private sector investments in countries such as Kenya, Morocco, Senegal and Zambia that have resulted in some of the best tariffs

in solar PV in the world so far at between $4.2 and $6.05 cent.

African countries have indeed signalled leadership and commitment to address climate change, recognizing that it remains a growing obstacle for Africa to attain the Sustainable Development Goals (SDGs) and achieve sustainable development and prosperity. All African countries have signed the Paris Agreement and 50 of them have already ratified the agreement with nationally determined contributions to climate action (NDCs) requiring close to $3 trillion of conditional and unconditional finance. African countries have 22,000 MW of renewable power actions in their NDCs. However, there is a realistic potential to deploy up to 200,000 MW of renewable power by 2030 on the continent – an investment opportunity of about $400 billion. African countries can therefore realistically use their limited public resources to leverage this volume of investments to address energy access and increase clean energy climate ambition eight-fold.

It then becomes critical to support African countries mobilize the private sector finance needed in this emergence to build back better and transform economies for better resilience and safer and inclusive growth. Initiatives such as the ECA's SDG 7 Initiative for Africa can help. The initiative, based on three mutually re-enforcing pillars of sustainability, governance and finance has been launched and is bringing together countries, financiers and developers of clean-energy projects to align interests and combine scale and speed to fast-track financing from the private sector for deployment of clean energy and climate action in Africa. Participants in the initiative subscribe to the core principles of sustainability and governance, which in turn facilitates the availability of finance from the private sector. This way, countries are able to address their energy access challenges and indeed not only respond to climate change but raise their climate ambition. I believe that this concept of the initiative enables us to have win-win outcomes for countries and impact investors such as members of the UN's Global Investors for Sustainable Development and the Swedish Investors for Sustainable Development (SISD), who between them manage trillions of US dollars of assets.

To promote responsible and sustainable development of their natural resources for economic growth and prosperity, many African countries have embarked on policies to minimize dependence on natural resources and limit the adverse effects of stranding. Some have done so by mobilizing investment and leveraging the fundamental role of the private sector in diversifying away from high-carbon economy and towards value addition in resources, agro-processing, manufacturing processes and deepening of financial services.

Policies or initiatives such as these will help create or strengthen linkages between climate change adaptation,

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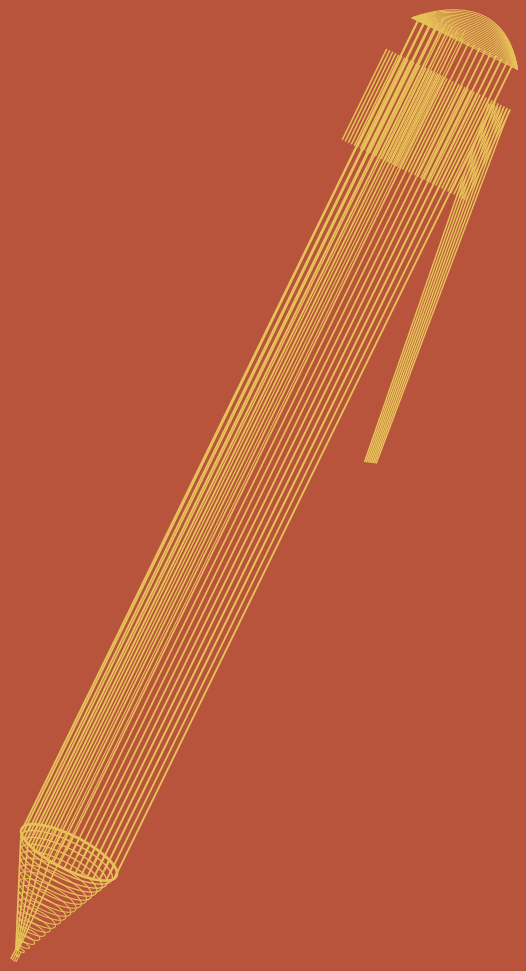
IEA (2019), *Africa Energy Outlook,* November 2019 (www.iea.org)

renewable energy, private investment, green growth and sustainable development in Africa. Increasing the share of renewable energy mix in Africa through enhanced investments in clean energy or climate finance will result in sustainable land use and will contribute to improved agricultural and industrial production, and job creation. This will be reinforced by investments in infrastructure, improved regulatory frameworks and enhanced business environments, which will create greater market opportunities for intra-African trade of resources (within the context of the African Continental Free Trade Area - AfCFTA and regional power pools) and help catalyze vast private capital and technological innovation for low-carbon development, sustainable transport, smart agriculture and sustainable land management. Alongside African governments and development partners, the private sector will then support policies and initiatives for transitioning towards climate resilient economies and sustainable development on the continent.

The ECA and development partners commit to continue supporting Africa countries in these efforts. I am very pleased with the partnership that the ECA and RES4Africa have developed to support the clean energy transformation agenda in Africa. Together, we have supported countries such as Djibouti, Eritrea, Ethiopia and Sudan to strengthen human capacity in energy and investment planning. We are conducting studies on policy and regulatory frameworks with case studies of ten countries so far. We will continue to strengthen this partnership and enlarge it to provide the support that African countries need to capitalize on global stresses – such as the Covid-19 pandemic and the global climate crisis – to transform them into opportunities for better, resilient and inclusive growth and shared prosperity towards the Africa we want.



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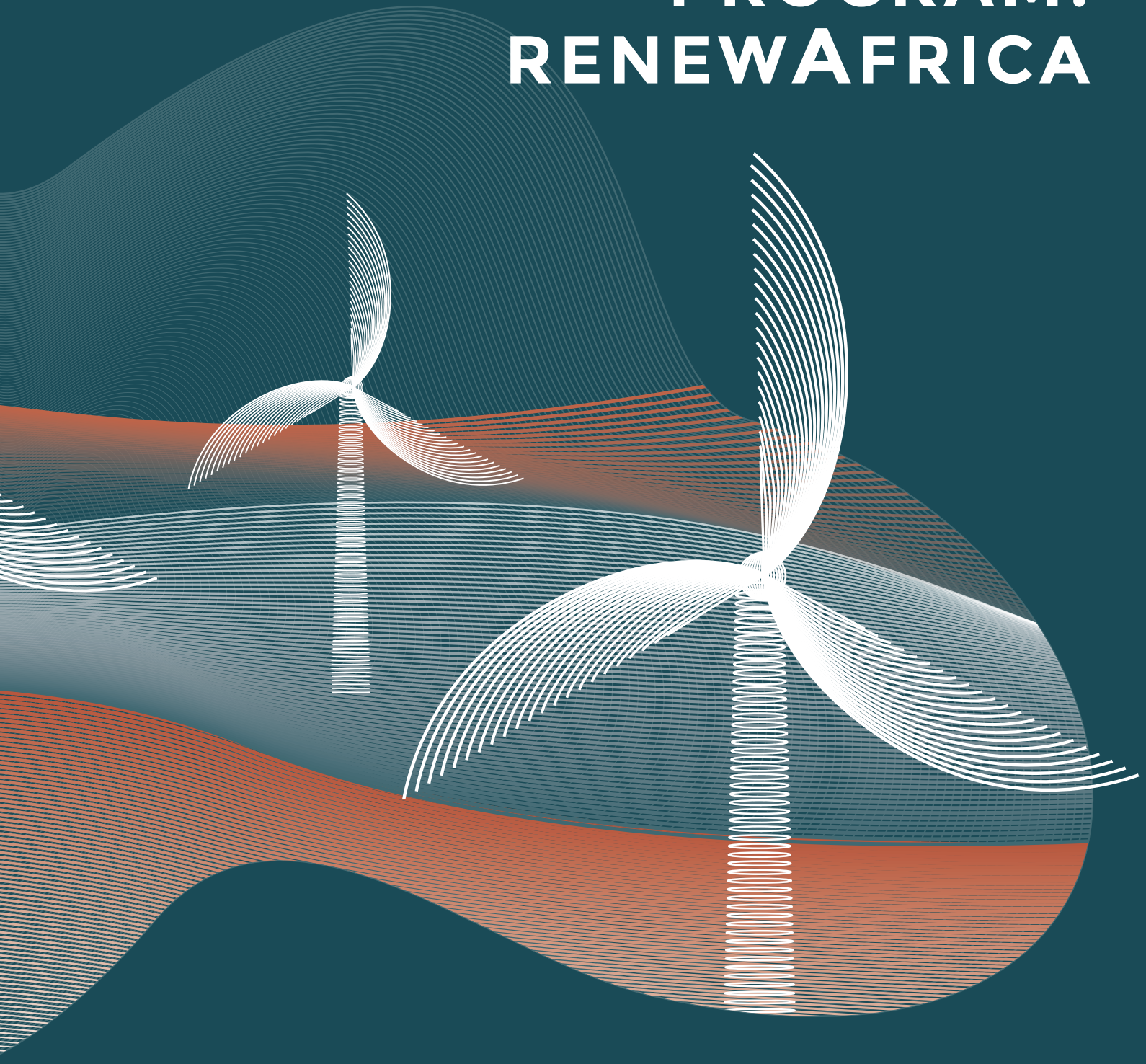
PART

INTRODUCING A NEW DE-RISKING PROGRAM: RENEWAFRICA



THE RENEWAFRICA INITIATIVE: ADVANCING A GREEN, SUSTAINABLE ENERGY AGENDA WITH AFRICA

A JOINT STATEMENT FROM RENEWAFRICA SIGNATORIES

Access to reliable and sustainable energy is crucial in sustaining essential services, from health to school, industrial production and trade. Ensuring a continuous flow of electricity is essential to keep all the fundamental public services and the strategic infrastructure of the countries running. **Electricity plays an irreplaceable role in modern life**. Yet, to date, nearly 600 million people in Africa did not have access to energy and the lack of reliable electricity is reducing Africa's GDP growth by at least 2%. **Expanding renewable energy capabilities, and the right policies to make them a reality, will be fundamental in providing electricity access to all Africans in a sustainable way and ensure the structural shift towards a low-carbon and more resilient, more sustainable economy**. Yet, worldwide, only 2 % investments in renewable has made it to the Africa region. We continue to believe that renewables are not a luxury of mature electricity markets.

Investments in renewable energy can provide power for Africa's nascent industries at the lowest possible cost and the shortest amount of time-to-market compared to any other technology. In that sense, renewables remain the least-cost road to sustained economic growth, creating local value, jobs, resiliency of supply, and other socio-economic benefits. **Africa has a tremendous opportunity to develop its vast renewable resources** so as to contribute to a resilient, sustainable development for the continent and its people. **Achieving affordable and clean energy access for all Africans by 2030, as defined by the UN SDG 7, requires a significant increase in renewable investments**. However, **investment barriers**, as for access to finance, capacity, policy and regulatory challenges and bureaucracy, stand in the way of project replicability and scalability; thus, **limiting the ability of the continent to build a pipeline of bankable renewable projects**.

The long-term vision laid out in the Green Deal and the new Strategy with Africa is providing a framework and a path to speed up the achievement of

clean, sustainable and qualitative economic growth and social advancement. Significant progress has been made by multiple international and national investment support programs, yet there is substantial room for improvement to scale up renewable investments.

Anchored in its international leadership in sustainable development and renewable energy transition and their vast experience in Africa, **the European renewable energy industry, knowledge centers and investors are in a position to offer their expertise and experiences to cooperate with Africa in its quest for a sustainable development path.**

Backed by 26 major stakeholders representing the European renewable energy value chain including the industry, finance, trade associations and services sector the renewAfrica Initiative was launched in June 2019.

renewAfrica is a European industry-backed initiative committed to working with, and support, African countries in achieving sustainable access to renewable energy at a transformative scale. It aims to be a game changer in unlocking investments in utility-sized renewables projects, by combining the wealth of currently existing EU investment support instruments into a comprehensive one-stop-shop programme. In the context of the Green Deal and the new Strategy with Africa launched by the European Commission, renewAfrica aims to play a central role in keeping the renewables development at the top of the EU and Africa agendas. More specifically, the **renewAfrica Initiative** aims to gather private sector actors and public sector institutions in Europe and in Africa to:

- **shape enabling environments for RE investment in Africa** to make progress on sustainable development;
- **promote actions to stimulate the creation of a integrated, one-stop-shop EU Support Program**, as a foundation to effectively strengthen RE investments in Africa;
- **support the effective deployment of a sustainable, renewable energy market in Africa.**

As the recent global health crisis once again demonstrated, our world is facing common challenges that require common solutions. Now more more than ever, we are all connected and we share risks that call for new ways of cooperation. Climate change and its broad impact is our next most urgent challenge. We trust that renewAfrica will provide new impetus for action, delivering on-the ground practical solutions in the framework of a renewed EU-Africa partnership for a sustainable and prosperous planet.

HIGHLIGHTS

1

The renewAfrica Initiative, launched by RES4Africa Foundation and backed by a wide range of European stakeholders, aims to support the implementation of a new EU-led de-risking program to build a pipeline of bankable RE projects across Africa and crowd in private investments at scale.

2

The strategy of renewAfrica is based on a multi-layered, one-stop-shop approach that aims to reduce fragmentation and overlap of de-risking instruments, bridge the existing gaps in risk coverage, and establish an impactful organizational set-up.

3

The prioritization of in-country impact and sustainable development is an essential distinguishing feature of renewAfrica, whose ultimate goal is to support Africa's economic, social and environmentally sustainable growth, aligned with the SDGs.

4

renewAfrica's operational model is based on cross-sector collaboration that delivers end-to-end support along the renewable energy project lifecycle through advocacy and policy dialogue, capacity building, technical assistance and financial support.

5

Within its core operations, renewAfrica will look to convene all relevant parties into a single ongoing dialogue, deliver training measures for effective knowledge transfer, assist in the technical preparation and execution of project development, and help secure tailored financial packages.

6

renewAfrica believes that partnering for Africa's clean energy access will be collectively beneficial for the future of all our economies and societies, and that an alliance between Europe and Africa along sustainable development objectives represents a unique opportunity for both continents to grow and prosper.

THE STRATEGIC APPROACH OF RENEWAFRICA

THE NEED FOR RENEWAFRICA

This report has already highlighted how advancing the rollout of renewable energy is a prerequisite for Africa to achieve universal access to electricity by 2030. If achieved, this in turn can fuel the continent's wider socio-economic transformation. However, this will require an unprecedented increase in the amount of private investments in Africa's RE infrastructure, as public financing alone will not be enough to bridge the funding gap.

The perception, and reality, of the wide-ranging risks that investors are currently exposed to in African environments is one of the main reasons holding back more substantial private investments. This is particularly the case in the RE sector where projects are exposed to a wide variety of specific risks, from technology to country-related ones. Tailored support in terms of risk-mitigation initiatives and instruments is often required to unlock individual investment opportunities and allow for the creation of a bankable project pipelines. While it might appear that there is already a large body of support instruments that can be used to accelerate such investments, when examined more closely the reality is that only a few of these are addressing the needs and delivering the desired scale of results.

In its conclusions, the previous chapter highlighted a **need to revisit and reconsider the design of existing de-risking programs** so that these might better reflect the needs of all stakeholders involved in RE investments: project developers, host countries and other related public institutions (including off-takers), as well as the lenders and DFIs potentially supporting the development of renewable markets.

Using this premise as a starting point, this chapter introduces a **novel initiative: renewAfrica**[1]. Launched by RES4Africa Foundation and backed by a wide range of European stakeholders, from both the RE industry and the financial sector, renewAfrica aspires to support the implementation of a new EU-led de-risking program, **based on an integrated, multi-layered, one-stop-shop approach** that will, once and for all, help **to enable the development of an extensive pipeline of bankable RE projects across Africa**. It will capitalize on the potential of a range of technologies, make use of the natural resources available, and ultimately enable more diverse socio-economic growth for the continent.

