The sun does not forget a village just because it is small.

African proverb

An Ethiopian girl standing by the Omo river artificial basin, in Southern Ethiopia.
Over the past decade our perception of Africa has changed completely: the economy has been growing fast in recent years and this positive trend is gathering momentum: GDP is projected to grow by 4% and the continent has gone from being defined as ‘the lost continent’ to ‘a land of hope’. However, Africa is made up of a number of very diverse regions characterized by different income levels, specific economic assets with local features, and varying levels of dependence on commodity exports and of political and social stability, as well as different energy infrastructure development and consequently specific degrees of access to energy. Secure access to modern energy is widely recognized as an important enabler for economic and social development and although Africa is enormously rich in natural energy resources, the continent is poor in energy supply, mainly in the Sub-Saharan area. This region accounts for about 14% of the world’s population, but just 4.5% of global primary energy demand, with solid biomass representing over half of primary energy demand. Today about 590 million people in Sub-Saharan Africa live without access to electricity, especially in rural areas and villages not connected to the electricity grid, representing more than half of the global number. For instance, in Sub-Saharan Africa the average electricity consumption is 200 Kwh per year, compared to almost 1,600 Kwh in the European Union. The energy access status varies significantly across the continent, from Central Africa, with almost 100 million people living without access – 17% of the total – and the lowest access rate at just 25%, to West Africa, accounting for 30% of those without electricity and with an average access rate of 34%. However, electrification efforts have accelerated in the last few years, overtaking population growth for the first time in 2014 and leading to an increase in electricity consumption. Since Africa is rich in terms of all renewable energy resources – hydropower, solar, wind, geothermal and biomass – these represent the most effective response to the continent’s growing demand for electricity in a fast and flexible way, offering three key advantages. Typically, renewable generation is less concentrated, more decentralized and more easily deployed, with a scalability approach based on current needs. In addition, the time required to build a renewable power plant is much shorter than for other conventional technologies and the cost of renewable energy, if the resource concerned is abundant, is progressively lower. Having recognized this opportunity, Sub-Saharan Africa is increasingly tapping into its enormous renewable energy potential in order to provide power. Between 2012 and 2015, around 18 million people gained access to renewable energy each year, mostly from hydropower and geothermal, principally in Kenya. Although grid expansion remains crucial, in remote areas where building the grid connection is too expensive, decentralized power generation has huge potential for both household and productive use, such as in agriculture. Furthermore, an estimated 2 million people gained access through solar home systems in 2016. In some countries in Sub-Saharan Africa, especially in rural areas in Uganda, Tanzania and Nigeria, where mobile phone ownership is higher than the electrification rate, new emerging business models based on pay-as-you-go financing and payment schemes are facilitating access as consumers use their smart phones to pay a regular fee for the energy service or a fixed amount for the solar home system in a rent-to-own plan. However, given the current policies and measures in place, the number of people without electricity in Sub-Saharan Africa will remain at today’s level until 2030, as rapid population growth outpaces electrification progress. Sub-Saharan Africa within the largest region without access to electricity, accounting for almost 80% of the people in the world without access in 2030. If we do not tackle this situation in an effective manner now, we cannot possibly hope to meet the 2030 United Nations Sustainable Development Goals (SDGs), given that one of them, SDG 7, is to “ensure affordable, reliable, sustainable and modern energy for all”. To this end renewable energy, including solar PV and wind power plants connected to the grid, will play an important role, together with
Africa is often the subject of a one-sided narrative, where the continent is either still presented as a wild, primitive land, or where wars, poverty and epidemics dominate the social, political and economic life. Energy is seen as a Herculean task for the Mediterranean and Africa, such as in the recently launched flagship training program Open Africa Power. At the same time, Enel is a founding member of RES4MED and RES4Africa (Renewable Energy Solutions for the Mediterranean and Africa), a multi-stakeholder platform that aims to create a conducive environment for renewable energy investments in Southern-Mediterranean and Sub-Saharan African countries.

Open Africa aims to demonstrate that progress is being made and, through local photographic testimonies from Uganda, Kenya, Ethiopia and South Africa, it shows the positive impact of sustained access to renewable energy, from small- to large-scale renewable energy solutions. Thanks to these photographs and local stories, this book outlines what happens when people gain access to energy. In essence, it visually captures what achieving progress looks like in winning access to energy. In this sense, SSA would be at the centre of the other revolutionary trend of these years, the sustainable energy transition.

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around 8% in the upcoming years. This confirms the economic trend the region was already benefiting from in the early 2000s when its growth became, for the first time in history, greater than the year before. why?

On the other hand, with this growth comes an inherent fragility which in many SSA countries has yet to bring power to almost all its population; in 2016, one third of the gas the region produced was consumed, one third exported and one third simply flared, a waste that was particularly dangerous for the region's environment. However, one fifth of the region's population was without electricity. The combination which is expected to continue and raise the population of the African population. IMF forecasts also highlight that the regional per capita income will scarcely increase, and that it will actually decrease for 40% of SSA’s population. In this sense, even the positive economic trends many are experiencing as low as 1.4% in 2016.

Blackout a day, with an average consumption of 200 kwh (except in the world, with a marked disparity between the urban areas and those which are farthest from the grid, where electricity supply can cost two times more.)

Heterogeneity is, indeed, another delicate issue for the African energy sector. Many countries have practically no access to energy, as in the case of Burundi, which is only a few km more than half of the population have electricity. Even rapidly growing countries, such as Kenya, suffer from low levels of access in 2016, according to the IEA, only 45% of people in Ethiopia and 35% in Tanzania had access to power.

Furthermore, there are many other issues that will impact on energy consumption, such as low levels of payment, low incomes and low purchasing power. Hence, many countries are far below the 1.8 billion in 2035 and 2.5 billion in 2050. By 2035 half the regional population will not have access to power. Even those who have electricity in SSA still have access to power of renewable energy sources is several times higher than current capacity. This curse was not by chance that in the past two years uncertainty has – it is not by chance that the first of all the burden of public debt, which in many SSA countries has been generated by wind and solar energy. In 2014, IRENA reported that the contribution to these resources or using them domestically. Another specificity is also changing the structure of several national energy systems; in 2015-2017, thanks to the Last Mile Connectivity Project (LMCP) for example, the Kenyan grid provided electricity to an additional 1.5 million people in rural areas.

The clean energy revolution in Africa is also set to continue as the region is on the brink of achieving universal access to energy by 2030. This is also changing the structure of several national energy systems; in 2015-2017, thanks to the Last Mile Connectivity Project (LMCP) for example, the Kenyan grid provided electricity to an additional 1.5 million people in rural areas.

