WHITE PAPER

RES4AFRICA

RENEWABLE ENERGY SOLUTIONS FOR AFRICA

Beyond the energy approach for sustainable development in Africa

In the framework of the G7 Energy and Environment Ministerial Meetings and under the auspices of the Italian G7 Presidency, RES4MED-RES4Africa cooperates to host side events dedicated to Africa, with the main purpose of analysing the status of the power market and facilitating the dialogue on how to accelerate universal energy access in the continent, contributing to the achievement of Sustainable Development Goal #7.

The events will rely on an interactive exchange between relevant stakeholders from both African and G7 countries belonging to national governments, multilateral development organizations, businesses, academia, civil society and the Italian Agency for Development Cooperation (AICS). Participants will have the opportunity to discuss ideas, policies, regulatory improvements and share experiences on how to **improve access to energy, strengthen energy supply, improve energy efficiency, create job opportunities** and **consolidate** the growth of local economies in the African rural and urban contexts.

With this White Paper, RES4Africa aims to provide input for one event focused on **"innovative solutions for a secure and sustainable energy access"** and, in particular, on the **productive use of energy** as a driver to achieve social and economic development in Africa.

Photo Riccardo Venturi – www.akronos.it

RENEWABLE ENERGY SOLUTIONS FOR AFRICA

RES4Africa - **Renewable Energy Solutions for Africa**
is the leading platform for public-private dialogue in the sub-Saharan African renewable energy context. A network of key international energy stakeholders – utilities, industries, agencies, technical service providers and top academia – engaged in promoting clean tech solutions in the sub-Saharan continent. RES4Africa is a spinoff project of RES4Med association. The mission is to support the deployment of renewable energy – both large scale and distributed energy – and energy efficiency solutions as well as their integration in local and regional markets to satisfy local energy needs. RES4Africa builds sustainable energy partnerships with a "bottom-up" approach to propose solutions customized to local contexts. RES4Africa encourages the set-up of partnership formulas that provide decision makers with private sector perspectives to stimulate investment opportunities along the entire supply chain through networking activities for market operators, industry associations and other key stakeholders.

Green Power

EGP - **Enel Green Power**
is the Enel Group Company that develops and manages energy generation from renewable sources at a global level, with a presence in Europe, the Americas, Asia and Africa. EGP is a major global operator in the field of renewable energy generation, with an installed capacity of 36 GW, a generation mix that includes wind, solar, hydro, geothermal and biomass and a footprint in 19 countries. Named in the top five of Fortune magazine's "Change the World" list in 2015 for leading a renewable energy revolution, the Enel Group owes its high placing to both its well-balanced generation mix and its policy of making zero carbon emissions a priority. In an effort to ensure a renewable energy supply that is available to all and sustainable over the long term, EGP has explored business models and technologies to improve access to energy and foster social and economic development for isolated rural areas in sub-Saharan Africa and Asia.

OUR FINDINGS IN BRIEF

Addressing rural electrification in sub-Saharan Africa

Over the past 12 months, RES4Africa and EGP have extensively researched off-grid renewable energy solutions for increasing access to energy in rural communities with unreliable or no access to the grid. Technology scouting, field explorations and experiments with private and NGO partners allowed for gaining an in-depth understanding of available technologies, local contexts and the unmet needs of the communities.

Are we solving the right problem?

The insights of this research effort reveal a more complex challenge to tackle rather than focusing solely on the electrification issue.
The reality is that easing rural communities' access to electricity without addressing and fostering their social and economic development is a dead end. For too long, the off-grid energy industry has worked in isolation by providing "just the technology". Time is ripe for changing the approach, thereby linking together energy access and local development in a more holistic and cross-sectoral way.

Partnering for mutual success

RES4Africa and EGP strongly believe in this comprehensive approach, and together they have generated preliminary ideas on how to embed off-grid renewable solutions into larger systems. In order to be implemented successfully, the ideas and recommendations outlined in this paper call for new collaborations and partnerships with interested private companies, NGOs, the public sector and local communities.

SUB-SAHARAN AFRICA: A GREAT POTENTIAL...