THE RENEWAFRICA STRATEGY AIMS TO BUILD AN END-TO-END SOLUTION THAT ENABLES THE DELIVERY OF RE PROJECTS AT SCALE

Generally speaking, **the aim of renewAfrica is to build a comprehensive European program** that is technology-, geography- and size-neutral, and to provide a range of measures to de-risk renewable investments to mobilize and crowd in private investments at scale. The starting point for renewAfrica's strategic approach is to address some of the common challenges that exist in this area:

a. reducing the fragmentation and overlap in the existing universe of de-risking instruments by combining their best features, and forming a more complete and user-friendly platform that will both encourage their use and support the development of more RE projects;

b. bridging the existing gaps in the risk coverage that is currently available to investors, by firstly ensuring that support is offered across all project phases, and secondly that the full range of risks are addressed with a diverse and fit-for-purpose range of instruments;

c. establishing an impactful organizational set-up, with a strong local presence in African countries, to build and align a deep institutional understanding of partner countries' and investors' challenges and needs, and to drive the underlying stakeholder engagement needed to deliver on the hoped outcomes.

a. Reducing fragmentation

A number of studies have already found that existing EU renewable energy support schemes are often characterized by widespread fragmentation and in some cases overlap[2]. The sheer number and range of existing instruments is likely to become a hurdle that may dissuade potential users, both private and public, from adopting them. **With the ambition of being able to provide a one-stop-shop program, renewAfrica will try to unify under one umbrella the multitude of existing instruments**, coming from both European institutions and the DFIs of its Member States. Tapping into complementarities and reducing redundancy, this consolidation effort will hopefully also unleash new synergies between instruments and maximize impact.

b. Bridging gaps in risk coverage

The fragmented nature of existing de-risking instruments has also resulted in gaps in the areas that they cover: this can be seen in the kinds of technical and financial support and risk mitigation products they offer, in the technologies and geographic areas they cover, and so on. The renewAfrica approach therefore aims to **encourage the development of a comprehensive support program able to address the full range of risks that investors are confronted with along the entire project lifecycle**. In driving the process of expanding and enhancing the current set of instruments, renewAfrica will look to constantly draw from a range of first-hand investment experiences of European RE industry players, as well as from an open and ongoing dialogue with African

partners to ensure there is a complete understanding of local needs. Thanks to this approach, renewAfrica will benefit from a holistic and evidence-based review of the most pronounced and critical risks, shed light on where the need for improvement is strongest, and engage the stakeholders that can then help to deliver the solution.

c. Establishing an impactful organizational set-up

Delivering this program of work will require an enabling and impactful organization that is entirely focused on achieving the desired outcomes for Africa. **renewAfrica aims to end up with a prominent and impactful presence in African countries**, to build strong working relationships and reflect a deep institutional understanding of partner countries' challenges and needs. Some of this will come from dedicated expert teams on the ground, some of it from building synergies with the existing country office presence of EU Delegations and DFIs. In the meantime, links with major project developers and technology companies and a close working relationship with investors will enable renewAfrica to understand their needs and provide targeted support. By building on acquired knowledge of the full range of existing instruments and their potential to address different challenges once applied, renewAfrica will more efficiently suggest options and solutions, address bottlenecks in project formation as they start to emerge, as well as increase users' confidence and familiarity with the wide range of solutions that are already available, and those new ones being developed.

A HOLISTIC FRAMEWORK TO SUPPORT THE RENEWAFRICA STRATEGY

ADOPTING A MULTI-LAYERED DE-RISKING FRAMEWORK FOR DELIVERING RENEWABLE ENERGY PROJECTS AT SCALE

RenewAfrica rests on an understanding that enhancing levels of cooperation amongst a greater range of renewable project stakeholders, both private and public, is fundamental for the successful delivery of projects[3]. To pull together the strategic aims of renewAfrica and translate them into a delivery mechanism, a **framework model for delivering the de-risking ambitions** (Figure 14) has been developed.

Based on a multi-layered approach, the framework begins by **looking at RE project development in Africa through the lens of all the key local and international stakeholders involved**. This could include, for example, project developers, equity sponsors and lenders, as well as hosting governments and other public institutions (including electricity off-takers).

The model then defines the main guiding principles of an effective de-risking strategy. These different layers allow for a focused mapping and assessment of the types and the levels of risks that exist along the RE project lifecycle, and help to guide the identification of the actions needed to manage, address, delegate and mitigate them in the most effective way. This process is entirely carried out **in a climate of shared responsibility and long-term partnership among all project stakeholders**. By pulling together already available instruments and defining new most-needed tools and actions to fill the gaps whilst avoiding the risk of duplication and fragmentation, renewAfrica's guiding principles will be able to support existing plans **to maximize RE project outcomes in terms of social, economic and financial impact.**

RENEWAFRICA IS BASED ON A NUMBER OF GUIDING PRINCIPLES THAT SHAPE THE BLUEPRINT OF AN IMPACTFUL PROGRAM

The partnership-based, multi-layered framework outlined above has been informed and developed with the input of a number of guiding principles and features.

a. Cross-sector collaboration and focus

renewAfrica will aim to deliver effective collaboration among all RE project stakeholders, both public and private, to define fit-for-purpose de-risking strategies which allocate risks to those players best equipped to efficiently handle them. Governments can gain access to the information and support that they need to make more progress, and international stakeholders can better understand local circumstances and, in turn, offer more targeted support to local governments. One distinguishing feature and point of strength is that renewAfrica is **an industry-backed initiative** (among its many signatories sit representatives from the worlds of finance, IPPs, manufacturers, academia and consulting, essentially representing the entire European renewable energy value chain), **and as a result it can draw on the diverse and detailed experience of both the supply and the demand side of RE projects to deliver results at scale**.

b. A one-stop-shop to support project delivery

The renewAfrica program is meant to act as a **one-stop-shop offering a risk-based approach**, where investment risks are identified and stakeholders collaborate to design measures to address them. It aims to be comprehensive, providing **technical assistance, capacity building, and policy dialogue in addition to the more standard elements of financing and financial de-risking tools**. A consolidated, appropriate and updated toolkit, available to the right stakeholders at the right time will help to speed up project delivery.

c. Strengthened commitment of partner countries to accelerate energy reforms

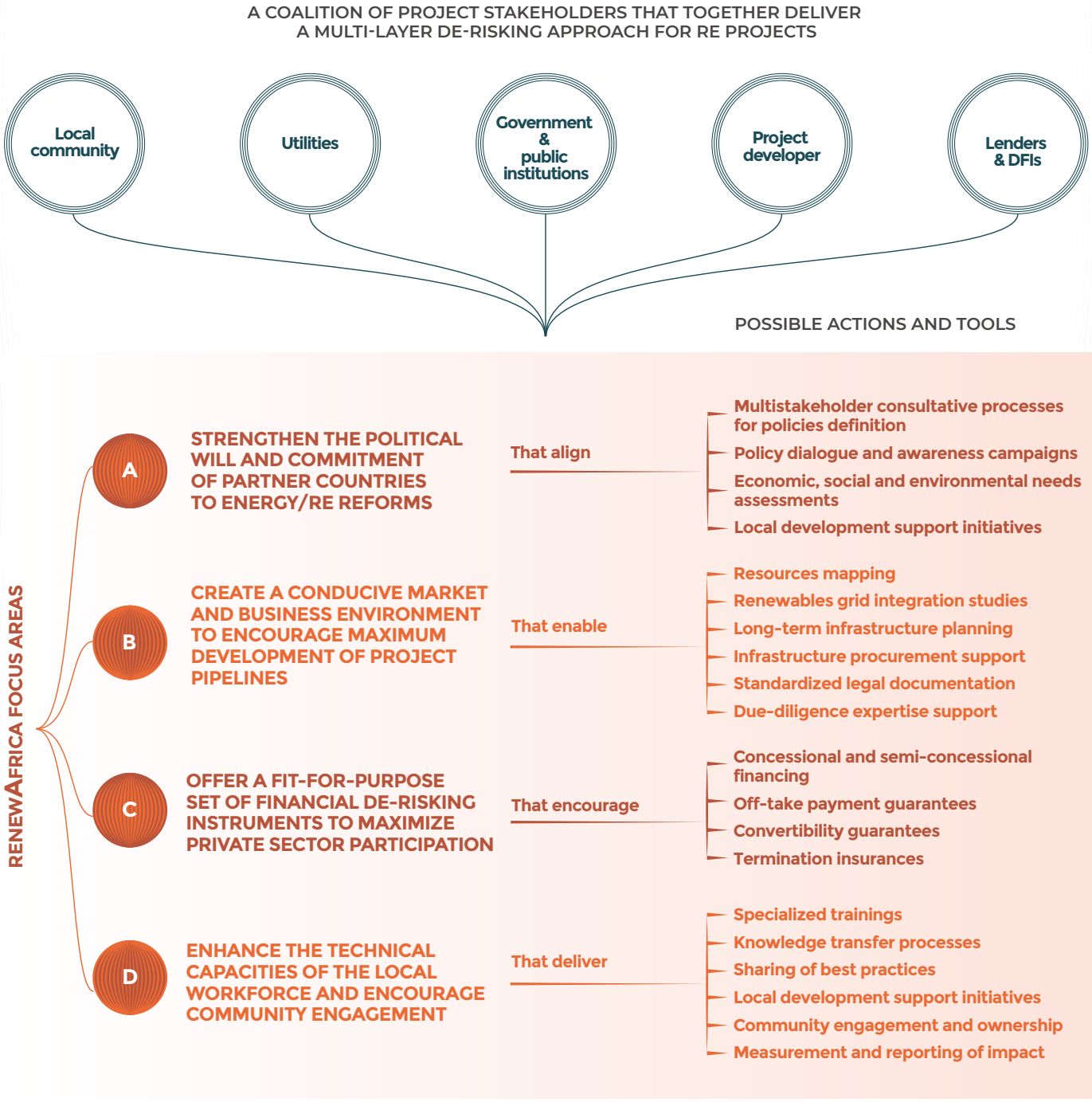
By bringing together the coalition of parties that need to work jointly from the outset, renewAfrica will look to build commitment towards common energy goals. This can be achieved at a higher level through **promotion and advocacy initiatives around the social, economic and environmental benefits of renewables**, or through more **technical support in the development of country strategies and visions that can help drive energy reforms**. The underlying work will also need to include close partnerships with the broader public sector, including local communities, when looking to build the appropriate consensus around RE development. Public authorities have the ability to foster consensus among the communities where projects will be located and help to jointly assess and deliver the full economic, social and environmental impact.

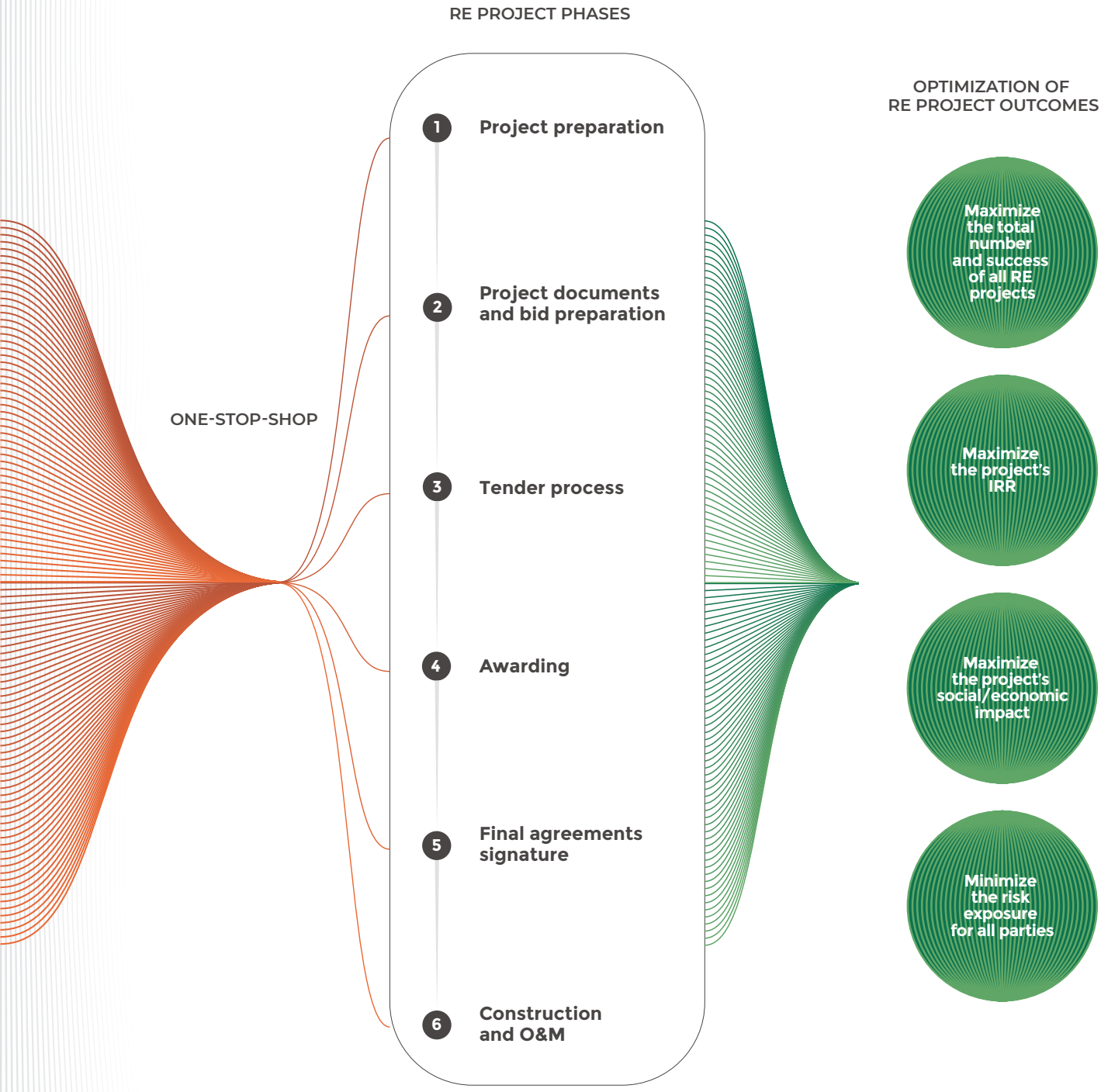
d. Supporting the creation of a conducive environment to amplify project pipelines

A critical enabler for the commissioning of RE plans is the **creation of a local market and business environment** that is conducive to the development of bankable projects. To do so, a variety of measures need to be considered. Some will be addressed by the de-risking measures listed above, while others require more targeted technical assistance services.

FIGURE 14

RENEWAFRICA'S MULTI-LAYERED FRAMEWORK FOR AN IMPACTFUL DE-RISKING OF RE INVESTMENTS





Source: renewAfrica/RES4Africa/authors elaboration

Targeted technical assistance and knowledge transfer in these areas, along with continuous dialogue between renewAfrica and host countries, will ensure the creation of the right conditions for the development of viable renewable energy projects.

e. A fit-for-purpose set of financial de-risking instruments to maximize private sector participation

Despite dramatic reductions in the costs of renewable technologies globally, project developers in Africa continue to face financing challenges. In order to reduce costs of capital for RE projects in Africa, there is a need to mitigate these risks in a way that can then attract more private capitals: **financial de-risking tools (for example, guarantees and insurances) will be collated and developed as needed**, and then combined with all the other elements of de-risking to ensure that any unnecessary risk can be removed and that remaining risks are fully understood and reduced as far as possible to minimize their impact.

f. Enhanced technical capacities of the local workforce

To encourage the long-term and sustainable local development of RE projects, renewAfrica needs to act not only as an equal partner and effect lasting improvements in the partner country's investment climate, but it also needs to **focus at its core on the local workforce and communities**. Therefore, renewAfrica's main service includes **specialized training and knowledge transfer** covering such matter as processes, protocols, and best practices in regulatory reform and energy tendering. **Capacity building will be fundamental to empower the local African counterparts**, to ensure a project-ready local workforce – and perhaps local manufacturing as well – is in place.

g. Investments made sustainably

Environmental and social sustainability criteria have a significant role to play in the development and successful delivery of projects. On the one hand, a sustainable use of natural and human resources will ensure that projects continue to bring a positive return for the community and country over the long term. On the other hand, a focus on appropriate local outcomes enables greater local understanding, engagement and appreciation for the projects, which then plays a substantial role in the potential for follow-on projects.

THE PRIORITIZATION OF IN-COUNTRY IMPACT AND SUSTAINABLE DEVELOPMENT IS AN ESSENTIAL DISTINGUISHING FEATURE OF RENEWAFRICA

The ultimate goal of renewAfrica is to support Africa's economic, social and environmentally sustainable development. The main measure of success for any implementation of the renewAfrica program is the creation of shared value and a measurable and positive impact for all stakeholders, along with well-defined sustainability criteria.