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pact of intermittance and the road for base-generated. Meanwhile, the development of more efficient solar PV technolo-
gies allowed for the spread of solar home systems that were once too expensive for a large portion of people but are now also available for other kinds of uses: sewing machines, vaccine refrigeration, ves-
ture pumps for irrigation and domestic use, and others. So, un-
like photovoltaic home systems offering a wide range of applications, which simplifies the deployment role of mini-grid in Africa to the detriment of Africa’s economic growth. In the future, the agency says that diversified re-
newables represent the majority of new generation required to grant universal access in SSA in 2050. All of this is linked to the mobile revolution in Africa: as in 2016 60% of the SSA population had mobile phones, many providers are exper-
encing with “pay-as-you-go” systems, in which the cost of energy depends on the number of phone units paid for mobile phones based on consumption. These solutions make payments auto-
matic, reducing the costs of collection and the risk of non-pay-
ment, thus making energy easier to access for poorer consumers.

Unlocking Africa’s power

Providing SSA with universal access to energy will radically change the region. Perhaps even more: it could be the fundamental change the region has been waiting for. Perhaps more: it could be the fundamental change the region has been waiting for. Perhaps more: it could be the fundamental change the region has been waiting for. Perhaps more: it could be the fundamental change the region has been waiting for. Perhaps more: it could be the fundamental change the region has been waiting for. Perhaps more: it could be the fundamental change the region has been waiting for. Perhaps more: it could be the fundamental change the region has been waiting for. Perhaps more: it could be the fundamental change the region has been waiting for. Perhaps more: it could be the fundamental change the region has been waiting for. However, the drivers will be the beneficiary of its local energy system, which has been widely invested in the form of renewable energy projects in the region. The IEA estimates that solar PV has the potential to add 1.1 GW of solar capacity by 2019. If this potential is fully realised, the region could be on its way to achieving universal access to electricity by 2030.

The root of the problem is the low level of investment in the sector. In SSA, only 9% of the total investment in power generation and transmission has been realized in the past 10 years. However, this is expected to increase significantly in the coming years, with the African Development Bank estimating that $14 billion will be needed to reach universal access to electricity by 2030.

The way forward

The recent increases in access to power in SSA have indeed shown that reaching full universal access is possible. Yet, it is not certain when this will be achieved.

IEA scenarios for the years to come show that the positive trend of electrification of SSA will be short-lived. If policies and in-
erve to attract foreign direct investment. In many cases the regulatory and institutional frameworks need to be improved, as well as new investment models, design, implementation and project monitoring need to be developed further.

Infrastructure is crucial for unlocking economic growth and reducing poverty. Access to reliable and affordable energy is essential for economic development, as it is critical for industries and households to function effectively and efficiently. Without access to electricity, people are unable to access basic services such as healthcare, education, and communication.

In addition, off-grid solutions should be cheap enough to pro-

The paper concludes by stating that reaching full universal access to power is possible. The key is to continue investing in off-grid solutions and scaling up the number of projects.

The authors argue that reaching full universal access to power is possible, as long as there is a strong political will and sufficient financial resources. However, they also caution that achieving this goal is not without challenges, and that more needs to be done to overcome them.

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IN ETHIOPIA

A DARK AFRICAN NIGHT

The daily journey of Elias Tesfaye, and that of his fellow re-

searchers at the non-profit Wolayita Development Association

(WODA), seems to follow the extension of the electrical network

in the region. It starts from the city of Sodo, in Southern Ethiopia,

with its shops and lightened asphalt streets, along the dusty

roads that lead to the small towns, the provincial centres which

are the last outposts of the national grid. Later, here and there

the connections manage to reach some villages and schools, but

only a few kilometers further along it is dark again. And here

Elias’ work begins.

Elias is one of the researchers working in the Wolayita region

of Ethiopia. His work aims to foster economic development in

the area, and a key part of it consists in providing access to pow-

er to the population which still has none, the majority in the re-

gion. He works in cooperation with Italian and European asso-

ciations, such as Comitato di Collegamento di Cattolici per la

Civiltà dell’Amore (CCCA), and he is thus often accompanied by

foreign engineers, like Riccardo Del Citto from the Rome-based

University Sapienza. They work together to understand the en-

ergy needs of the population living in the region with two pur-

poses: their first aim is to grasp the extent and impact of the

lack of access to electricity, and the second is to design a system

to generate power which is suited to the specific features of a

low-income population, widely scattered on the territory. This

is meant not only to offer a solution which fits the local, mostly

agricultural economy, but which is also able to survive indepen-
dently from external support in the years to come.

Their journey thus goes through the different landscapes of the

Wolayita region, from the greenish lowlands to the rocky high-

lands of the Ethiopian plateau, at more than 2000 meters above

sea level. The focus groups and individual interviews which Elias

and Riccardo lead bring forward a variety of energy needs: farm-

ers complain about the fees they have to pay to grind wheat

with diesel-powered mills, families about the cost of kerosene.

Only some of them appear to be aware of the danger posed by

the fumes of biomass and kerosene burnt inside small huts and

mud houses. Yet, most kitchens have dishes and other house-

ware soiled by smoke and oil, and the walls are covered in black

where the torches are.

As they go from town to town along dry-weather roads or among

the giant excavations made by Chinese companies to build major

roads in Ethiopia, other energy needs are reported to them: the

Gale Wargo health centre complains about lack of electricity to

treat patients at night, perform laboratory analysis and even

store medicine. Even the community life is hampered by the lack

of power: celebrations for children’s day at the gospel church of

Boko Kalehewota village took a significant toll on the church’s

budget due to the rent of a generator and the purchase of fuel

to power instruments and amplifiers.

Access to electricity could revolutionize the status of the region.

A few farmers, such as the Tantu family, have decided to invest

in it mostly through solar home systems. Yet, the main challenge

would not be to spread the technology for energy access, but to

be able to build a system which replicates itself. Elias’ job is

thus to start local enterprises which can install and repair solar

panels, and to support the businesses growing with access to

electricity. Developing a stable demand for electricity, it is going
to be the next challenge for Elias, Riccardo and the Tantus’

village community.
IN ETHIOPIA

The Omo river artificial basin, located in Southern Ethiopia.
Three young men on the excavations of new roads, on the hills near the Omo river. Building new roads is the precondition to extend the electric national grid, yet this leaves behind the unconnected villages.
A group of young Ethiopians in the Wolayita lowlands, before the beginning of a focus group with Riccardo Del Citto from Sapienza University.

Ethiopians in a day market in the Wolayita region. These markets are often overcrowded, due to the prohibition of night markets because of the lack of streetlights, which makes these nocturnal gatherings too dangerous for the population.
Riccardo del Citto discusses with the village community the malfunctioning of a small solar panel powering an emergency telephone line.

A focus group under a tree in the main square of a village, in the Ethiopian highlands.
A kerosene lamp used to light up a diesel-powered mill in the Wolaita region. Without electric power, kerosene is the most common fuel, despite the high costs and the dangers it poses to health.
A group of young Ethiopians in front of the Omo river banks.

A young Ethiopian man records a moment of a focus group organised by the Italian and Ethiopian managers in charge of the electrification projects, to understand the energy needs of the area.
In Ethiopia

A moment of prayer in the Gospel Church of Bako Kadiyoni. On National Children’s Day in Ethiopia, the local community had to rent a diesel generator for the special celebration during the mass.

A school in the Wolaita region, at the end of the school day for children. Without electricity, the building cannot be used at night for evening school for adults who work during the day.
An Ethiopian girl in a village in the south of the Wolayta region starts a fire to prepare dinner.

A group of Ethiopians waiting to hold individual meetings about their energy needs with Riccardo del Citro.
A woman from the villages of the Ethiopian highlands, during an individual discussion on the energy needs of her family.
When it comes to renewable energy transition, Kenya is one of the most advanced and promising countries in Sub-Saharan Africa. It is a story that starts from the chaotic streets of the capital and goes all the way to the furthest regions of a country almost twice the size of Italy.

One of the journey’s first stops takes us to a laboratory in Nairobi, more precisely the newly opened research department for renewable energies at Strathmore University. The lab’s ongoing work focuses on something that leading European and American research centers are missing: the particular characteristics of Kenya and of Sub-Saharan Africa. This is a large part of the activities of Sarah Anyango Odera, the woman who manages the centre together with other researchers. ‘European standards are set on average temperatures which are five to ten degrees below the Kenyan average’, she says. Light bulbs and other appliances are designed for a grid which is far above the possibilities of African consumption. ‘Here we do research keeping in mind the people who will use the electricity we provide’, she adds. This is the added value of developing renewables for Africa, in Africa.

These potential new consumers live in the countryside, but also in Nairobi itself. This is the case for Korogocho, a slum where 200,000 people live in an illegal dump smaller than 2 square kilometres, where toxic fumes constantly arise from burning waste. Electricity also plays an important role here: Michael Otieno and his sister Martha tell us that the neighbourhood has changed since street lights and electricity appeared. ‘Korogocho’s nights are less dangerous than they used to be five or six years ago’, they say, and people can now open small businesses, have hope for improvement, in a slum which had been ravaged by crime and unemployment for decades. Yet, more has to be done, since poverty still pushes people to steal electricity and share it (for a fee) with the neighbours: this is ‘mulikamwizi’, meaning ‘stealing to share’ in Nairobi slang. This is an issue which cheaper electricity can solve, and here transitioning to renewables could be the solution.

Yet, the most evident progress delivered by the renewable energy transition lies in the borderlands of Kenya. Talek, for example, is a town located a few kilometres away from Tanzania. It is Masai land, belonging to a people of breeders who refuse to cultivate crops and who have always had a transitional idea of property – they stay in a place for a few years, perhaps a generation, and then they simply leave. Talek Town is a crossing point which looks like an African Far West. A series of oddly named hotels, like the Deep Cooked or the Jamaica Hotel, welcome coach drivers, while the tourists arrive by car and go to the luxury lodges. They come by the hundreds during the migration period and represent a significant source of income for many people in town. Yet, tourism alone is insufficient to keep the town’s local economy running.

Thanks to a local mini-grid recently installed by GIZ, the German agency for cooperation, the economic situation here is changing. There are now small shops and businesses that now stay open late, as well as workshops for plumbers and electricians. Meanwhile, hotels have already started buying a few television sets and lights, brightly colored for outside and white for inside.

With the mini-grid, access to electricity has pushed the town’s economic growth forward, a process which would have otherwise taken longer through grid-extension. Even if tempted by the desire to move, many Masai people are still living on the borders of Talek, in farms often without electricity, and going back and forth to the market or to charge the phones they use to pay for all sorts of services. In a little hallway between the old main road and the stability of the town, in such conditions, a typical Masai like Dee Tome, who is also the chairman of the committee running the mini-grid, is still teaching his son how to kill a lion or how to handle a spear, because ‘those are things you need to know’.

Yet, change is already at the gates of Talek, and of Kenya.
The highlands of the Masai Mara park.
A technician working on the connection to GIZ’s mini-grid for one of the many mechanics of Talek.

Children playing at the gates of Talek, close to the repeater which gives a 4G coverage to the area.
The inside of the Seventh Wonder, one of the many bars which use the connection to the mini-grid to power fridges, lights and TV sets.

The Jamaica Hotel, a small hostel for the drivers who often go back and forth from Nairobi to the Masai Mara park, enlightened thanks to Talek’s mini-grid.
The sons and daughters of Dee Tome, a young Masai and chairman of the committee managing the mini-grid.
IN KENYA

A routine control of the solar power plant’s batteries in Talek.

A technician working on the poles of the photovoltaic power supply system of GIZ’s mini-grid.
A young driver and tourist guide to the nearby Masai Mara’s park, in Talek.

A young Masai girl outside her shop selling electric supplies to connect to the mini-grid.
An overview of the Korogocho slum from the opposite side of the dump.
Kevin Omondi and Emmanuel Omondi, two inhabitants of Korogocho, put on a light saving bulb, as requested by their landlord.
Sarah Anyango Odera, researcher at Strathmore University, and her colleague, testing innovative light bulbs at the Energy Research Centre’s laboratories.
Roaching the Ssese Islands takes three and a half hours of navigation through Lake Victoria on rough boats made of old Congolese wood. One of the most prominent islands is Kitobo, where the first impression is of lush vegetation: visitors are welcomed by palms and avocados echoing with toucans and monkeys. Upon landing, however, the islands show a different face: unexpected activity and the constant movement of both fishermen and new inhabitants, arriving to open small businesses and shops. Musoke Livingstone, the owner of all of Kitobo, says that upon returning from a two-week trip, he has already noticed ten new houses. The reason behind this dynamic transformation is a solar mini-grid plant which was built by the Italian company Absolute Energy. The plant has allowed for a stable and cheap electrical connection: electricity now costs one-third what it did when it was supplied by the diesel generator formerly powering the town, which was operational only at certain times of the day. This mini-grid is considered one of the most advanced in all Sub-Saharan Africa, and is composed of 880 solar panels of 250wp each, four vanadium battery packs (each as big as a container) and a back-up generator. All of this provides the stability needed by the population of the island, of whom 90% (circa two thousand people) are now connected to the mini-grid.