When looking at in-country impact, renewAfrica's contribution could be quantified in terms of socio-economic and environmental advantages (for example, job creation, economic growth, investment volumes, CO_2 emissions reduction or avoidance) as well as with energy-related objectives (for example, GW of clean energy installed). Quantitative results will allow country governments to measure renewAfrica's impact and their local sustainable development also against a number of SDGs, including "Quality education" (SDG 4), "Gender equality" (SDG 5), "Affordable and clean energy" (SDG 7), "Decent work and economic growth" (SDG 8), "Climate action" (SDG 13) and "Partnerships" (SDG 17). **The UN SDGs are integrated across the whole renewAfrica approach, and will provide a viable widely-recognized framework for measuring progress**. Similarly, the Nationally Determined Contributions[4] (NDCs) also constitute a target set by many African countries against which to benchmark renewAfrica's added value and country progress.

To make sure sustainability principles are also prioritized at the project level, KPIs to measure project success could include a range of social, economic and environmental criteria that include the number and features of people employed (for example, job position, age, gender, etc.), materials used, and so on. If project-specific reports were produced on a regular basis by the project developer, and later shared with renewAfrica and the local government using a common template, it would allow renewAfrica to aggregate individual project reports to demonstrate sustainable local impact and enable future project learning. Continued sustainable development impact assessment for a program like renewAfrica is fundamental for its accountability, for measuring contribution, and for continued fine-tuning of the proposed solutions.

BOX 5

THE ROLE OF EDUCATION FOR DE-RISKING INVESTMENTS IN AFRICA'S CLEAN ENERGY SECTOR

ENEL FOUNDATION

The transition towards a cleaner and more reliable energy sector in Africa is indeed one of the key elements for the continent's sustainable socio-economic recovery. Clean electricity generation and reliable distribution networks are fundamental to achieve universal access for all Africans. Today, the lack of energy access represents an enormous barrier to Africa's progress and has an impact on a wide range of sustainable development indicators: clean energy transformation can contribute to increase health and wealth for all by igniting industrialization and increasing jobs to reduce poverty and exclusion.

The likely pattern of electrification in the continent requires enabling frameworks and governance. However education is paramount to empower changes, encourage investments and eventually boost the deployment of massive RE capacity and smart distribution in the continent. **Against the backdrop of the Covid-19 crisis, the human factor is likely to become the real compass in the journey from poverty to sustainable prosperity in the electricity realm**. Therefore, advanced training, skill-creation and, more generally, any efforts to establish mutual knowledge-sharing at global scale, represent a key enabler for sustainable energy developments in Africa. However, Africa's population is projected to grow fast, and its rates of higher education enrolment are still too low. **According to a joint Enel Foundation-Bocconi study, enrolment rates in Africa reach just over 20%, well below the global average of 38%**, and the continent does not have yet enough local education offer. This evidence makes collaboration and partnerships between local and international academic and research players a much needed element, offering interesting opportunities for local talents to remain in the continent, and fueling Africa's sustainable transformation.

In the electricity sector specifically, along with the international efforts and policies put in place at the institutional and intergovernmental level, **corporate stewardship initiatives promoting higher education and vocational training provide an important contribution**.

Thanks to a solid on-the-ground experience and a skilled workforce, business, in close cooperation with local and international universities, can establish attractive leadership knowledge exchange, training and education opportunities for younger generations, thus supporting the continent's journey towards a clean energy future.

Enel Foundation's Open Africa Power (OAP) is a case in point. The OAP program represents an ambitious and successful attempt **to leverage international academic cooperation and sector-specific knowledge to empower a new generation of clean energy leaders able to support the progressive decarbonization of Africa's energy sector**. OAP activities aim at preparing enthusiastic, knowledgeable and thriving young Africans to join public or private ventures and contribute to advancing the African energy transition for a sustainable future. One of the pillars of the initiative is to empower and retain talent to the benefit of the African society at large, creating skilled and committed leaders. In this context, the personal and professional empowerment of women as leading actors in the local energy sector (more than two fifths of the 61 participants to the OAP 2020 training, all coming from 16 African countries, were women) represents an absolute priority for the program. The partnership with the Nelson Mandela Foundation, started in 2020, is another example of how the program is encouraging its alumni to give back and promote change locally. **The "Nelson Mandela Foundation OAP Prize" will award the best student of the program, based on both academic merits and social commitments towards local communities**, with a focus on local empowerment.

Leadership knowledge exchange with the perspective of filling gaps in the global North-South divide is another relevant dimension lying at the core of Enel Foundation's "Analysis and Management of Energy and Environmental Policy" program, organized in collaboration with the Harvard Environmental Economics Program (HEEP). Within this initiative, a number of international industry leaders, policy makers, academic experts convened in Marrakesh on November 13-14, 2019, for a roundtable discussion with key African stakeholders. All participants shared opinions and reviewed current developments in Africa's energy and climate change policies, including energy access, integration of renewables in the electricity grid, and the role of public and private entities.

As the world prepares to tackle a global green recovery, education activities need to be considered a priority for the emergence of skilled and conscious workforce to support clean energy solutions in Africa at all levels. This is why **Enel Foundation supports the vocational training program Micro-Grid Academy (MGA), and the professional training program Advanced Training Course (ATC) both organized by RES4Africa Foundation**. Quality higher education and mutual competence exchange are fundamental drivers for sustainable development in Africa, and in particular for the achievement of the SDGs related to access to clean energy and to the enhancement of sustainable industry, innovation and infrastructure across the continent. **Enel Foundation**, as a catalyst of international academic cooperation, **is promoting sustainable socio-economic development through the education programs it organizes and supports, thus paving the way to a new generation of clean energy local leaders for Africa's future**.

THE OPERATIONAL MODEL OF RENEWAFRICA

The framework outlined above has taken into account the guiding principles which renewAfrica is setting out as building blocks for a new impactful de-risking program[5]. These guiding principles will be delivered through four main streams of action, forming the renewAfrica toolbox that is able to provide end-to-end support all along the renewable energy project lifecycle (Figure 15). A snapshot of how and what kind of actions, as well as when the toolbox would look to engage its potential stakeholders, is given below.

RENEWAFRICA WILL DELIVER ITS PRODUCT THROUGH FOUR STREAMS OF ACTION DESIGNED TO EXHAUSTIVELY SUPPORT AND ADDRESS ALL TYPES OF RISKS

1. Advocacy and policy dialogue

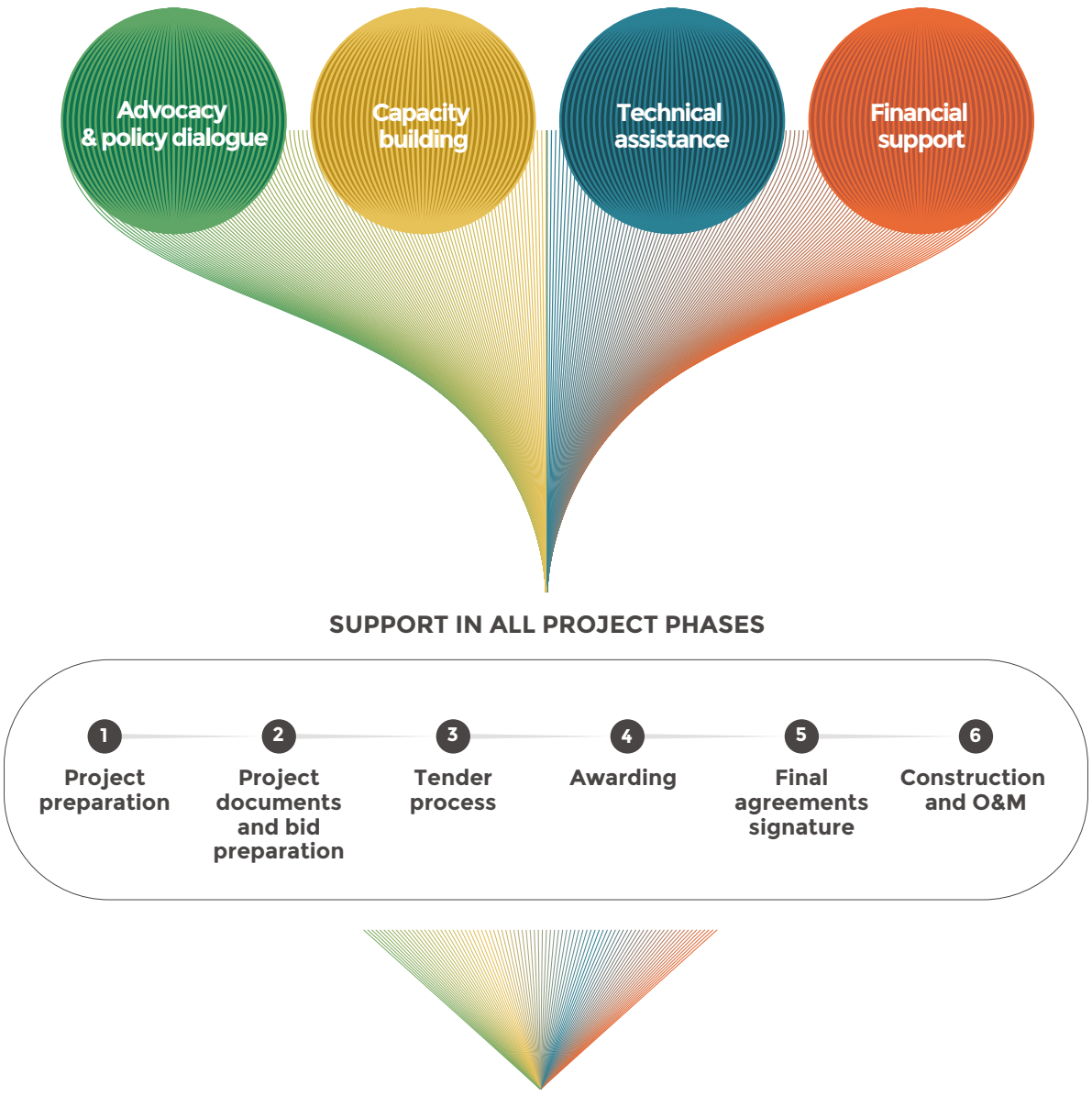
The starting point for all of this work has been the convening of the relevant parties into a single ongoing dialogue so issues and solutions can jointly be identified throughout the lifecycle of a project. This convening of parties also allows for a more detailed discussion, for example with a particular focus on the risks related to the stability and predictability of the regulatory framework, the wider investment climate, the maturity and strength of political will, and general levels of trust for a renewable energy program. By **assembling the capabilities needed to effectively engage with partner countries**, the renewAfrica program will be able to provide the proven informational content to support the discussions, chair and facilitate conversations, enable the development of an acceptable assessment of the current state of things to be used for planning and, most importantly, building a lasting, robust working relationship of equals to engage on subsequent project development.

2. Capacity building

To address some of the risks related to the availability, or shortage, of local skills and specialized know-how, it is clear that training and capacity building activities will need to be carried out across different areas at different times (Box 5). Building on the experience that the renewAfrica signatories and the European renewables industry have as global leaders in renewable technologies, **renewAfrica will design and help to deliver the measures needed for effective knowledge transfer**. This includes establishing a shared framework that can be used to assess local contexts and identify knowledge gaps; and developing specialized training courses to empower counterparts

FIGURE 15

A SCHEMATIC REPRESENTATION OF RENEWAFRICA'S OPERATIONAL MODEL

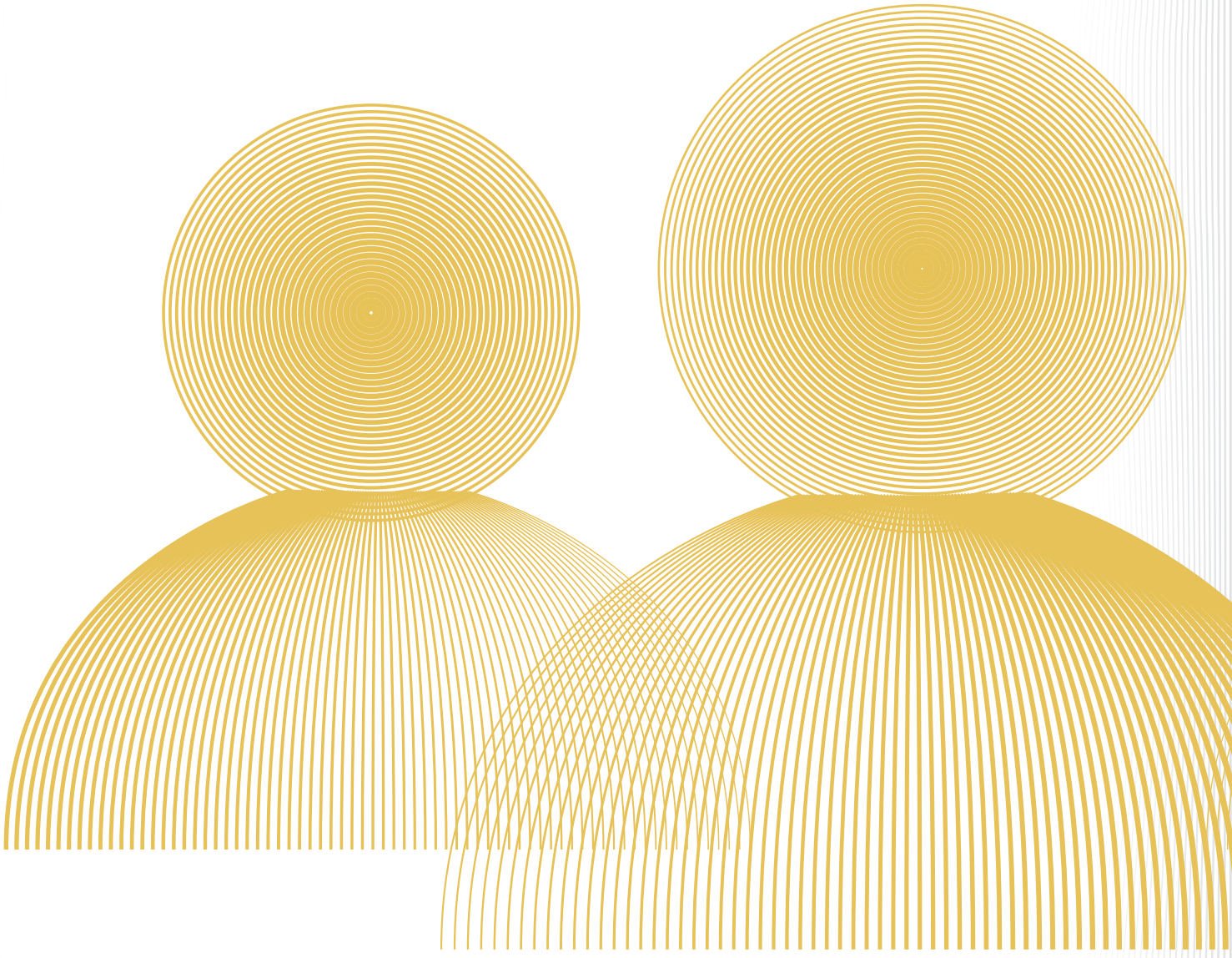


Source: renewAfrica Secretariat

at line ministries and regulatory bodies. This allows them to, for instance, carry out tenders for projects in subsequent rounds, provide support to governments and agencies on how to establish conditions for opening the market to private sector involvement (for example, drafting regulations), and so on. It will also include profession-specific training, for example training for local financial intermediaries as it relates to renewables project finance, among other fields.