Life in Kitobo is now linked to energy. The small streets among the metal and wooden shacks resound with the noise of drills and electric saws working at all hours, and the Ugandan reggae music issuing from the bars. The small shops shine with the lights, stereos and popcorn machines they proudly display. Soon ice cream machines will arrive, too. Electricity is a novelty which is changing the shape of the island. It represents a fundamental aid to the development of the fishing industry, traditionally Kitobo’s main activity. Boats can be repaired even at night and be ready to leave before dawn. A stable connection will also enable the functioning of the much desired ice machines.

In addition to this, electricity is also key to diversifying the activities of the island, providing an alternative solution to the drastic decrease in fish, an unavoidable problem for many communities on Lake Victoria. Additional job opportunities also reduce the seasonality of work, which used to empty out Kitobo as the fish migrations changed. Investments in food processing machinery are increasing, as well as infrastructure to provide services to other islands in the archipelago, all without electricity with the exception of Bugala, the largest. Oscar Omdia, a local businessman, had long since planned to leave the islands because of the scarcity of fish and the hardship in developing new activities. Electricity arrived right before he packed, and now he has great plans for his life in Kitobo. Many are following Oscar’s path.

As a consequence, in a few years Kitobo could become significantly different from the pirate-style fishing cove that it is today. Many are considering constructing permanent buildings, and there is talk of building a central hospital also serving other islands. Not already today, the lights of the two cinemas shine brightly from inside their metal sheds, the town radio blares out across Kitobo, while people come and go on the pier crowded with white herons. All of this is a story of change that has started and has no intention of stopping, using only renewable energy sources.

IN UGANDA

LAKE VICTORIA’S OWN TORTUGA

Lake Victoria’s Ssese Islands
In Uganda

Kitobo at dawn, seen from the neighbouring island of Banda.
Ronald Bogere, a young fisherman of Kitobo, and his partner setting hooks ready for the morning fishing.
IN UGANDA

A typical household of Kitobo, seen from the windows of one of the four churches of the town. ▲

Francis Biapaloi, technician responsible for the connections between the mini-grid of Absolute Energy and the houses of Kitobo, working on one of the town’s poles.
Kitobo’s people in front of a shop selling MTM Mobile Money top-ups, the payment method via cell phone also used to pay electricity bills. Kitobo’s residents waiting for the opening of one of the several shops offering phone charging and DVD rental, which appeared shortly after the mini-grid started functioning.
Ndalike Kamhati, a customer service employee of Absolute Energy, during an evening check.

One of Kitobo’s main streets at night.
A fisherman from Kitobo heading offshore for night fishing.

One of the mechanics of Absolute Energy working at night, thanks to the electricity supply of the mini-grid.
Ronald Bogere having lunch in a cafe of the island while waiting to get back the nets he had released at dawn. One of the two cinemas in Kitobo broadcasting the European Champions League.
Geoffrey Mangali, a technician of Absolute Energy's power plant, heading towards the panels for a last check.
IN UGANDA

Geoffrey Mangali and Jonathan Makanga, technicians of the mini-grid of Absolute Energy, performing the routine cleaning of panels.
IN SOUTH AFRICA

THE FACES OF AFRICA

Landing in South Africa reveals a renewable energy transition that appears quite different than in the rest of Sub-Saharan Africa. Cities are lighted up and 86% of the population has access to electricity. Here, as well as providing access to those still without power, renewables are augmenting a system that is still unstable, when compared to Western countries. Unlike the mini-grids or solar home systems being implemented elsewhere in Sub-Saharan Africa, however, massive on-grid solar and wind power is a real possibility in South Africa, where the electricity network is far more developed than on the rest of the continent. The Northern Cape province, for instance, is an immense dry region whose few towns are scattered around the red-soil landscape, and which until a few years ago was served only by a couple of hydro plants. Now, landing in the small airport of Kathu, right below the Serengeti desert, provides a panorama of wilderness studded with shiny flats of solar panels: from above, the new solar plants look like small lakes, while from the ground they seem endless. The panels require the attention of engineers, who are often trained abroad in Germany, Italy or Spain, as is the case for Maxwell Sibayoni, an engineer at Enel Green Power’s Adams solar plant. While the maintenance work necessary for renewable plants is much simpler than it is for coal, it can be trickier for windmills than for solar plants. Repairing the 90-meter-high white towers on the windy shores and grasslands of the Eastern Cape, for instance, requires special technicians. Brian Galvin has quite a spectacular job: he started as a mountain climber, and now he travels the world to repair windmills and train local technicians — in this case Anwar Collins, a South African man from the province. They go up, fix their ropes, and then slowly float down to the blades. ‘After a few times it stops being scary and it becomes like driving a car’, Brian says.

In South Africa, solar and wind power are combating the temptation to use coal, which just four or five years ago was seen as the only option to extend the power supply and avoid costly blackouts for cities, mines and industries. And, besides its role in the energy mix, renewables are contributing to the difficult social transition that South Africa is still fighting from the apartheid period. ‘South Africa is still a pyramid’, says Kaabweze Dickaba, a young black entrepreneur from the Northern Cape region. She explains that everyone at the top has more than everyone else at the bottom, even though they represent the majority. ‘This is true for all resources in our country’, she adds, ‘including energy’. Cities, whose mostly white people live, have streetlights and power; in townships, where black people are, the electricity supply is less stable and they often live in the dark. In the countryside there is simply no electricity. Yet, power is needed for the development of businesses and agriculture, and for the amelioration of these areas hit by high rates of criminality and unemployment. This need could be satisfied by renewable plants, which are smaller than those powered by coal or gas, and thus can be decentralized to reach distant communities. As the supply of electricity from renewable energy sources becomes more abundant and cheaper, this could help even out the strong social differences in the country. The rise of renewables is part of a greater phenomenon, which could truly change Africa, and which is coming from Africans themselves. Kaabweze had almost fully qualified as a lawyer in Johannesburg while her business partner, Phenyo Mako, was already working as an engineer in a multinational pharmaceutical company. They both quit their job and came back to their townships near Kuruman, to start local enterprises and give something back to their community: hydroponic solar-powered farms, for instance, or alternatively, shiny bars in the townships to attract both white and black people. They are not alone; they say, and feel they are part of a movement bringing electricity, jobs and health services to the forgotten regions of Africa. ‘A movement’, Kaabweze says, ‘which in twenty or thirty years will change the face of South Africa, of Africa, and the world’.
IN SOUTH AFRICA

Brian Galvin, rope access technician on a wind turbine at Enel Green Power's wind farm in Gibson Bay, in the Eastern Cape region of South Africa.
IN SOUTH AFRICA

Wind farms between Gibson and Stryder Bay, Eastern Cape.
Farms near the town of Hankey, Eastern Cape.
A fully electrified township near Port Elizabeth, Eastern Cape.
IN SOUTH AFRICA

Lungile Kato, alias DJ Champ, in his house in Hankey, Eastern Cape.

A farmer working in a social farm sponsored by Enel Green Power’s Adams solar plant, providing food to the nearby Vergenoeg village, near Kuruman Town, Northern Cape.
IN SOUTH AFRICA

Sibahle Jessica Blouw and her friends and fellow singers. They live in the town of Hankey and often connect to the internet through the “Free Wi-Fi Connectivity” project sponsored by Enel Green Power’s Gibson Bay Wind Farm.

A young South African outside the library of Hankey, using one of the free Wi-Fi spots set in the town.
Performers during a community celebration in the Gantaelang village, in Gasegonyana local municipality of the Northern Cape.
Phenyo Nkoi, a young South African entrepreneur, with his collaborators in his hydroponic farm in the south of Kuruman Town, Northern Cape.

One of the staff members of Enel Green Power’s “Free Wi-Fi Connectivity” project in Hankey, Northern Cape.

IN SOUTH AFRICA
The workshop Ko Kasi at night, an alternative bar opened by Phenya Mico near the town of Katse, Northern Cape.
workers substituting a solar panel in Adams solar plant in Kathu, Northern Cape.

Brian Galvin descending from a wind turbine that he had just repaired in Gibson Bay, Eastern Cape.
IN SOUTH AFRICA

A decommissioned coal plant near Port Elizabeth, Eastern Cape.
A young man working at a car wash service in Kimberley, Northern Cape.

A diamond mine near Kimberley, Northern Cape.
The upper part of the town of Hankey, Eastern Cape.
A view of Port Elizabeth, Eastern Cape, from the old lighthouse.
The vision for 2030 – universal access to electricity

Envision a future not far from now, in which all 1.4 billion people living in the region of Sub-Saharan Africa in the year of 2030 have access to electricity. In this vision, every person has access to reliable and affordable electricity that powers everything from personal devices and household appliances, to public buildings and shared spaces. Access to electricity is undoubtedly transforming people’s lifestyles. Lighting in homes lengthens productive hours into the evenings, allowing children to complete schoolwork. Women living with electricity achieve household tasks with greater efficiency and safety, gaining the time to seek further employment. The option to charge phones, listen to the radio, and watch television more regularly strengthens family cohesion and builds communities. Businesses also thrive upon this baseline, avoiding financial and material losses caused by unexpected power cuts. In countless more ways, access to electricity transforms society radically. It serves as a cornerstone of economic development.

Access to electric transforms society radically. It serves as a cornerstone of economic development. People living in the region of Sub-Saharan Africa in the year of 2030 lack access to electricity, but also a region which has demonstrated promise to progress towards universal access in leaps and bounds. This SDG is aptly timed, as the region is poised for economic growth in the coming decades; gross domestic product is projected to grow at an annual average rate of 4.4% between now and 2030. Energy access is one of many puzzle pieces that must fall into place in order to unlock the region’s economic potential. Furthermore, Sub-Saharan Africa is now positioned to pursue energy access with a new paradigm. The region has the chance to bypass historic trajectory of first relying on polluting fuels and inefficient technologies, and move straight to deploying clean renewable supply and energy efficient technologies.

The reality of 2017 – signs of promise and room for improvement

This is a story of both impressive progress and immense work left to be done. In 2013, for the first time, Sub-Saharan African people gained access to electricity at a rate faster than the rate of population growth, meaning that the number of people without access to electricity in Sub-Saharan Africa has stopped increasing and since declined. This was brought about by an impressive tripling of the pace of electrification in 2012 onwards, relative to the rate between 2000 and 2012. Since 2000, at least 260 million people have gained access to electricity. Despite this turn-around, 590 million people – roughly 57% of the population – remain without access in Sub-Saharan Africa, such that it remains the largest concentration of people in the world without electricity access. It has been argued that just as there is a two-speed Africa in terms of economic growth there is also a two-speed Africa when it comes to electricity access. While the number of people in Sub-Saharan Africa gaining access has increased in recent years, progress has been uneven across the continent. The fastest disparity lies between the urban and the rural. Over 80% of those without electricity live in rural areas, where the electrification rate is less than 25%, compared with 71% in urban areas.

References

have flourishing off-grid markets providing access in rural areas. The number of connected customers has more than tripled in Kenya without access, and reliability can be a problem even in Kenya. It has also made good progress, with its access rate reaching roughly 30% in 2000 to 90% today, despite having a relatively low population density. In 2014, the government announced a national policy for developing off-grid solar energy, and by 2020, it is estimated that the population would have access to off-grid electricity. The expansion of off-grid solar energy has reduced the cost of access to electricity, and this is expected to continue as technology continues to improve. In Nigeria, which has one of the highest electrification rates among its neighbors, the electrification rate was about 11% in 2000 and is now 33% in 2016, up from 25% in 2000. Democratic Republic of Congo (DR Congo), which has the most electrified population of all countries in Central Africa, also has one of the lowest electrification rates – 15%. This means that roughly 88 million people are without access to electricity, and this number is increasing every year. This lack of access is a significant challenge, as it affects the hydropower potential, which could speed up the pace of electrification.

Finally, Southern Africa countries’ access for nearly a quarter of the population is electrified in Southern Africa. The average access rate in this sub-region is 62%, and the number of people without electrification has decreased since 2010. South Africa, which is one of the sub-regions with the highest GDP in the world, has an electrification rate of 97%, which is above 80% – Gabon, Mauritius, Reunion, Seychelles, Swaziland, and Zimbabwe. While others persistently see a rate below 25%.

The mini-grid market, which serve enterprises as well as households, has also made good progress, with its access rate reaching 6% by 2016. This rate has more than tripled since 2012. The mini-grid market is most developed in Nigeria, with a rapid increase in the number of connections. Over 30% of these people have access to mini-grids in Africa. The average access rate in this sub-region is 52%, and the number of people without access to electricity has decreased since 2010. South Africa, which is one of the sub-regions with the highest GDP in the world, has an electrification rate of 97%, which is above 80% – Gabon, Mauritius, Reunion, Seychelles, Swaziland, and Zimbabwe. While others persistently see a rate below 25%.