3. Technical assistance

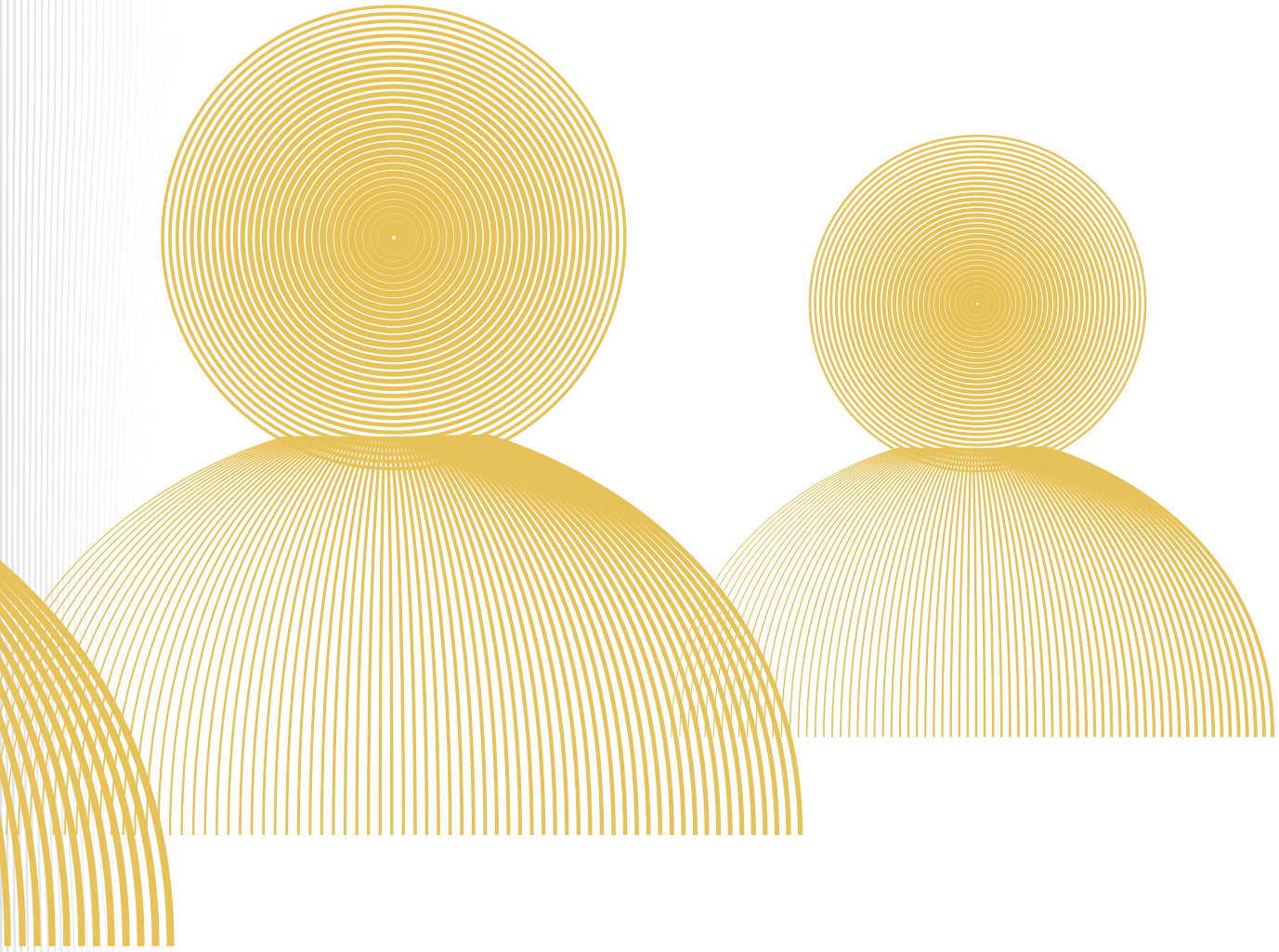
Within this area of activity, renewAfrica will look to **assist with the preparation and execution of project development and implementation**, such as private-public partnership legal frameworks, auction processes, grid integration aspects, tariffs reforms and so on. The provision of this support will rely on the already existing European technical assistance instruments (for example, Technical Assistance Facility - TAF), to maximize synergies. Other activities that might be carried out during this stage by renewAfrica include the development of feasibility analyses, risk and sustainability assessments; support with the drafting of key project documents and contracts; help



in defining tender frameworks and providing assistance during the launching, execution and post-bid phases to help reduce the risks that are commonly encountered with these activities. Building on the practical experience of the renewAfrica signatories, once successfully trialed and tested, **renewAfrica could lead the way in building best practices that can then be shared across interested partners and countries**.

4. Financial support

This is a broad area of intervention and looks to **address risks related to access to finance and, perhaps most importantly, to revenue stability**. renewAfrica will offer technical information, expertise and assistance to investors to help them **secure a tailored financial package**, finalize the mobilization of private/blended financial resources and, where needed, also help them obtain a package of guarantees and insurances to mitigate risks related to revenue stability. Assistance will also comprise the provision of support with final negotiation and structuring discussions, and help to ensure that obligations deliver fully and on time.



RENEWAFRICA WILL OFFER SUPPORT ALONG THE ENTIRE PROJECT LIFECYCLE

The actual phases and sub-components of a RE project lifecycle will of course vary depending on country situations, local and project circumstances, but projects usually go through the indicative stages outlined on the black and white sequence rectangle of Figure 14.

With the underlying renewAfrica framework rooted in the practicalities of project delivery, it is important to **define and align these phases to the application of the de-risking activities and support offered**. If this is missing, the possibility of a disconnect in the de-risking approach might hamper the maximization of most hoped for project outcomes and allow project stakeholders to adopt individual, localized and just-in-time solutions that may be far from being the optimum ones.

Country landing

As highlighted in the previous chapter, the main barriers and risks encountered in the initial phase of a renewable energy project development relate to the broader country political stability, regulatory and policy risks, rules favoring market openness to private developers, grid access rules, social acceptance, and so on. The renewAfrica program aims to **provide support during the initial country landing and project conceptualization stages**, by facilitating high-level policy dialogue between local and international stakeholders. These discussions could focus on how to best set up a favorable RE investment environment, how to stimulate political commitment to renewable technologies, and perhaps also through technical assistance in carrying out a regulatory framework assessment.

Project preparation

During the project preparation stages of work, the main risks identified often relate to grid access rules, permitting and licensing procedures, clarity on environmental impact, assessment processes and curtailment risk. The renewAfrica program could provide **technical assistance** that supports site selection, the completion of feasibility studies, potentially tax analysis, and early stage local training where applicable, to **mitigate some of these risks and help create the conditions for longer-term project success and impact**.

Procurement process

For countries that are new to renewable energy, the risk that tender processes are badly designed or not completed is real. This can then lead to situations where the authority is not able to attract competitive bids or ends up with uncompetitive prices, and both of these situations can have long-term consequences for the country going forward. Effectively dealing with the complexity of managing a bidding process, from the tender preparation and bidding stage to ensuring the overall efficiency of tender processes, often requires diverse and ongoing assistance and support (Box 6). renewAfrica will provide **technical assistance to create structured, stable and credible infrastructure procurement processes**, and design standardized project documents, while **supporting all phases of the tender implementation** (request for qualification, bidder consultation, request for proposals, proposals review, award and signing of the project documents).

Financial close

Financial risks (for example, revenue stability, exchange rate risks, non-payment risk, capital transfer and convertibility, financing availability, interest rate and inflation, etc.) tend to be the most common types of risk that remains partially or fully unaddressed by the currently available set of de-risking schemes. To assist during this phase, renewAfrica is planning to provide **technical assistance for the financing process, negotiation, contract drafting and financial close processes**. Where required, it will also look to play a key role to support the provision of blended finance in the form of debt, equity, and grants, and help to make available pre-approved guarantees and/or insurances able to efficiently address all the investment risks that remain uncovered.

Construction, operation and maintenance

The construction and operation phases are often considered the riskiest phases of a renewable energy project, with challenges spanning from availability of local skills, construction flaws, logistic issues, security and safety risks, concession rights, land disputes, and so on, being some common areas of concern. With a focus on the full project lifecycle, renewAfrica plans to **offer technical assistance and capacity building initiatives that can assist with the monitoring and evaluation of the project's development**, and facilitate the set-up of training courses for local administration and labor force.

BOX 6

A TRANSPARENT LEGAL FRAMEWORK TO FACILITATE RENEWABLE ENERGY PROJECT DELIVERY

BONELLI EREDE

That Africa is a continent on the move is proved by the recent entry into force of the agreement establishing the African Continental Free Trade Area (AfCFTA). Once fully implemented, the AfCFTA will enact the world's largest free trade market for goods and services, with free movement of people and investments between adhering states.

The economic integration model adopted by African countries was clearly inspired by the other side of the Mediterranean Sea where the European Union and its Internal Common Market represent not only an example of integrated multinational economy but also a natural partner on the way forward to sustainable economic development.

This direction is embraced by the Communication from the European Commission on September 12, 2018 (COM(2018)643) and the Joint Communication from the European Commission to the European Parliament and the Council on March 9, 2020 (JOIN(2020)4), which launched the idea of a new Africa-Europe alliance. Among its aims, this has the creation of an intercontinental free trade area between the European Union and Africa which – if and when actually implemented – will become the new largest in the world.

The creation of a free trade area with the aim to increase trade among African countries, particularly through the elimination of tariff and non-tariff barriers, will automatically make the continent extremely attractive for foreign investors who want to benefit from the privileges provided by the Agreement and trade across Africa, and establish their activity within one of the states adhering to the free trade area. In this perspective, the development of efficient and sustainable energy infrastructure becomes even more urgent, and renewable energy sources can play a pivotal role in supporting sustainable economic growth.

Stimulating the RE sector means encouraging the social and economic growth of a country as renewables will generate industrial development, and therefore new jobs and increased income for the communities. However, investing in RE sources requires a large upfront investment and in the African region, characterized by limited public funds, access to financing by the private sector on a non-recourse or limited recourse basis will be fundamental to unlock RE investments.

One way to facilitate access to financing while reducing costs, which is equally important, is to implement an effective de-risking strategy able, on one hand, to manage the hurdles of national legal environments that hinder an efficient implementation of RE-projects. On the other hand, it will device *ad hoc* financial instruments that partially allocate the financial risks of the project to the public sector or to multilateral and regional development banks.

African governments and authorities are encouraged to free their legal systems from any barrier hampering the working of a transparent and certain legal framework applicable through the entire RE project cycle, from the bidding phase through the operation phase. Simplifying and centralizing the authorization procedure for a project (including land authorizations), creating a dedicated skilled regulatory body acting as a true one-stop-shop, standardizing bankable project documentation (for example, PPAs, concession agreement) and resorting to international law and/or arbitration for investment dispute resolution and settlement mechanism are some of the key actions that private investors need from a government committed to support RE deployment and crowd-in private investments.

While ensuring a clear, transparent and viable legal system and removing the obstacles that may hamper project development is a responsibility of national governments, devising de-risking financial instruments is a job for all project stakeholders: for project-hosting countries providing instruments such as sovereign guarantees and public loans, for project developers and lenders, as well as for IFIs and DFIs. Within their mission, the latter can leverage on the know-how, the available funds, the political contacts and organizations that are perhaps best suited to take the lead in promoting and implementing appropriate financial instruments that can really meet the needs of all stakeholders across all project phases.

Sometimes African markets are still erroneously seen by investors as markets with more problems than opportunities. Instead, Africa is a land of opportunities that cannot be missed but shall be created: opportunities for both Africa, Europe and the rest of the world.

RENEWAFRICA WILL FUNCTION THROUGH THE JOINT WORK OF EUROPEAN, AFRICAN AND INTERNATIONAL PARTIES

The renewAfrica framework starts with an appreciation and acknowledgment that **strong partnerships among project stakeholders are needed for the successful delivery of RE projects at scale**. This mindset has guided the conceptual design of the renewAfrica Initiative helping to identify its added value (Figure 16), and will also be invaluable in ensuring a successful rollout. In an attempt to move beyond the donor/recipient relationship that has too often characterized international support efforts aimed at African countries, renewAfrica is based on the **recognition that partnering for Africa's clean energy access needs to happen together**, and that **an alliance between Europe and Africa underpinned by a sustainable development** premise represents a unique opportunity for both our economies and societies to grow and prosper.

renewAfrica's strategic goal to advance European commitment to Africa's clean energy access at scale is distinctly consistent with the European Union's current strategy and its pursuit of enhancing green diplomacy to encourage cross-continental knowledge exchange and sharing of best practices and experiences around sustainable development. By creating an opportunity for close EU-Africa collaboration, **renewAfrica aims to become one of the pillars of a redefined EU-Africa cooperation**, also reflecting and supporting the strategic approach of the **EU Green Deal** and the **Comprehensive Strategy with Africa**.

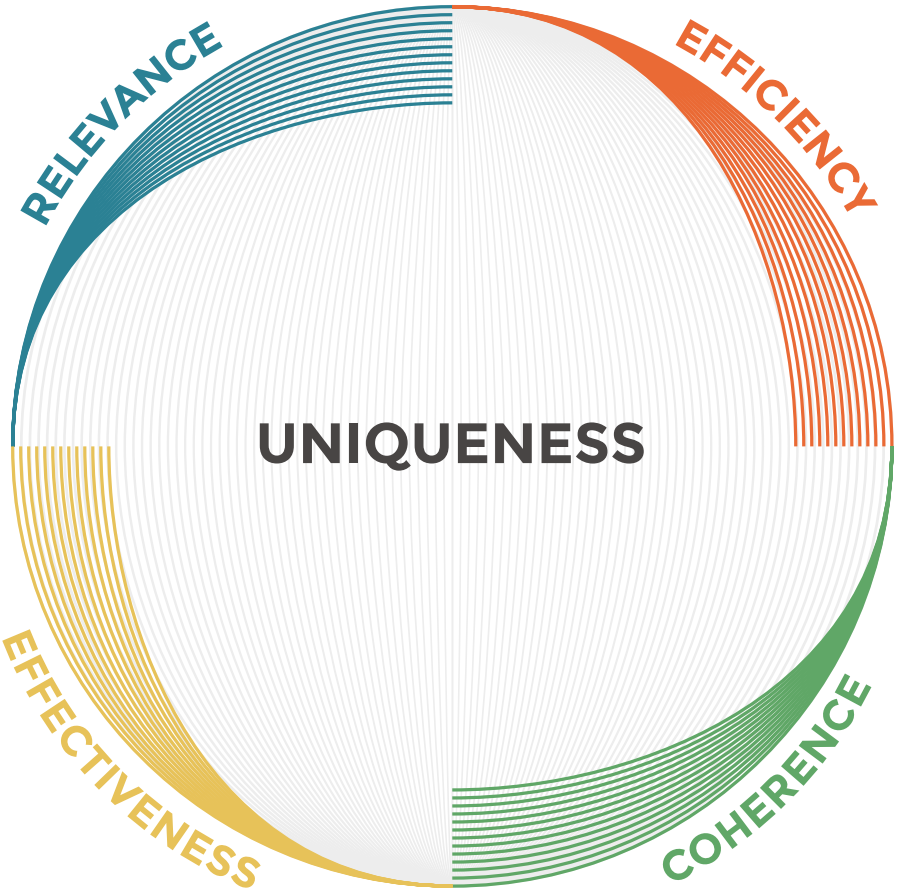
Using its collaborative public-private platform, renewAfrica also has the ability to encourage and facilitate more direct discussions between leading European renewable energy industry champions, African public and private sector participants, the European Union, African institutions and governments. Encouraging the exchange of best practices and experiences between these parties will allow for **increased cross-continental knowledge sharing and faster progress with the renewable energy transition** in both continents.

In closing, much of the required core content to enable this to happen is already there. Member States and their respective DFIs currently operate a series of wide ranging and strong schemes which, when paired with EU instruments appropriately, and strengthened where needed, can form the backbone of a program that delivers. By making available the existing support in a way that allows European funds already dedicated to supporting renewables in Africa to fully benefit from these instruments, there is also an opportunity for some quick wins. The time for action and implementation is now.

FIGURE 16
THE ADDED VALUE OF RENEWAFRICA

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

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



Removing limits in terms of country coverage, technology type, and project size will **catalyze investments and the scale** that African energy markets demand

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

Source: renewAfrica Secretariat

SUPPORTING CLEAN ENERGY INVESTMENTS AROUND THE WORLD

ANDREW MCDOWELL, VICE-PRESIDENT, EUROPEAN INVESTMENT BANK

Last year, the European Investment Bank (EIB) renewed its energy lending policy that outlines our future support for the sector and confirms how the EIB will help to deliver the European Union's new Green Deal.

The new energy lending policy, agreed following the EIB's largest ever policy consultation, represents a crucial milestone in Europe's fight against climate change around the world and the EIB's support for global climate goals.

The EIB's energy lending policy sets a new standard for international finance institutions and enables the EIB, the world's largest international public bank, first-time issuer of green bonds and largest climate financier, to strengthen future investment to support clean energy innovation, energy efficiency and renewable power generation across Europe and around the world, including building on our track record in Africa, in the years ahead.

The EIB's new energy focus will play a key role in ensuring that the EIB delivers on our commitment to support more than €1 trillion of climate related investment by the end of the decade. In Africa, we will further increase our climate action to strengthen support for clean energy and ensure access to reliable energy to help achieve SDG 7.

The scale of investments needed to achieve the green transition is huge, particularly in Africa. About 600 million people in sub-Saharan Africa are currently living without electricity, more than half of the population, and this proportion is expected to grow until 2030 (IEA). Back in 2015, IRENA was projecting that an annual investment of between $26 billion and $52 billion would be required to increase the power generation capacity and provide electricity for all African people by 2030.

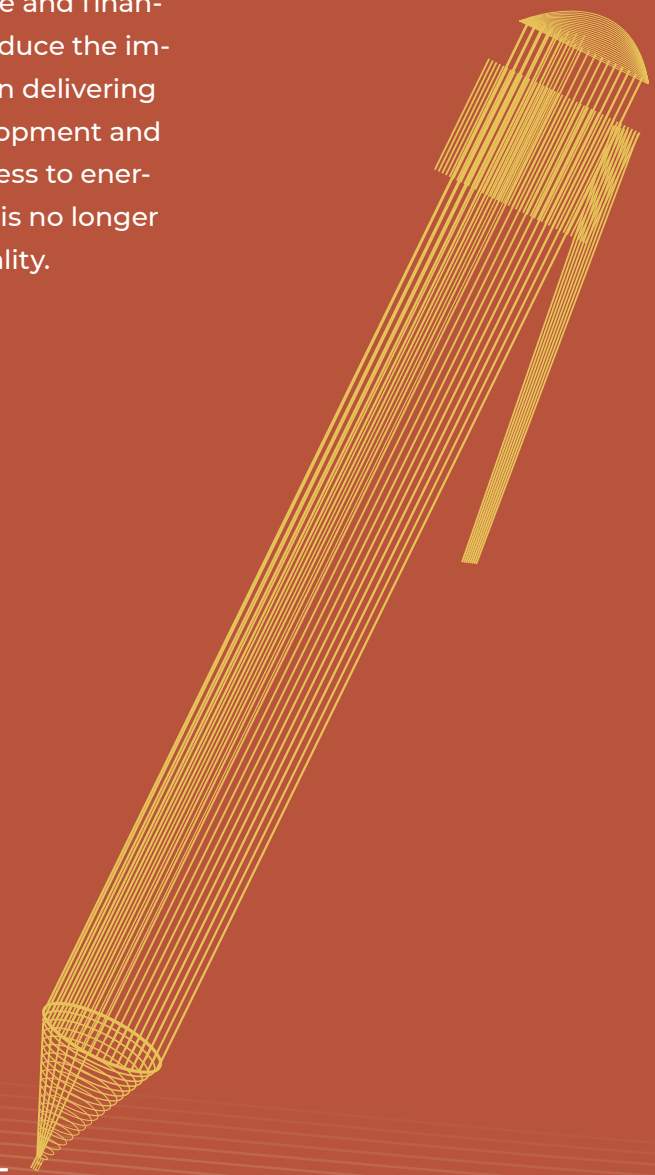
This ambitious objective can only be achieved by harnessing global capital including through green bonds, enabling other investors to back large and small-scale energy projects, fostering cross-border energy cooperation, and providing technical assistance to maximize the impact and deployment of innovative energy technology.

The EIB has supported a number of renewable energy projects in Africa over the years, both lending to the public and

private sectors. EIB's experience financing Independent Power Producers (IPP) includes notably the largest windfarm in Kenya, solar projects procured through the IFC-led Scaling Solar initiative, and a sizeable hydropower plant in Cameroon. The EIB is also helping Burundi to harness clean energy that can benefit the Great Lakes region, delivering off-grid solar projects to power 400 schools and health centers across The Gambia and connecting rural villages in Senegal to the electric grid for the first time. These show how African and international partners are working together to enable a better future powered by clean energy.

The EIB is an active supporter of the renewAfrica Initiative, which intends to facilitate and improve financing for renewable energy projects in Africa through the creation of a holistic and inclusive European-led program covering project preparation, tendering, financial de-risking tools and other policy and regulatory support.
The world is currently facing new health, social and economic challenges following the Covid-19 pandemic. Continuing and scaling up successful clean energy investment in the world's most vulnerable countries will be even more important than before.

The EIB is pleased to have stepped up cooperation with local and international partners across Africa as part of our response to Covid-19. We are committed to using our technical expertise and financial strength to reduce the impact of Covid-19 on delivering sustainable development and ensuring that access to energy for all of Africa is no longer a dream, but a reality.



NOTES

1 renewAfrica (2019), *Presentation Card*, renewAfrica Secretariat.

2 Tagliapietra S. (2017), *Electrifying Africa: how to make Europe's contribution count,* Bruegel Policy Contribution Issue n. 17, Bruegel.

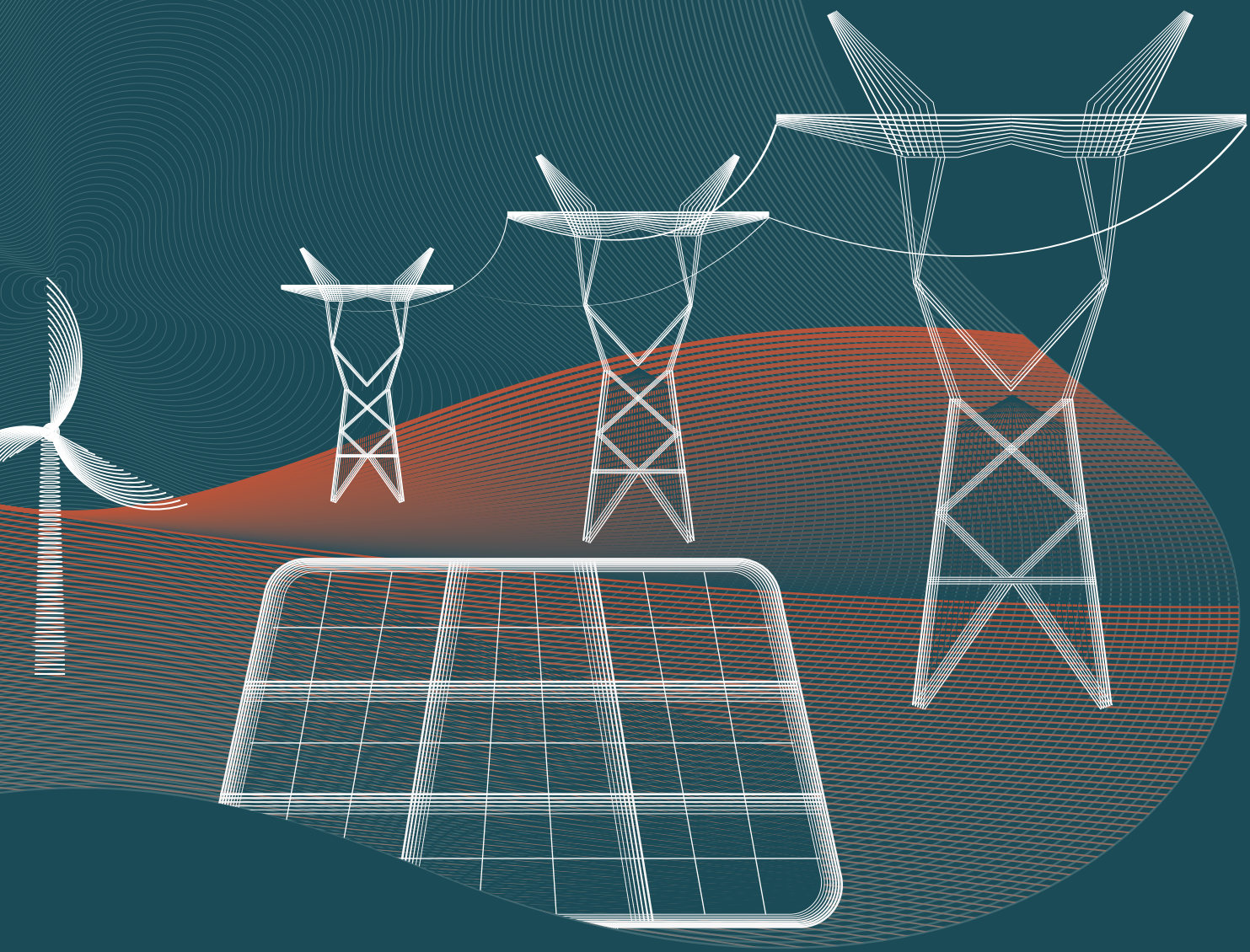
3 renewAfrica (2019).

4 UNFCCC, NDC Registry, https://www4.unfccc.int/sites/NDCStaging/Pages/All.aspx.

5 renewAfrica (2020), *renewAfrica Initiative. Advancing European Commitment to Africa's Clean Energy Access at Scale*, renewAfrica Secretariat.

PART

OUR COMMON JOURNEY TOWARDS A SUSTAINABLE FUTURE FOR AFRICA



DE-RISKING RE INVESTMENTS

AMANI ABOU-ZEID, COMMISSIONER FOR INFRASTRUCTURE AND ENERGY, AFRICAN UNION COMMISSION (AUC)

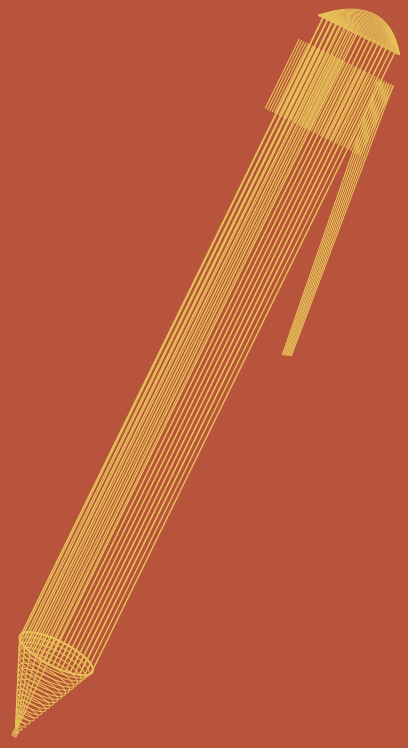
Africa has vast renewable energy resources, which include hydro, solar, wind, geothermal and biomass. Its hydropower potential forms about 12% of the world's, and geothermal has an estimated potential of over 15,000 MW. The continent offers excellent locations for solar and wind (for example, the Sahel region), and a huge variety of biomass resources. The geographical spread of RE sources in Africa can be used to provide reliable and affordable energy for the people of Africa. However, much of these resources have not been developed, and the continent continues to face the challenge of low access to modern energy services with around 600 million people lacking connection to electricity. According to IRENA, Africa's installed RE capacity only amounts to 2% of the global total[1].

One of the reasons for low RE development in Africa is low private investments due to high risk perception. Yet, private sector participation is critical for closing the energy access gap in Africa as public resources compete for pressing demand from social sectors. High risk perception leads to low investments and high costs when investments take place. One reason for this has to do with the policy and regulatory frameworks which manifest as barriers to investment due to their effect on the business, as well as the confidence and predictability for investors. The political environment and macro-economic policies contribute to the overall investment climate risks, such as exchange rates and ability to repatriate profits, while the energy policy framework affects risks related to licensing regimes, permiting requirements, access to land for project developers and whether or not a developer is guaranteed access to the grid or assurance of selling the energy generated, along with assured payment by the off-taker. Another aspect relates to financing, which affects the return on investment and consequent decisions, which are also impacted by the overall policy environment. These include cost of capital, transaction costs, taxes, levies and others, reducing investors' returns if costs are high.

RE private investments are required to complement governments' investments for the transition to a sustainable energy future where every African has access to affordable, reliable and sustainable modern energy services by 2030. De-risking RE investments is therefore necessary in order to attract the private sector. A mix of policy and financial interventions is required to reduce risks: policy de-risking instruments aim at addressing the underlying barriers that form

[1]IRENA (2020), *Renewable capacity statistics 2020*, International Renewable Energy Agency (IRENA), Abu Dhabi.

the root causes of risk, including improvement of the policy framework, strengthening institutions, resource assessments and local skills development[2].
The AUC is supporting African Union (AU) Member States to formulate policies that promote RE development and attract private sector investments. These interventions take the form of policy frameworks and guidelines that States adopt and apply to their specific circumstances. Key achievements include the Strategy and Action Plan for the harmonization of regulatory frameworks for the electricity market in Africa, Africa Bioenergy Policy Framework and Guidelines, and others, while arrangements are being made to design a Solar Policy Framework. In addition, the AUC is working with the European Union in the framework of the AU-EU Partnership to build the capacity of African institutions and adopt best practices, as well as enhance local skills in the energy sector. The AUC ensures a consultative process by involving Member States, regional economic communities, and specialized African institutions, among other stakeholders.
On the other hand, financial de-risking aims at transferring investment risks through instruments such as loan and partial risk guarantees, political risk insurance and public equity co-investments, in the form of Public-Private-Partnerships (PPP), thereby lowering the perceived risks, ensuring required returns, and reducing costs[3]. Development partners can also play a role in financial de-risking through tailor-made facilities, technical assistance and grants that contribute to lowering financing costs. A good example of a tailor-made facility is the Geothermal Risk Mitigation Facility (GRMF), established in 2012 by the AUC in partnership with KfW, DFID and the EU Infrastructure Trust Fund to support private and public developers during the upstream phase of the project cycle. To date, grants worth $115 million have been awarded for 30 projects of 1,500 MW and leverage $9.2 billion of investment capital. At the national level, financial de-risking instruments can take the form of incentives such as feed-in tariffs, tax breaks, carbon offsets, guaranteed access to the grid and priority dispatch.
The energy transition requires scaling-up renewable energy investments. Hence the need for de-risking measures in a systematic and integrated way to increase private sector appetite to invest in Africa. The measures taken so far, such as policy interventions and GRMF, demonstrate the enormous potential of de-risking instruments leveraging private capital. It is important to activate and scale-up de-risking instruments such as the guarantee window of the European External Investment Plan, and the renewAfrica Initiative promoted by RES4Africa Foundation, along with the opportunities that the externalization of the EU Green Deal offers to tremendously increase RE investments in Africa to support the energy transition.



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HIGHLIGHTS

1

To emerge from the current Covid-19 crisis and to ensure greater resilience against future disruptive events, there is an urgent need to transform economies around sustainable, circular, innovative and inclusive principles.

2

Renewables can quickly provide a secure energy supply capable of supporting factories, services and businesses, as well as jump-start job creation, reduce CO_2 emissions and foster technological innovation.

3

By deepening existing financial and de-risking instruments and tailoring a balanced and impactful mix of tools able to crowd in private financing at the required scale, renewAfrica makes available a package ready for use to scale RE investments.

4

renewAfrica and its body of European and African backers need to launch their fully-fledged operational program as soon as possible to help creating the missing link needed to boost RE investments in Africa and enable shared impact over sustainable growth in Europe, Africa and beyond.

THE JOURNEY OF RENEWAFRICA

Since its outbreak in late 2019, the Covid-19 pandemic has quickly impacted the entire world, resulting in a widespread health and economic crisis that upset established global equilibriums. As governments and companies have engaged and responded, **the pandemic highlighted the need to think more in terms of interdependent systems and the benefits of coordinated action in dealing with current and future global challenges**. The world community is now very much at a crossroads, where the learning that we have experienced to date and our choices today may permanently shape how tomorrow's world will look and work.

The pandemic has impacted countries in a different way. Some advanced economies have suffered more than some less advanced economies, which might not have been expected at the outset. An immediate learning suggest that countries that appear to have coped better had ensured that access to energy, food, information, finance, healthcare and shelter remained available. These building blocks, when combined with strong and collaborative leadership, have allowed existing systems and institutions to care for populations as they coped with the effects of Covid-19. As we move through the pandemic, all countries now have the opportunity to not only reboot their systems, but also actively support new ideas and solutions aimed at "building back better".

In these times, renewAfrica is more relevant than ever. To emerge from the current crisis, and to ensure greater resilience against future disruptive events, **there is an urgent need to transform economies around sustainable, circular, innovative and inclusive principles**. To ensure that pledges can be delivered and supported, there is a need for increased cooperation between governments, societies and businesses. To support ongoing socio-economic development and day-to-day life, energy and electricity are vital. It is against this backdrop that **renewAfrica is committing itself to an enhanced partnership between forward-looking renewable industries, European institutions and African countries with the aim of accelerating the deployment of renewables across the African continent**. All interested stakeholders are welcome to join renewAfrica on this journey, to learn, to help deliver, and to find new pathways of growth that might also provide long-term, sustainable solutions to our next, common, and most urgent challenge, that of climate change.