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while affordable, limit the level of energy services a consumer can attain. Failing off grid systems with queer efficient appliances allows consumers to maximize each kilowatt-hour of electricity and improves the affordability of energy access. Policy planning will also need to be forward-thinking: decentralized off grid systems prove to be effective in many countries at providing access to areas that are too expensive to electrify via the grid in the short or medium term. However, moving beyond a basic level of consumption is unlikely to require more energy than off grid systems can provide, and therefore require either mini-grids or grid connection, which also can usually offer less expensive.

Mini grids themselves can be integrated into large networks, if they use compatible equipment. This undermines the need to integrate the dynamic and integrated nature of energy access development, and the coordinated planning which takes account of energy to upgrade existing systems and integrate decentralized systems into the grid if and when the need arises, as is being done in Tanzania and Namibia. Adequate policy planning will enable Sub-Saharan Africa to harness the full benefits of low cost electricity access.

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governmental actors to implement the regulatory framework necessary for renewable energy projects to succeed in terms of both financial viability and operational feasibility. The government should also promote the development of financial instruments to support the renewable energy sector, such as risk-sharing mechanisms and investment tax credits.

The role of the grid

The grid infrastructure is crucial for renewable energy integration. The grid is the backbone of the energy system, allowing power to be transmitted from producers to consumers. A well-designed grid can enable the efficient and reliable integration of renewable energy sources into the power market. The grid must be able to handle the variability and intermittency of renewable energy sources, while ensuring grid stability and reliability.

The success of renewable energy integration is dependent on the grid infrastructure. The grid must be able to meet the increasing demand for electricity from renewable sources, while also being able to accommodate the integration of new renewable technologies. The grid must also be able to adapt to changing load patterns, which are expected to increase with the growth of the renewable energy sector.

In conclusion, the development of an enabling environment for renewable energy is crucial for Africa's energy transition. The policies and strategies outlined in this paper can provide a pathway for the successful deployment of renewable energy in Africa, contributing to the continent's sustainable development, economic growth, and energy security.

The complexity of the challenge

Sub-Saharan Africa has seen significant progress on electricity access over the past few years. However, the attainment gap persists, with universal access still an elusive goal. The region faces a wide range of stakeholders, technologies and business models. Past electrification attempts have shown the critical importance of pursuing tailor-made energy access strategies. Rethinking governance and regulatory arrangements, as well as the design of African-specific electrification paths coalescing into idiosyncrasies warranting the development of Design-specific frameworks for universal electricity access, as well as the key features of future appropriate governance and regulatory models.

Until the 1990s, the low priority given by colonial administrations to electrification led to several energy access rates as low as a handful of percent at the time of independence. Newly independent African states inherited an infrastructure for electrification that was characterized by a low level of development, with substantial differences across countries. Power grids remained underdeveloped for rural areas and their extension limited to major cities, industrial centers and mining installations.

Following the idea that the success model of electrification in industrialized countries could be translated as such in developing countries – the “one-size-fits-all” approach – African states quickly engaged after independence into large-scale programs for electrification, without the deployment of small and mini-grids in rural areas. These initiatives were the first attempts to address the issue of electrification and to extend electricity access to secondary cities and, to a lesser extent, to large villages.

A decade later, the oil shocks of the 1970s created a momentum for electrification. Electrification rates stagnated at low levels for electrification technology for each household, and (ii) the inability to pay of rural households. Moreover, the large proportion of non-electrified population relative to national population proved to be a major obstacle to the implementation of balanced cross-subsidization. In the absence of any credible alternative and based on the experience of industrialized countries, grid extension, grid extension remained the only electrification strategy in Sub-Saharan Africa until the late 1980s. A decade later, the oil shocks of the 1970s created a momentum for off-grid renewable technologies. Solar energy systems – based on the electrification of small urban centers and remote rural regions. However, solar power projects had not reached high levels of reliability and cost competitiveness at that time, and the regulatory arrangements were not oriented towards higher level of electricity services and tariff structure. In contrast to the traditional donor and government-driven model of electrification, Mini-grids also benefited from cost reduction and higher technology adoption, although to a lesser extent. While their economic viability remains a major obstacle, it is also subject to the presence of local anchor loads, mini- and micro-grids both hold the potential to bridge the energy access gap in Sub-Saharan Africa.

In practice, it is not until the 2010s that a conjunction of technological, financial and regulatory developments of idiosyncratic African electrification paths coalescing into idiosyncrasies warranting the development of Design-specific frameworks for universal electricity access, as well as the key features of future appropriate governance and regulatory models. Past electrification attempts have shown the critical importance of pursuing tailor-made energy access strategies. Rethinking governance and regulatory arrangements, as well as the design of African-specific electrification paths coalescing into idiosyncrasies warranting the development of Design-specific frameworks for universal electricity access, as well as the key features of future appropriate governance and regulatory models.

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Following the idea that the success model of electrification in industrialized countries could be translated as such in developing countries – the “one-size-fits-all” approach – African states quickly engaged after independence into large-scale programs for electrification, without the deployment of small and mini-grids in rural areas. These initiatives were the first attempts to address the issue of electrification and to extend electricity access to secondary cities and, to a lesser extent, to large villages.

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In practice, it is not until the 2010s that a conjunction of technological, financial and regulatory developments of idiosyncratic African electrification paths coalescing into idiosyncrasies warranting the development of Design-specific frameworks for universal electricity access, as well as the key features of future appropriate governance and regulatory models. Past electrification attempts have shown the critical importance of pursuing tailor-made energy access strategies. Rethinking governance and regulatory arrangements, as well as the design of African-specific electrification paths coalescing into idiosyncrasies warranting the development of Design-specific frameworks for universal electricity access, as well as the key features of future appropriate governance and regulatory models.
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Inclusive: any new governance and regulatory framework, and the resulting business models, must safeguard the objective of universal energy access, acknowledging varying levels of electrification. While ensuring affordability for local population and profitability for electricity providers. While strong political and social pressures have maintained electricity prices at low levels, usually by legal or financial means. New models should include strategies tailored to specific national conditions.

In some countries, mini-grids and stand-alone systems might be for some time the preferred option for a sizeable proportion of the rural population, due to their low cost and lower access tiers to full access, either on or off-grid, nor to co-ordinated electrification planning with overall economic planning. Despite the many difficulties experienced today, distribution infrastructure projects associated with productive uses. On the other hand, by enhancing the synergy with productive uses of electricity, the opportunities for cost reduction and increasing revenue collection are multiple.

The “Electricity Company of the Future” (ECoF) is the IDC, plus other activities that might be added depending on the circumstances. The ECoF in its broadest rendering, including network assets and associated growth in demand. Investment opportunities will be on renewable technologies. This model has worked for it, and will continue to do so under the right conditions for a viable business model that have become mainstream during the last two decades.

Some large generation investments are essentially justified if there is in-\nternship training for stakeholders, especially for the last mile. The new generation is consumer-centered and it will make use of advanced technologies for that purpose, making a difference with the current situation in the distribution sector: the distribution activity recognizes the different nature (risk profile, asset ownership, etc.) of the two business segments: the current incumbent distribution company is essentially a delivery company, outsourcing all technical activities and responsibilities in the incumbent (typically pub-licly owned) distribution company can only be possible with a large private energy firm with sufficient financial resources. The ECoF will benefit from the application of sound regulatory practices. In particular, it is important that the remuneration of the distribution activity takes into account different risk profiles and the costs of network expansion.

The ECoF will be consumer-centered and it will make use of additional technologies for that purpose, making a difference with the current situation in the distribution sector: the distribution activity recognizes the different nature (risk profile, asset ownership, etc.) of the two business segments: the current incumbent distribution company is essentially a delivery company, outsourcing all technical activities and responsibilities in the incumbent (typically pub-licly owned) distribution company can only be possible with a large private energy firm with sufficient financial resources. The ECoF will benefit from the application of sound regulatory practices. In particular, it is important that the remuneration of the distribution activity takes into account different risk profiles and the costs of network expansion.

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Energy access started to be recognized as an important driver for development and growth, gathering particular attention in the second half of the twentieth century. Post 1950, many newly independent countries were trying to understand the challenges that lay ahead (Branding Conference, Non-Aligned Movement, Afro-Asian Solidarity) and what to make of the new world order. On the other hand, by the 1960s the countries such as the United States were already benefitting from electrification through growth and were vastly expanding access over to the vast populated mid-west. For brevity, we refer to the former group of countries as ‘The North’ while distinguishing from ‘The South’, the wealthier countries.

Referring to the period leading up to the 1950s, economists Piazzesi and Romer (2004) made the electricity case for the probability of usefulness in the factories to be restricted away from the natural potential of the new energy sources. Perhaps, this was to note the role of other advances, such as these in automobiles and trains, which we equally well recognize as part of the engineering and technology. While some of them can be noted as the starting points of the electrically driven economic growth in The North, as opposed to some key drivers of economic growth, Ayoo and Wang (2013) go further to claim that the efficient thermodynamic conversion of heat into useful work, is a third important driver.

Some countries of The South such as Indonesia, Tunisia, and Vietnam made rapid progress with electricity access reaching well over 50% to 90% across the board. Access rates were however below 20% in Sub-Saharan Africa and below 50% in South Asia at that time. At the UN Summit in 2000, the Millennium Development Goals (MDG) were adopted. These 2000’s Goals for the year 2015 were adopted. The 2000’s Goals were to address the levels of energy poverty and improve access to energy. The 2000’s Goals were to achieve universal access to modern energy services and ensure access to affordable, reliable, sustainable and modern energy for all. The ambitious task of ensuring access for all still sits high on the priority list of global climate change commitments. Hence, the one of the first priorities is to achieve equal access. As a result “Sustainable Energy for All” was launched in 2012. On the first day of 2016, UN Secretary-General Guterres adopted 17 Sustainable Development Goals for the year 2030 and included a specific goal for energy access. The new 2030 Agenda for Sustainable Development has a clear focus on access to reliable, affordable, sustainable, and modern energy for all. While the advanced task of ensuring access for all holds the highest rank on the list of global climate change commitments, it is clear that not all countries in Sub-Saharan Africa or South Asia are able to meet the targets. Also, the achievement of targets is a very important task. The targets are complex and require a long-term strategy to ensure that access is available, affordable, and sustainable. The targets are also interconnected with other targets such as health, education, and economic growth. Hence, it is essential to ensure that access to energy is achieved in a way that is sustainable and equitable.
Africa holds a significant potential for development, which is strongly connected to energy access. Today the continent counts 1.2 billion people, with 600 million of them living without access to energy or relying on biomass such as charcoal, and isolated fossil fuel gets to satisfy basic energy needs. As the African population is expected to grow by 40% reaching 7.1 billion people by 2050, energy poverty rates would consequently result in the same number of people projected to lack energy access by that time. Renewable energy (RE) plays a key role in this issue, and a predictively make up about two-thirds of total capacity additions being responsible for three quarters of the region’s energy demand by 2030. As illustrated by the United Nations Sustainable Development Goals (SDGs), access to clean, affordable and reliable energy (SDG 7) has a bouncing effect on many other aspects of development, from health, education to economic growth and gender equality. This is particularly true for Sub-Saharan African countries, which today represent the vast majority of people living without access to electricity. In these contexts, decentralised renewable energy solutions are instrumental to provide households electricity access to independent villages and are a key to kick-start local development. Over Sub-Saharan Africa’s vast geographical expanse and relatively underdeveloped grid infrastructure, off-grid systems are one of the most viable means to meet this challenge. Thus, where communities are generally too distant to be economically connected to the main grid, but are still densely populated enough to offer Siemens of scale in power delivery, stand-alone and mini-grid solutions are expected to meet 70% of the demand of newly connected customers over the next 25 years. Renewable mini-grids specifically are defined as integrated systems which integrate mini-hydro, micro wind, photovoltaic or mini-hydropower generators. These systems usually contain an energy-storage component such as an electrochemical battery, a diesel backup generator and a distribution network to connect such single user.

Due to their inherent characteristics, renewable mini- and grid distributed generation not only provide the electrification of households but also play a key role in enabling energy access for productive uses. Firstly, in most remote areas, renewables can generate power through mini-grids at a significantly lower cost than through diesel generation or grid extension, making them more accessible and affordable. They are also faster to be deployed and, typically respond to the population’s immediate energy needs: the installation of a mini-grid, for example, can be completed in less than one year. Given that mini-grid plants are directly related to the local necessities and usage conditions, they also result to be socially and environmentally sustainable.

However, it is their modularity and flexibility that makes mini-grid technologies particularly suitable when it comes to designing a profitable and financially sustainable model for development. This means that the power of a mini-grid plant can be easily increased according to the growing energy demand in the community.

Main barriers to mini-grids deployment

Scaling up the deployment of mini-grids still suffers significant constraints, such as; i) their high upfront costs, ii) permitting processes and iii) low energy demand in rural areas. A clear regulation system is needed in order to allow ESCOs (Energy Service Companies) or EPs (Independent Power Producers) to sell energy to final users, and to easily define a tariff that covers long term investment costs. As – since it is the case for many countries – the energy market is state-owned and managed, ESCOs and EPs are anxious about the lack of regulatory framework and the high perceived risk of small-grids. However, this scheme is not scalable and can only be sustained until the end of the mini-grid’s life cycle or if additional grants and funds provided by external donors, thus reducing the upfront capital investment costs, can be used to cover the operating costs and eventually lowering the tariff of the energy sold. How- ever, this scheme is not sustainable and can be only used until the power of the mini-grid plant can be easily increased according to the growing energy demand in the community.