PARTNERING TO ADDRESS AFRICA'S ENERGY PARADOX

It is clear that renewable energy technologies represent the most cost-competitive solution to electrify African societies and economies, which can then support a wider socio-economic transformation. Although they are capital-intensive and long-term infrastructure projects, renewable energy sources and clean technologies also represent large economic and industrial opportunities that enable a future that is more appealing than continuing with a fossil fuel-based economy. As we have seen, the old economy often features pollution, uncertainty and unpredictability[1]. At a time like this, when recovery priorities are focused on attracting investments and sustaining job markets, **investing in renewables can jump-start job creation, reduce CO_2 emissions and foster technological innovation**. Restarting an economy will also require energy. The current economic crisis in Africa is aggravated by limited access to sustainable and reliable energy for services, industries and households. **Renewables can quickly provide a secure energy supply capable of supporting the restarting of factories, services and businesses**, that helps to avoid recurrent blackouts or load-shedding measures, while guaranteeing access to new customers and responding to the growing demand for energy by African populations.

But delivering on the potential that renewable energy represents for Africa and creating low-carbon economies will require a **joint effort and focus of a range of governments, institutions, businesses and decision-makers across countries**. The scale of the challenge is enormous. Cross-sectorial collaboration and intercontinental partnerships will be essential to overcome common challenges and ensure an exchange of best practices and experiences, at a speed and level required.

As a long-established player in the renewables field, Europe can provide its expertise in regulating, procuring, installing and operating renewable energy and clean technology to support Africa's own pursuit of a sustainable future. **The European Union has the ability to lead on energy and climate policies and share knowledge on fundamental regulatory issues**, such as market design and grid operations and management. European RE industry leaders are global pioneers in the areas of technology innovation, R&D and clean technology investments, while European financial institutions are able and willing to provide financing for green investments internationally. **The headline ambitions of the European Commission's (EC) Green Deal reflect the EU's commitment to building a low-carbon economy, with sustainable energy as its main driver**. The recent EU-Africa cooperation efforts based on objectives including the green transition, energy access and sustainable development (for example, the Strategy with Africa, the extension of the Cotonou Agreement, etc.) illustrate the prioritization of strong partnerships for shared positive and durable impact. In a time, and a decade, that urgently calls for action and renewed efforts for sustainable development, the renewAfrica Initiative will provide the coordination and support that is needed to bring the relevant parties together in a way that will deliver results. With the commitment of European institutions and the renewable energy industry, **the renewAfrica Initiative aims to pragmatically support African stakeholders as they look to accelerate their own sustainable energy transition**.

RENEWAFRICA IS PREPARING FOR ITS ROLLOUT

The previous chapter introduced the renewAfrica Initiative. **Central to this initiative is the proposed design of a European one-stop-shop program for de-risking RE investments in Africa**. RES4Africa Foundation launched the initiative in June 2019 and since then it has been coordinating its development through a dedicated Secretariat with the extensive work and support of all of renewAfrica's signatory members. All signatories come from the worlds of finance, manufacturing, think tanks, consulting, IPPs and industry associations with extensive experience in RE development. In addition to a growth in numbers, they represent a diverse and committed body of industry players who are ready to work with Africa to advance access to sustainable energy.

Over the past year, renewAfrica has also grown its profile and gained momentum on the European, African and international stages. It started by engaging in an open dialogue with major African institutions (for example, UNECA, AUC) to establish constructive relationships and carry out discussions on the shape and intent of the Initiative. The focus then shifted to Europe to ensure that the stakeholders and programs were aligned. Details of the Initiative were then also shared with the European Investment Bank and other European DFIs to assess interest and encourage feedback. Following this, ongoing engagement with the European Commission resulted in the building of a strong collaboration with Directorate Generals of Energy (DG ENER), International Cooperation and Development (DG DEVCO), Climate Action (DG CLIMA) and with European External Action Service (EEAS).

The collection of inputs by the renewAfrica Secretariat for all of these discussions, the parallel thematic working groups, and the range of in-person workshops and meetings led to a series of achievements. These range from: i) the creation of a Presentation Card and subsequent presentation meeting in Brussels in early 2020, ii) the development of headline communication materials (for example, brochure, logo, website), iii) the development of a diverse set of international working relationships, iv) a renewAfrica roadshow across different audiences in Europe and internationally, and v) successful contributions to the Africa-Europe Sustainable Energy Investment (SEI) Platform[2].

The focus for renewAfrica has now turned to supporting the work of four task forces covering a number of priority work areas, which include: country prioritization, financial support, technical assistance, advocacy and outreach, as shown below. Successful delivery by these task forces will enable renewAfrica to put forward a proposed architecture for a comprehensive program.

a. Country Prioritization Task Force

The aim of this task force is to define a comprehensive methodology for **assessing the potential of target countries for a successful implementation of RE deployment program and RE-IPPs investments**. The methodology is to be based on quantitative indicators and qualitative assessments and feasibility tests. Methodology criteria so far include macro-economic factors, RE potential, sustainability and others.

b. Financial Support Task Force

The aim of this task force is to scope and **develop an effective and fit-for-purpose financial**

de-risking package able to meet the requirements of RE project stakeholders and achieve the ambition of renewAfrica signatories to provide quality investments at the most advantageous conditions for all parties involved. This effort included a demand-side analysis of risks, followed by a supply-side analysis aimed at identifying which instruments are best equipped to address those risks, through a series of screening measures.

c. Technical Assistance Task Force

This task force looks to define a **comprehensive catalogue of technical assistance and capacity building services** to be offered. This includes a thorough and detailed mapping exercise of technical assistance services along the project development cycle taxonomy, followed by the development of a matrix overlapping the existing EU Technical Assistance (TA) programs in Africa with the identified development cycle taxonomy and renewAfrica TA services. The effectiveness of existing programs will then be reviewed and assessed consequently.

d. Advocacy and Outreach Task Force

The goal of this task force is to lay the ground for engaging with the European Commission and conducting systematic dialogue with African stakeholders. In addition to analysis and news sharing, this task force plays the role of catalyst to leverage on renewAfrica's members network and strengthen its outreach plan towards African partners. Following the Covid-19 outbreak, the task has been active on defining an outreach strategy to showcase and encourage the key role of renewables as a recovery strategy.

Despite having to deal with a challenging agenda and an uncertain context as a result of the pandemic, the renewAfrica maintained a steady pace of progress in the work of the task forces as well as in its engagement with government stakeholders to keep renewables development at the top of European and African agendas. The initiative hopes to have a proposed architecture for a fully-fledged one-stop-shop program by the end of 2020, by following through on the remaining steps in its proposed **development roadmap**:

- **Outreach**: continue reaching out to all relevant African counterparts, carry out advocacy activities to strengthen relations and elevate constructive policy dialogue with Africa, while complementing European efforts;

- **Endorsement**: obtain further high-level institutional endorsement at the European level, use this to advocate for increased effectiveness and coordination with all European initiatives and cooperation strategies;

- **Expansion**: expand the pool of signatories and backers of the initiative, use the diversification that increased memberships bring to tap into new best practices and build an even more impactful program;

- **Program development**: begin to build an in-country program that can be tested with a preliminary rollout in a set of interested pilot countries.

With the completion of these activities, renewAfrica will be well-equipped to become an integral part of the European and African visions set-out below. In doing so, **renewAfrica will help creating the missing link needed to boost RE investments in Africa and enable shared impact over sustainable growth in Europe, Africa and beyond**.

AN EU-AFRICA JOURNEY TO SUSTAINABLE DEVELOPMENT

Recognizing that action on sustainability and climate is only possible through cooperation and concerted efforts between European and African governments and the private sector, the EU launched a major investment stimulus package to sustain the recovery period following the crisis. This had a particular focus on Africa, an emphasis on the creation of the jobs needed in the post-Covid-19 era, and a desire to ensure the achievement of the European Green Deal objectives at the same time (Box 7). This fits well with the view from the **African side**, where **access to clean energy is recognized as a vital necessity both for suitable public health systems and improved livelihoods and economies**.

A EUROPEAN VISION FOR A LOW-CARBON FUTURE

The European Commission has a long track record in advancing climate action, particularly through development cooperation with neighboring countries and continents, including in Africa. It is encouraging to see that in the current crisis these commitments have only been further strengthened, and aligned with the necessary recovery stimulus packages. These commitments and objectives fit well with renewAfrica's mission to advance European investments in Africa's renewable energy sector, allowing it perhaps to become one of a number of delivery vehicles to achieve the ambition of climate action.

An exciting development at the end of 2019 was the EU's official commitment to the **European Green Deal**[3]. This is probably **one of the most ambitious sets of policy measures to address climate change** seen to date in any developed economy in the world. It consists of a headline goal: to **render the entire EU economy climate-neutral by 2050**. The Deal is based on the will to inform, inspire and foster cooperation between people and organizations ranging from national, regional and local authorities to businesses, civil society, educational institutions, research and innovation organizations, consumer groups and individuals. This intention is conveyed by the European Climate Pact[4], as well as the Just Transition Mechanism (JTM)[5] – a key tool to ensure that the green transition happens in a fair way that leaves no one behind.

BOX 7

HOW THE EU DE-RISKS SUSTAINABLE ENERGY INVESTMENTS IN AFRICA

EUROPEAN COMMISSION (EC)

The EU allocated approximately €3 billion for sustainable energy cooperation with Africa in the 2014-2020 period with striking results: 15 million people gained access to electricity, financing for 7.3 GW of renewable energy (RE) was leveraged, and 10 million tCO_2eq emissions are saved each year. The Africa-Europe Alliance for sustainable investment and jobs deepens economic and trade relations between the two continents by boosting investment, improving education and skills, strengthening business environments, and promoting trade. The External Investment Plan (EIP) is fundamental for implementing the Alliance. The EIP provides finance, technical assistance and investment climate support, and has a specific investment window for sustainable energy and connectivity. Under the Alliance, sectoral task forces were created to enhance dialogue: the energy-dedicated one, the High Level Platform on Sustainable Energy Investments in Africa (SEI Platform), brought together representatives from governments, businesses, academia and civil society and, in November 2019, presented its recommendations on how to speed up investments in sustainable energy.

Under the EIP's finance pillar, the EU provides blended finance and guarantees to attract private investments – many incentivizing investments in RE – such as a €46 million guarantee agreement with the KfW Group designed to spur RE generation, increase energy efficiency and cut carbon emissions in sub-Saharan Africa by covering off-take risks. In terms of blending, the EU finances several de-risking tools, such as ElectriFI, which finances early-stage companies focusing on electricity access and RE generation, and Climate Investor 1, an investment facility financing development, construction and operation of RE projects in Africa and Asia.

Besides financing, the right policies and regulatory frameworks are also key to de-risking investments. The EU's Technical Assistance Facility for sustainable energy (TAF) supports partner countries improve policies, regulatory frameworks and institutional capacities to facilitate investment. One example is the collaboration with the AU supporting the harmonization of electricity regulatory frameworks across Africa; another one is GET.Invest, an EU program supporting decentralized, medium-size RE investments by working with project developers, financiers and regulators to improve the investment climate and the bankability of projects by addressing the quality of project documentation and the capacity of project and business developers. Almost 150 projects have been supported by GET.Invest and its predecessor program (RECP). Another example is the Sustainable Business for Africa (SB4A) initiative, a dialogue platform with the private sector to identify barriers to investment, support priority reforms and enable the EU to tailor support to the specific needs.

The priorities of African countries and the European Green Deal (the EU's new growth strategy to become the first carbon-neutral continent by 2050 and to act concretely towards a sustainable future), launched at the end of 2019, blend together perfectly. The Green Deal has RE development as a cornerstone and highlights the importance of innovative financing and the digital agenda to accelerate the global energy transition and protect natural capital. What is needed is to translate its different components into partnerships across the world and reinforce the EU's international engagement, specifically with Africa. Enhanced cooperation on global and multilateral affairs will be at the heart of our common action: stronger political, economic and cultural ties between the two neighboring continents are crucial in a multipolar world where collective action is needed. The EC's Communication Towards a comprehensive Strategy with Africa likewise underlines the importance of the green transition and outlines a Green Energy Initiative, building on the recommendations of the SEI Platform.

Bringing together all available instruments and creating synergies between the private sector, Development Finance Institutions (DFIs), banks, civil society and other players will be crucial. In our relations and engagement with Africa, the private sector can play a more prominent role, working towards an economy focused on dynamism and sustainability. In light of the current Covid-19 crisis, the EU has launched the Team Europe package with over €20 billion to support partner countries, with a special emphasis on Africa. The Green Deal and the digital agenda are at the heart of this recovery package to build more sustainable, resilient and inclusive economies and societies. We need to avoid short-term solutions that risk locking the world in non-sustainable economies for decades. Addressing climate change and Covid-19 crisis while ensuring 100% access to sustainable energy in Africa requires stronger action, and de-risking investments in renewable energy and energy efficiency are at the heart of the EU's response to this endeavor. Much has been achieved, and much more remains to be done.

Alongside the ambitions of the Green Deal, the European Commission also envisions a Stronger Europe in the World[6]. This ambition includes championing multilateralism through a strengthened role of the EU as a global leader, while ensuring the highest possible standards of climate, environmental and labor protection. **European leadership also means working shoulder-to-shoulder with neighboring countries and partners, and in this context the Strategy with Africa was proposed** earlier this year by the EC with a joint communication to the European Parliament and Council. The Strategy stresses the need to **partner with Africa to support the continent's economic expansion and unlock its potential to accelerate broader social and human development**.

This is expected to lead to new jobs and growth opportunities in the digital transformation, the demographic dividend, low-cost renewable energy, the green transition and so on, also reflecting the vision of African transformative initiatives and growth targets.

In addition to the activities highlighted above, there are also ongoing negotiations underway to revise and extend the Cotonou Agreement between the EU and the African, Caribbean and Pacific group (ACP). These discussions are aiming to place the 2030 Agenda for Sustainable Development at the core of the revised agreement, with climate action and sustainable investments as core areas of collaboration.

RENEWAFRICA CAN HELP EUROPE CREATE GREEN PARTNERSHIPS ABROAD

An essential part of the Green Deal strategy has to do with the involvement of partners beyond European borders, to jointly walk the talk of a grounded low-carbon economy, and expand possibilities of widespread long-term success. The EU has expressed an explicit readiness to pursue the path of green diplomacy, and to share its climate ambition with international partners. By committing to structural transformation at home, the EU is endowing this diplomatic outreach with credibility, coherence and real data. **renewAfrica will add to the credibility of this outreach strategy by acting as a platform for dialogue among European and African public and private stakeholders** involved in renewable energy development, advocating for climate action, and facilitating the recognition of different needs and challenges. Moreover, it can help further stimulate the European RE industrial sector with its internationalization efforts, contribute to enhancing their leadership in the sector, particularly in times when the economic contraction driven by the current crisis is elevating the risk of protectionism and trade restrictions. This also aligns with the Commission's **New Industrial Strategy for Europe**[7] based on the industry's ability to lead the coming twin digital and ecological transitions.

Europe's Strategy with Africa distinctly encourages a partnership based on a clear understanding of mutual interests and responsibilities, reflecting the comprehensiveness and maturity of the continents' relationship. These include developing a green growth model, improving the business environment and investment climate, boosting education, research

and innovation, as well as creating decent jobs and value addition through sustainable investments.

The renewAfrica program can help deliver on a number of these targets, whether directly or indirectly, through its practical and comprehensive de-risking approach that focuses on putting projects on the ground. These, **in turn, can generate broader impact in socio-economic terms** by advancing energy access, promoting job creation, sustainable livelihoods and economic growth, and healthy ecosystems. More specifically, **renewAfrica can be the gamechanger needed to catalyze the development of renewables in Africa** and meet the requirements for African countries to achieve their set low-carbon targets, and practically enact their commitment by:

- **offering a comprehensive approach**, creating synergies among existing EU instruments, reducing fragmentation and ensuring effective support to investors and public bodies needed to deliver projects;

- **providing targeted support** along all stages of the investment delivery cycle, from the beginning of the policy dialogue activity with partner countries to project preparation, procurement, financial close, construction and operation phases.