Mini-grids for better access

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The shift to approaching development from a more integrated point of view, influenced in part by the SDGs, is changing the view of energy’s role in development and the provision of energy services. Access to sustainable energy plays a key role in unlocking Sub-Saharan Africa’s vast potential for economic development, and impacts many aspects related to it. Strategies to unlock these challenges require a ‘multi-utility company’ capable of managing the entire expanded value chain (comprising the energy, water and agri-food sector). This new entity would be able to scale, diversify and focus its investment according to the most fruitful activities, thus dramatically reducing risk. In addition to these elements, the modularity and flexibility of mini-grid technologies would help to gradually follow the economic and social growth pathway of communities, counteract the cost and risk of high-risk projects.

Partnerships and collaboration are fundamental to achieve the SDGs, and a multi-stakeholder inclusive approach can leverage the existing barriers to RE decentralised investments by generating value from different sources. Broadening the focus beyond energy supplies towards productive uses of energy, including water and food, can create a stronger business model for investors and a greater impact for policy-makers to improve access to electricity and foster economic growth.

The way forward

Open Africa

This book, a RES4Africa project in collaboration with Enel Foundation, aims to increase the engagement of stakeholders from continental and regional organizations, to governments, civil society, the private sector and academia on the African continent and beyond, in order to drive effective and long-lasting progress on advancing sustainable energy in Africa. This continent’s transition to sustainable energy requires far-reaching infrastructure improvements that could potentially unlock enormous economic, social and environmental benefits.

The Open Africa project is inspired by the outcomes of the G7 Energy Ministerial, which was organized in Rome in Spring 2017, in cooperation with the Open Africa Power. Knowledge sharing plays a pivotal role in supporting the ongoing African sustainable energy transition that is visually represented in this book.

With this printed version and the parallel web documentary we hope to broaden the awareness and the commitment of policy makers, stakeholders and investors to help achieve universal energy access, strengthen energy security, consolidate resilient growth, trigger socio-economic benefits such as job creation and inclusive development, and improve prosperity and stability in Africa.

The Open Africa project is inspired by the outcomes of the G7 Energy Ministerial side event “Africa 2030: Empowering the continent through innovation, green technologies and capacity building” organized in Rome in Spring 2017, in cooperation with Enel Foundation. Both initiatives reflect Enel Foundation’s long-standing commitment to local capacity building, with educational programs directed to young professionals at the Advanced Training Course and the Micro-Grid Academy, and to PhD students at Open Africa Power. Training and capacity building are pivotal to promoting medium and long-term investments. Off-grid renewable energy solutions can be deployed in many areas far cheaper and quicker compared to grid-extension. They provide leapfrogging opportunities for energy access, and can significantly improve African livelihoods.

It is imperative to showcase innovative African solutions, business models, and players to help scale up investments in projects and initiatives that bring energy to hundreds of millions of Africans. This objective should be strengthened multi-stakeholder collaborations among private sector actors, African institutions, innovative local startups and civil society to ensure the continuation of Africa’s innovative development.

Secretary General, RES4Africa

Roberto Vigotti

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RES4Africa

Renewable Energy Solutions for Africa (RES4Africa) promotes the deployment of large-scale and decentralized renewable energy solutions in Sub-Saharan African countries to meet local energy needs. RES4Africa’s mission is to create enabling environments for renewable energy investments in emerging markets. The association gathers the perspectives of a member network from across the sustainable energy value chain. RES4Africa functions as a platform for members and partners of emerging markets to foster dialogue and partnerships, share knowledge, and build capacity to advance sustainable energy investments in emerging markets.

res4africa.org

Enel Foundation

Enel Foundation is a knowledge platform that focuses 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 for 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. We develop scenario analysis, define policy and regulation opportunities and design capacity-building programs to the benefit of 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 aiming to converge with likeminded actors determined to solve global challenges ensuring a sustainable future for all.

enelfoundation.org

Akronos

The aim of the association “Akronos” is to bring together institutions, private companies and the general public through art and culture. Its specific targets are to design and realise high quality multimedia projects, through which the partners of the association can tell their stories and approach a wider audience. Akronos produces photographic and journalistic books, exhibitions, video projects, workshops, concerts and events, with specific attention to the web documentary as a new and innovative form of journalistic communication.

akronos.it

The project

This book and its complimentary web documentary are a RES4Africa initiative in partnership with Enel Foundation and Akronos, that aims to visually illustrate how access to sustainable energy in Africa positively impacts African livelihoods. The book’s narrative is recounted through a series of local stories captured in Ethiopia, Kenya, Uganda and South Africa, as well as testimonies from international experts in the field of sustainable energy. The objective is to portray a continent with a vast potential for growth, on the path to achieving sustainable development through renewable energy.

The Authors

Riccardo Venturi is an internationally renowned photographer with over thirty years of experience. Winner of the World Press Photo, Sony, Pictures of the Year and many other prizes, he documented some of the most dramatic moments in contemporary history, focusing most of his work on African countries. He has published eight photo books among which is Haiti Aftermath, on the consequences of the Haitian earthquake.

Lorenzo Colantoni is a journalist and video maker, specialized in energy, climate change and the environment. He has been awarded the 2016 Premio Tutino and the 2018 Premiolino for his work with National Geographic on Italians abroad. He is also a researcher at the Istituto Affari Internazionali (IAI) in Rome.

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RES4Africa Secretariat – Anna Adragna, Chiara Albera, Marco Aresti, Neimat Khatib, Luca Marena, Andrea Micangeli, Daniele Paladini, Flavia Pezzano, Luca Traini.

Contributing authors – Andrea Baronci (Enel Green Power), Olivia Chen (IEA), Joao Duarte (Enel Foundation), Vincenzo Franza (Enel), Grégoire Jacquot (Massachusetts Institute of Technology / Comillas Universal Energy Access Lab), Carlo Papa (Enel Foundation), Josefina Stubbs (Enel Foundation), Alain Wormser (Enel Foundation).

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The views expressed are solely those of the authors.

The photos on page 42, 48-49 show the solar mini-grid plant of GIZ in Talek, Kenya. The photos on pages 68, 74-77 show the solar mini-grid plant of Absolute Energy in Kitobo, Uganda.

The complimentary web documentary version of this photographic book is available on www.openafrica.it.