BOX 8

THE ROLE OF DFIs IN ADDRESSING RE INVESTMENTS IN AFRICA

CASSA DEPOSITI E PRESTITI (CDP)

Renewable energy has become a gamechanger in African regions. In many locations, solar energy is already the least cost option for power generation and can be an effective scalable solution for small households as well as for large utility-scale installations. However, still high upfront capital requirements and the long-term time horizon of RE investments, along with other specific risks and barriers, could prevent a rapid scale-up of these technologies in Africa. By providing access to effective risk mitigation instruments, development finance institutions (DFIs) can substantially help mobilize private capital for RE projects. This is particularly important in light of the limited public resources available for such investments in Africa. Various measures are currently implemented but each context poses different challenges and requires tailored solutions by DFIs:

- guarantees issued by public finance institutions, such as political risk insurance, partial risk guarantees and export credit guarantees, that can mitigate various types of risks (for example, political, energy policy and regulatory, credit and technology);

- currency risk-dedicated mitigation tools that include hedging instruments resolving currency mismatch in RE projects, as well as mechanisms to deal with the high cost of hedging itself;

- liquidity risk mitigation instruments, such as sovereign guarantees that can be used to mitigate the power off-taker's risk arising from its perceived low creditworthiness.

Most renewable energy PPAs are signed with state-owned utilities, which often have below-par finances due to non-cost reflective tariffs, and do not recoup their ener-

gy purchase and investment expenses. In addition, African governments would usually keep such companies afloat while they operate at a loss; this, in turn, can fuel long-term, structural issues, causing them to fall into arrears on payments to IPPs. Thus, financial tools for risk mitigation can be effectively implemented to reduce the financing costs of RE investments, ring-fence revenues accruing to off-taker utilities and ensure that there is enough cashflow to honor payment obligations under the PPA.

CDP has recently started its activities and operations in its capacity of Italian Financial Institution for Development Cooperation. In the last few months it has finalized its country and sector prioritization strategy. Sub-Saharan Africa represents one of CDP focus regions, and renewable energy is a key priority to develop the project pipeline in a long-term vision for the continent's decarbonization and achievement of a greener economic development.
To this purpose, CDP was the first DFI to partner with renewAfrica in order to respond to risk mitigation challenges in Africa, with the specific target of creating adequate conditions for private investors to effectively operate in the continent. CDP and renewAfrica share common goals of energy infrastructure deployment and socio-economic development in sub-Saharan Africa, whose successful implementation requires a new holistic and multilateral approach of public-private partnership.

CDP can contribute to the renewAfrica Initiative by supporting African countries through targeted and innovative blended finance tools, working together with other national and international partners who share the same sustainable development ambition. In particular, through renewAfrica, CDP intends to support medium to large-scale RE generation facilities, by bridging the de-risking gap with a new comprehensive instrument. This approach is consistent with the broader strategy implemented by CDP within the European Investment Plan (EIP): CDP is participating in one of the key instruments to support the RE transition, namely the European Guarantee for Renewable Energy (EGRE): in particular, under the EGRE umbrella, around 1,000-1,500 MW of new RE capacity are expected to be deployed in sub-Saharan Africa. Through this instrument, CDP, in partnership with other European DFIs, will provide partial risk coverage on the public off-taker's (the utility) payment service obligations for supplies from RE projects.

Together with other European DFIs, CDP is also part of the Electrification Financing Initiative (ElectriFI). This blending facility aims to unlock, accelerate and leverage private sector investments in order to increase or improve access to clean energy in developing countries. Through ElectriFI, CDP seeks to encourage renewable energy adoption mainly in rural, unserved or unreliably served areas, with an emphasis on decentralized energy solutions. Overall, the program is expected to enable a total of around 250 MW of capacity installed and 1,200 GWh of renewables per year, allowing almost 2 million new connections.

AFRICA'S JOURNEY TO SUSTAINABLE DEVELOPMENT

Despite having made a negligible historical contribution to global CO_2 emissions, Africa is highly vulnerable to the negative impacts of climate change. This is why there is local recognition of the immense potential of a clean energy transition to make progress on sustainable development and the creation of low-carbon economies. **Beyond setting national targets, many African countries have submitted ambitious NDCs towards the achievement of the Paris Agreement, clearly demonstrating a will to jointly cooperate in the global fight against climate change**. Similarly, they have embraced the journey towards achieving sustainable development across many socio-economic and environmental goals under the **United Nations Agenda 2030**. The African Union Commission (AUC), reflecting the commitment of its Member States, has supported them with the formulation of suitable policies to facilitate renewable energy deployment and local socio-economic growth as part of Agenda 2063[8]. This represents the African continent's strategic framework that aims to deliver inclusive and sustainable development, as a concrete manifestation of a common drive for unity, self-determination, and collective prosperity. With a flagship program that prioritizes infrastructure development and education among others, it includes the will to establish the African Continental Free Trade Area (AfCFTA).

Within this framework, **the AUC recognizes that a significant increase in private RE investments in Africa's electricity sector is fundamental in order to successfully implement the set decarbonization strategies**. Investment is needed in natural, human and economic resources – namely, renewable technology, workforce, infrastructure and know-how – to scale up renewable energy and make progress on sustainable development. At the same time, **the AUC advocates for the crucial role of partnerships and multilateral collaboration in the effective pursuit of a widespread green transition, with Europe as a trusted ally**. In fact, the AUC is already working with the EU in the framework of an **AU-EU Partnership** to build capacity in local institutions and share best practices, as well as enhance local skills in the energy sector. In this sense, African institutions (for example, AUC, UNECA) have deemed de-risking fundamental to attract the private sector and scale up RE investments, while promoting cross-sectorial and intercontinental knowledge sharing.

renewAfrica builds its ambition on the basis of Africa's vast untapped potential for RE development and sustainable socio-economic growth. We are also hopeful about the progress that can be made on universal clean energy access. In this context, **renewAfrica** presents itself as a **platform that can gather in one place all European support instruments and stakeholders** ready to share knowledge as needed. It aims to **help shape European expertise into a structured, practical and comprehensive de-risking program that African governments and investors can easily adopt to scale RE investments**. By mobilizing investments from the European private sector in a sustainable manner, it encourages the exchange of best practices, and will help build new and greater volumes of local capacity and industrial supply chains, thus promoting a locally-driven socio-econom-

ic development that is sustainable in the long run.

renewAfrica makes available a package ready for use at any point of a RE project development cycle. On the financial end, the package forms a key enabling feature of the program in implementing European and African clean energy targets and meet demand requirements. **By deepening existing financial and de-risking instruments and tailoring a balanced and impactful mix of tools able to crowd in private financing at the required scale**, renewAfrica offers technical information, expertise and assistance to help investors secure a tailored financial package, mobilize private/blended financial resources, and obtain guarantees and insurances.

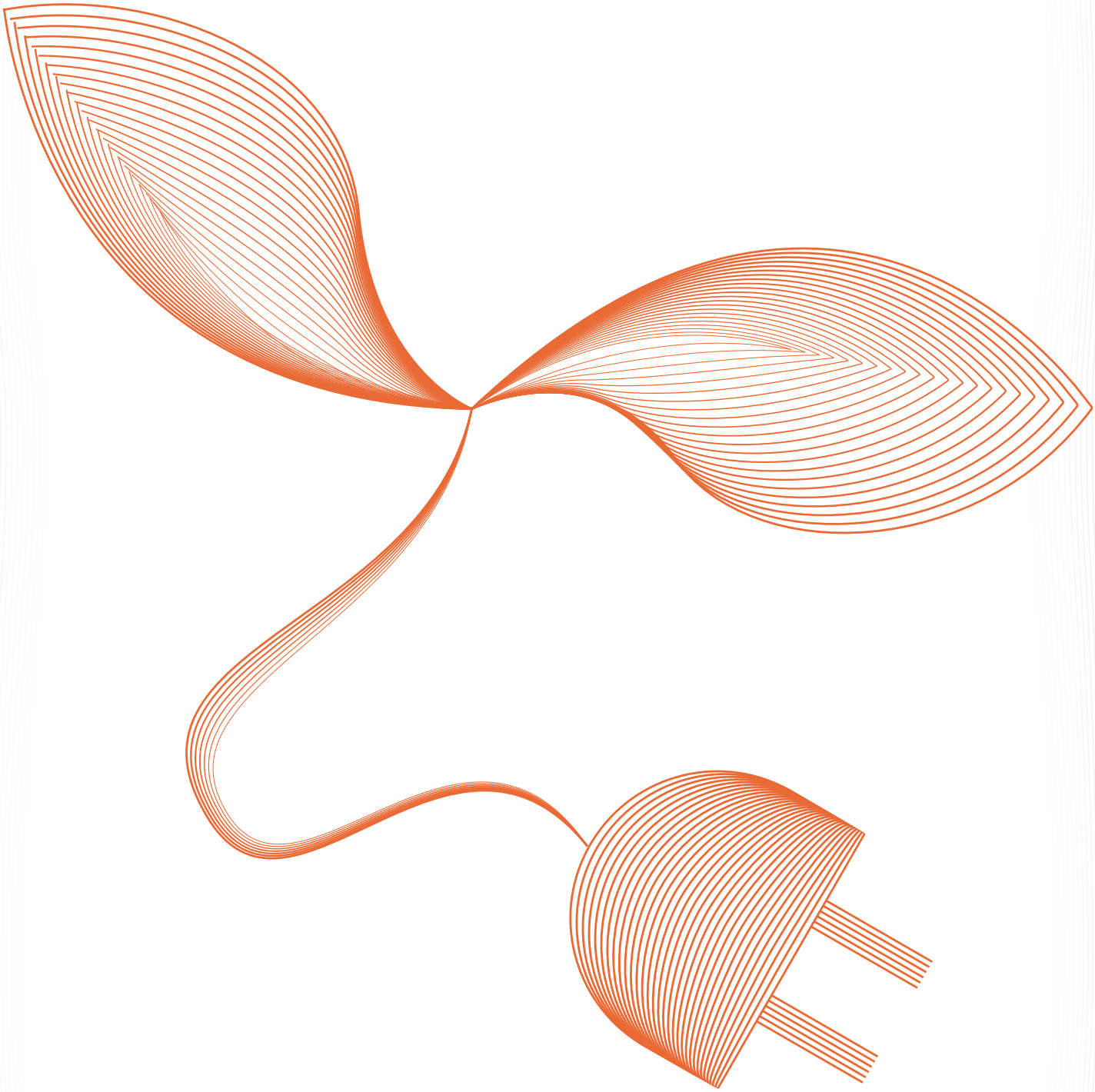
With this program, renewAfrica recognizes Africa's immense potential for renewable energy expansion as well as the progress made in Africa up to now, and is ready to offer Europe's support in continuing Africa's journey towards sustainable development, with the strong belief that long-term solid partnerships between the two continents can lead to better and faster shared success.

THE ROAD AHEAD: UNLOCKING AFRICA'S BRIGHT FUTURE

The developments and plans outlined above by African and European governments to date create a sense of hope for the opportunity that awaits us. However, the **time for more coordinated actions and hands-on delivery is now**. The UN SDGs have given us only this decade to deliver the change, but we may actually have to meet a more urgent timeline if the detrimental effects of climate change accelerate further, especially in Africa. **renewAfrica and its body of European and African backers need to launch their fully-fledged operational program as soon as possible**, so that it can begin to make a difference on the ground earlier rather than later. Renewables are a clear cost-effective answer to Africa's rising energy needs, that can be deployed today, and it is **important to prevent the lock-in of more expensive and polluting fossil fuel technologies**.

The good news is that the multi-stakeholder renewAfrica team tasked with the delivery of this challenge has the advantage of being equipped and supported with decades of R&D investment and policy measures experience from EU actors that have since become global leaders in their industries. In addition, now more than ever, private investors, both international and local, are being called on to lead the way towards new sustainable economic models that can connect the dots between purpose and profit.

As Europe and Africa move ahead and begin to build solid partnerships that can be nurtured with concrete activities and effective knowledge exchange, aimed at creating shared impact, then **by putting people, their needs and their ambitions at the center of its strategic thinking**, renewAfrica hopes to be able to play a transformative role for both the EU and Africa. Through its programs and activities, **renewAfrica will look to attract greater numbers of private investors that can drive socio-economic development**, act as a conductor to build on best practices, define partnerships and share knowledge, and most of all develop lasting collaborations between stakeholders. The road may be long and not fully certain, but the journey is always more enjoyable and easier with friends.



ENERGY COOPERATION IS A NECESSITY FOR AFRICA'S SUSTAINABLE FUTURE

ROMANO PRODI, FORMER ITALIAN PRIME MINISTER AND FORMER PRESIDENT OF THE EUROPEAN COMMISSION

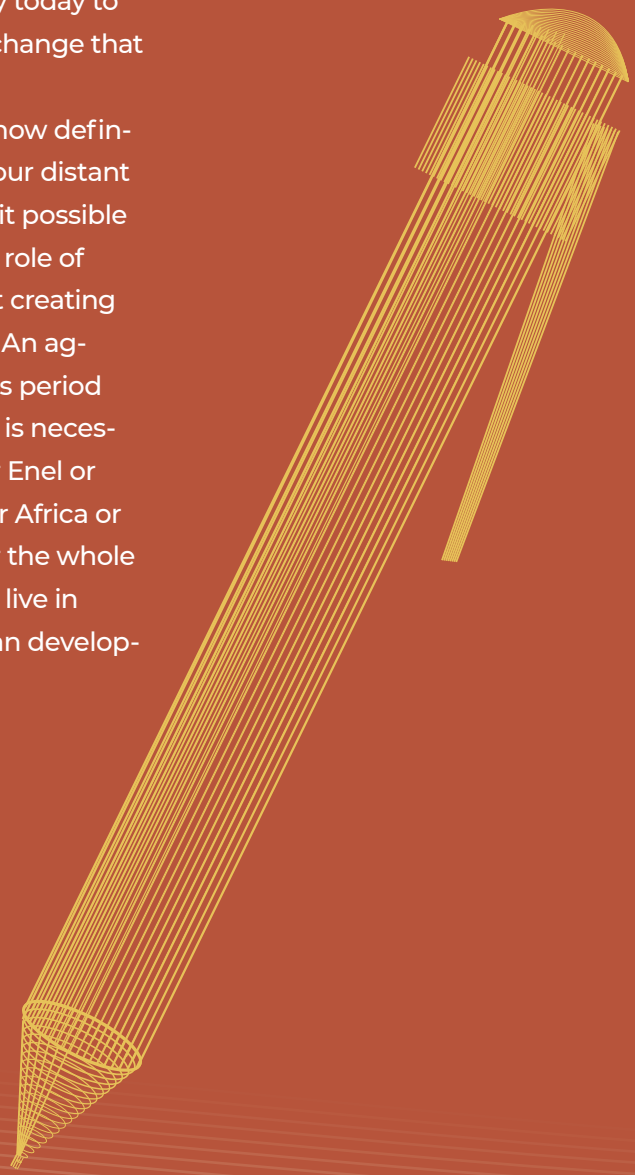
For years, or perhaps decades, we kept on repeating that Africa's socio-economic growth was vital for us Europeans, but the unfortunate political and economic developments have always postponed any coordinated action on this matter. The interests of different countries have always prevailed. Therefore we have never managed to devise a project that could help Africa build its own future, one that would have also helped create a better future for us.

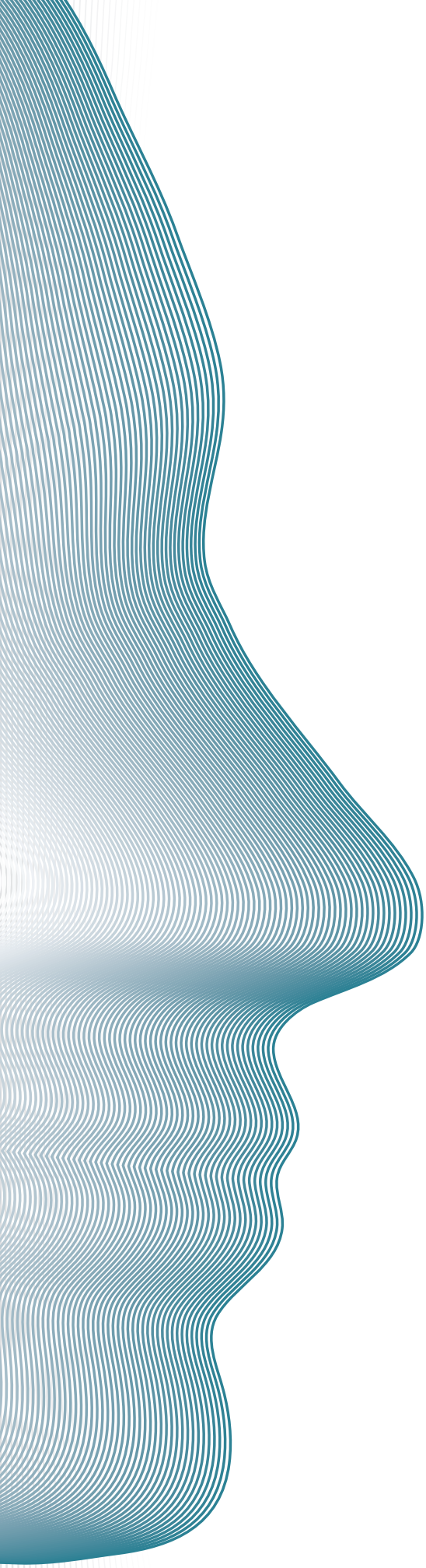
Each country acted individually, and so did our businesses and enterprises. The only African policy at a continental level has been implemented by China, which, however, despite operating in the whole continent, has always acted through bilateral relations with the single countries. The result was that, despite the efforts made by the African Union, Africa keeps being fragmented, always conflictual and always drawn to migrate in search for its 'tomorrow'.

The Covid-19 crisis makes this situation even more dramatic, even though, as we are overwhelmed with our own worries, we find only a negligible space in our media to describe the hidden tragedies that are now devastating a large part of the African continent.
I surely do not think that we will be able to remedy this catastrophe in the short term. However, I do believe that, in any case, today's dramatic events force us to reflect more intensely on the fact that our interdependence is growing day by day, and a cooperation strategy is therefore indispensable to ensure a bright future to our planet and for ourselves.

The first sector that can aid us in walking this path is definitely the energy one. I do not want to touch upon the dramatic social consequences that are accruing in oil countries such as Algeria, Angola or Nigeria, nor I want to expand on the collapse of prospects of those who had entrusted natural gas with their future (for example, Mozambique). I would only just like to point out that even in sectors like the energy one, which we all trusted unconditionally, the African continent has entered a very complicated crisis right when climate change is already damaging it more than anywhere else on the planet.
In simple terms: Africa suffers from its lack of energy and from our polluting resources that upset global equilibriums. The one thing we must not believe is that the consequences of

all this will not fall on us. Co-operation with Africa is not an option but a necessity, and the energy sector is a priority within this necessity. This is a dutiful project but one that, because of its importance and size, must move beyond bilateral relations. Indeed, a network must be built which, on the one hand, must be open to all African countries and, on the other, requires the financial commitment of the whole of Europe as well as a strategic agreement with China. It is true that we Europeans are the ones most interested in achieving these objectives, not least because we are the reference point and destination of African migratory flows, but it is also true that China is also suffering the limitations of the bilateral agreements policy, even though these extend to the whole continent.
Realistically, I do not think that a single nation can remedy this situation, but I do believe, however, that Italy has the opportunity to contribute in a credible way to the launch of an initiative capable of bringing together a growing number of countries, so as to implement an energy policy for the entire African continent. This is not only because of its geographical proximity and the direct responsibility that our country has towards African migration, but also because it is the reference point for the world's largest producer of alternative energies.
Enel can certainly neither be the sole nor the dominant player in this process, which requires productive and financial dimensions at a global level. But, precisely because of its experience in a large and diversified number of countries, it can exercise the aggregating role that is necessary today to help the process of change that Africa needs.
I also think that the now definitive cancellation of our distant colonial past makes it possible for Italy to exercise a role of aggregation without creating misunderstandings. An aggregation that, in this period of growing tensions, is necessary not so much for Enel or Italy and not even for Africa or Europe alone but for the whole world, which cannot live in peace without African development.





THE ROAD AHEAD

FRANCESCO STARACE
CEO, ENEL GROUP
& CHAIRMAN, ENEL FOUNDATION

The unprecedented crisis due to the Covid-19 outbreak is deeply shaking our world and its equilibriums. The precautionary measures adopted to break the chain of infection are reshaping the ways we were used to live, socialize and work, changing our societies and economies. As many countries approach the light at the end of the tunnel, extraordinary and coordinated measures will be needed to reboot our socio-economic systems, affected by extended lockdowns.

It would be fundamental to have a clear vision regarding the model to prosper we want to pursue and the strategy we need to deploy for the rebuilding. Indeed, the UN 2030 Agenda for Sustainable Development has already traced the road, one which leaves no one behind and is built upon the principles of sustainability, resiliency, inclusivity and shared prosperity. As we have entered in the Decade of Action, the recovery effort from Covid-19 pandemic should trigger the necessary political, economic and behavioural changes to orient decision-makers, business leaders and societies towards the realization of the Sustainable Development Goals (SDGs).

Renewables have a window of opportunity to become one of the pillars of this recovery effort. The pandemic showed us, again, the importance of electricity to support the continuity of healthcare and other essential socio-economic activities under the lockdown, as well as to allow remote working. In this terms, Covid-19 pandemic was, and continues to be, a big accelerator of trends that were already on-going: the shifting from fossil fuel consumption to electricity, the transformative role of digitalization in all the aspects of our daily lives, the evidence of our contemporary world economy working as one

single system, and the need to collaborate to effectively deal with our common challenges.
RES4Africa's Flagship Publication of this year walked us along Africa's energy paradox: a resourceful continent, with an increasing population expected to reach 2.5 billion people by 2050 and rising entrepreneurial opportunities, where socio-economic transformation remains constrained also by the lack of access to sustainable, reliable and affordable energy. Indeed, electrification presents many benefits, since it is an enabler for education, healthcare, business creation and thus poverty reduction. Electricity access is key for the pursuit of basic human rights. Moreover, while in the past centuries developing economies had to heavily rely on polluting energy sources, especially coal and oil, to meet their rapidly growing energy demand, Africa has today the opportunity to benefit from cost-competitive and reliable renewable energy sources to fuel its economic growth. Indeed, onshore wind and solar PV have already demonstrated to be the cheapest option for new electricity generation and their costs are expected to decrease further in the forthcoming years. Coupled with the immense potential for renewable energy sources across Africa, this makes the continent a perfect candidate for a green energy revolution.

Nevertheless, investments in electricity infrastructures, especially in renewable energies and networks, have been limited so far, with international renewable players focused on other regions, and lag well behind the required levels to be aligned with the Paris Agreement. The Flagship report opportunely highlighted the role of risk perception and exposure, as well as the lack of robust policy and regulatory frameworks, mature projects and fit-for-purpose de-risking instruments, as the main hitches preventing the scale-up of investments in renewables across the continent.

Today, Africa and the entire world, have the opportunity to use the extraordinary recovery measures that are surging in response to the Covid-19 crisis to accelerate on the investments needed for the transition towards a decarbonized and sustainable way of living and enhance their resilience against climate change. By calling for an enhanced, broad partnership among public and private renewable energy stakeholders, the renewAfrica Initiative aims to create those synergies and promote the right conditions for scaling-up investments in renewables, through impactful de-risking approaches. Its success would support electricity to emerge as the best source of final-use energy in Africa and the most competitive solution to electrify its economy in a sustainable and cost-efficient manner. Harnessing this renewable energy revolution will entail Africa to leapfrog and be ready for tomorrow's world.

Francesco Starace

NOTES

1 https://www.euractiv.com/section/energy-environment/opinion/which-world-do-we-want-after-covid-19/.

2 The High Level Platform for Sustainable Energy Investments in Africa was launched at the 2018 Africa Investment Forum following the European Commission's Communication for a new Africa-Europe Alliance for Sustainable Investments and Jobs. renewAfrica received the endorsement of the SEI Platform as one of the key initiatives in this framework of discussion.

3 https://ec.europa.eu/commission/presscorner/detail/e%20n/ip_19_6691.

4 https://ec.europa.eu/clima/policies/eu-climate-action/pact_en.

5 https://ec.europa.eu/commission/presscorner/detail/en/ip_20_17.

6 https://ec.europa.eu/info/strategy/priorities-2019-2024/stronger-europe-world_en.

7 https://ec.europa.eu/info/sites/info/files/communication-eu-industrial-strategy-march-2020_en.pdf.

8 https://au.int/en/agenda2063/overview.

BOILER PLATE

RES4AFRICA FOUNDATION

Who we are: RES4Africa Foundation is an independent organization that promotes the deployment of renewable energies in Africa. Relying on a cooperative approach, it gathers perspectives and expertise from a multi-stakeholder member network. This includes industries, agencies, utilities, manufacturers, financing institutions, consultancies, legal and technical services providers, research institutes, and academia, active in the sustainable energy value chain. RES4Africa Foundation works with local, regional and international partners, agencies and organizations to support the successful rollout of its activities and pursue its mission.

Our mission: RES4Africa Foundation's mission is to create an enabling environment for renewable energy investments in African countries to meet local energy needs for sustainable growth.

Our work: RES4Africa Foundation aims to contribute in paving the road towards a prosperous Africa, grounded on the use of renewable energy sources to power African economies' rise. It channels its activities in three broad work-streams:

1. acting as a connecting platform for **dialogue and strategic partnerships** to promote awareness around the benefits of renewable energy, facilitate policy dialogue, enhance political will and support governments on building a facilitating environment for renewable energy investments;
2. providing **technical support and market intelligence** through dedicated studies and strategic initiatives to catalyse innovative market solutions, create business opportunities, collaborate to create a wide range of bankable projects, and advance the renewable energy market development;
3. leading **capacity building and training** programmes to build multi-sector capacity, from institutional to technical, through the transfer of knowledge and capabilities, and ultimately support the long-term creation of renewable energy markets.

RES4AFRICA
RENEWABLE ENERGY SOLUTIONS FOR AFRICA
FOUNDATION

BOILER PLATE

ENEL FOUNDATION

Enel Foundation: a knowledge platform for a clean energy future.

We focus on the crucial role of clean energy to ensure a sustainable future for all.

By envisioning a sustainable future – resilient and equal – boosted by quality education and an enlightened self-interest by the business community. The future we want is powered by affordable, reliable, sustainable and modern electricity, smartly distributed to all.

We focus on research and education.
By developing partnerships with pre-eminent experts and institutions across the globe, leveraging on the vast knowledge of our founders. We conduct research to explore the implications of global challenges in the energy domain, develop scenario analysis, define policy and regulation opportunities and promote education programs for qualified stakeholders in the scientific and institutional realms.

We operate at the intersection of business and society.
By engaging institutions and governmental bodies, thought leaders and civil society representatives, industry experts and academia. We are a non-profit organization seeking to converge with likeminded actors determined to solve global challenges ensuring a sustainable future for all.

Connect with us!
Scan the QR code to discover more about the work of Enel Foundation and to connect with our social media channels.

enel Foundation

ABBREVIATIONS

AfDB	African Development Bank
AUC	African Union Commission
B-BBEE	Broad Based Black Economic Empowerment
BNEF	Bloomberg New Energy Finance
CAPEX	Capital Expenditure
CDP	Cassa Depositi e Prestiti
CSP	Concentrating solar thermal power
CTF	Clean Technology Fund
DFI	Development Finance Institution
DG CLIMA	Directorate General of Climate Action
DG DEVCO	Directorate General of International Cooperation and Development
DG ENER	Directorate General of Energy
DREA	Distributed renewables for energy access
EBRD	European Bank for Infrastructure and Development
EC	European Commission
ECA	Economic Commission for Africa
EEAS	European External Action Service
EGP	Enel Green Power
EGRE	European Guarantee for Renewable Energy
EIA	Energy Information Administration
EIB	European Investment Bank
EMEA	Europe, Middle East, and Africa
ESMAP	Energy Sector Management Assistance Program
EU	European Union
GCF	Green Climate Fund
GHG	Greenhouse Gas
IDA	International Development Association
IEA	International Energy Agency
IFC	International Finance Corporation
IFI	International Financial Institutions
IMF	International Monetary Fund
IPP	Independent Power Producer
IRENA	International Renewable Energy Agency
IRR	Internal rate of return
LCOE	Levelized cost of energy
MFI	Multilateral Financial Institutions
MIGA	Multilateral Investment Guarantee Agency
NDC	Nationally Determined Contributions
OECD	Organisation for Economic Co-operation and Development
OEM	Original equipment manufacturer
PPA	Power Purchase Agreement
PPP	Public-Private Partnership
PwC	PricewaterhouseCoopers

REN21	Renewable Energy Policy Network for the 21st Century
SDG	Sustainable Development Goal
SEforAll	Sustainable Energy for All
SOE	State-owned enterprise
SSA	Sub-Saharan Africa
STEM	Science, Technology, Engineering and Mathematics
TA	Technical Assistance
UNDP	United Nations Development Programme
UNECA	United Nations Economic Commission for Africa
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
WACC	Weighted average cost of capital
WBG	World Bank Group
WEF	World Economic Forum
WHO	World Health Organization

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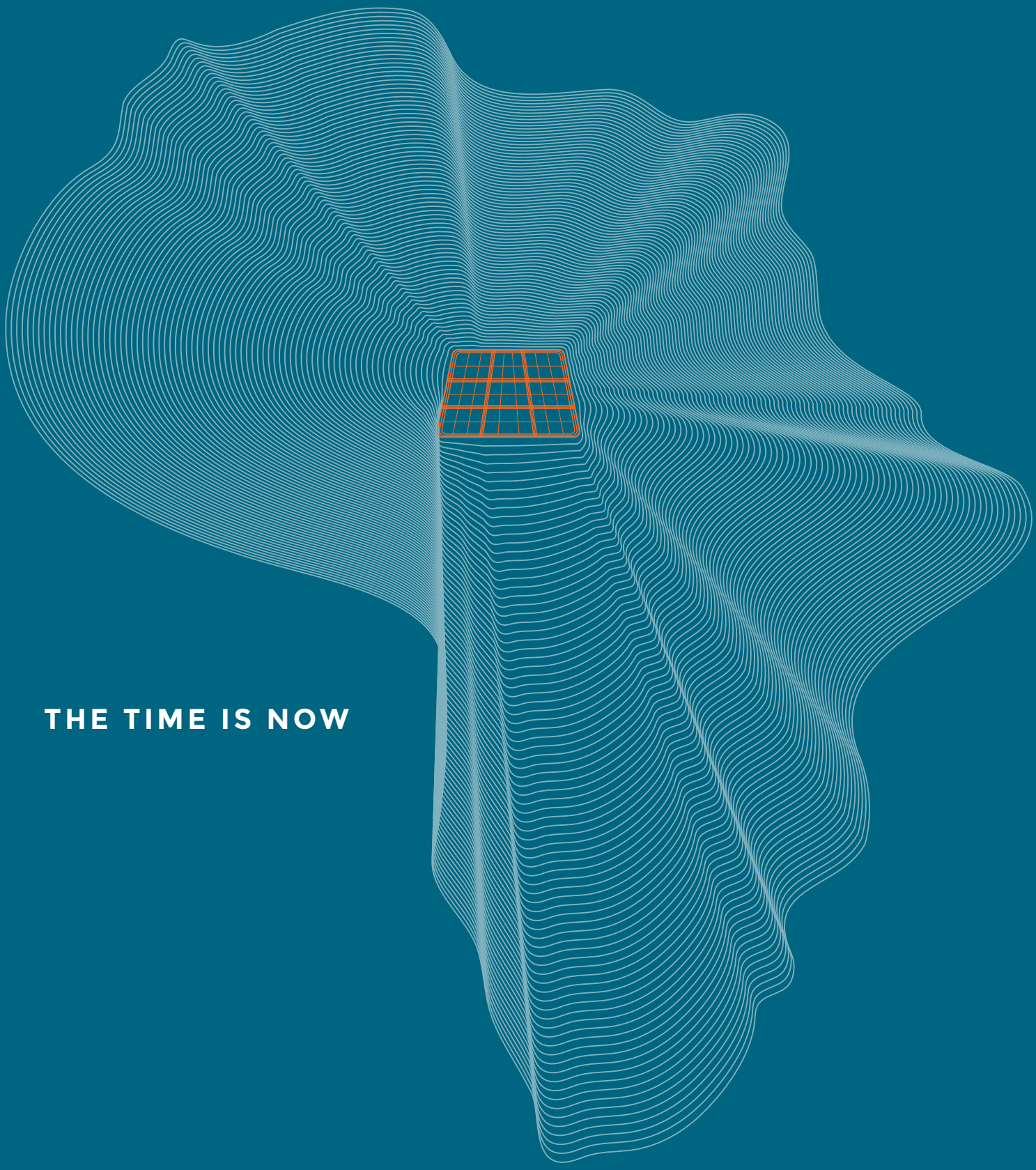

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