...STILL UNEXPRESSED

Young and growing population

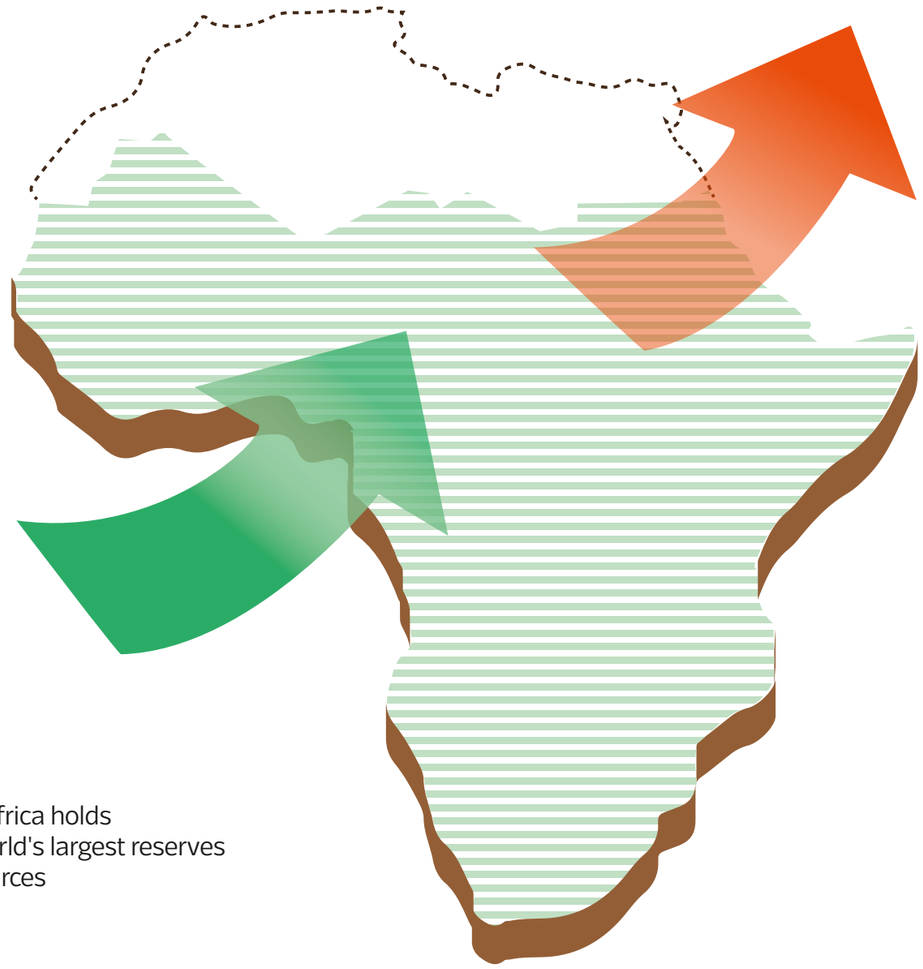
2010/2015
+14,56%

2034 **1,1 BILLION**
working age population

Improvement of life expectancy

2000
50,30 YEARS
2014
58,60 YEARS

+8 YEARS



Education

80%
Universal **primary education**
almost achieved

Resources

Africa is home
to the majority of the world's
unutilized agricultural land

Sub-Saharan Africa holds
many of the world's largest reserves
of natural resources

International Aid

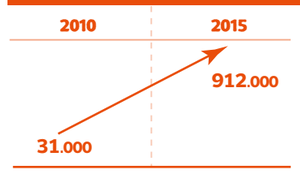
International aid and development funding have strongly grown in recent years
13,01 billion USD in 2000
46,55 billion USD in 2014

Main sources: United Nations, World Bank, African Development Bank

Oil exports

Since 2010,
decelerating growth
in oil exports

Sharp increase of emigration flows

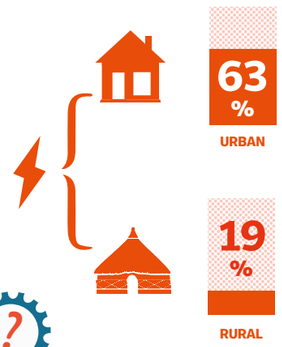


Power shortage

2-4% negative impact on GDP

More than 632 million people without access to electricity

Electrification rate: urban vs rural population



Lack of skilled labor force

Gross enrollment ratio
for tertiary education
is still growing too slowly

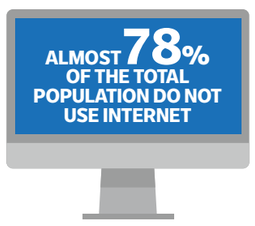
7,9 % in 2010
8,6 % in 2015

Procedures

Local entrepreneurship is held back by lengthy and costly procedures

27,3 days
is the average time
to complete
the registration

54%
of the average annual
income per capita
is the cost of registration



Communication Gap

Almost **78 %** of the total population still **do not use internet**, even if the rate has grown from **9,8** to **22,4 %** between 2010 and 2015

Time to rethink the private sector approach

The next boom continent: a dream perpetually around the corner?

According to the International Monetary Fund, Africa is projected to be the world's second-fastest growing region by 2020. With a young population, abundant natural resources and one of the world's fastest urbanization rates, Africa seems to have all the necessary ingredients to prosper. Despite strong economic fundamentals, companies and local governments will need to work harder to realize Africa's full potential. African markets still face inherent barriers that discourage investment and business growth. After initial tests and some failures, they have decided to leave the continent. However, successful innovative companies contribute to paint a more hopeful picture.

Who is succeeding in Africa?

The notable successes of some start-ups and local entrepreneurs have found a path where multinationals have repeatedly hit a wall. How? By adopting a holistic approach that does far more than providing products or services. Successful companies listen to the communities, explore their needs and join forces with other players to reduce risks and offer solutions that create sustainable development opportunities. Every profitable and sustainable business needs strong community engagement, not only to create demand for its products, but also to provide critical assets and a supportive environment.

Access to Energy: it is not just about technology, it is about the surrounding system

Urgency for a change in the approach is more than ever relevant for our sector. The off-grid solar industry, that barely existed a few years ago, has tried to tap the opportunity of Africa's vast market of unconnected people. Yet, unsuccessfully. With a traditional "single-game player", off-grid solar companies have entered Africa's market by pushing their own technology. However, inadequate levels of demand from the served communities posed serious challenges on the business profitability. As a result, most players had to rely substantially on financial aid or government subsidies.

VIRTUOUS CYCLE

PRIVATE SECTOR

The private sector provides more than just products or services. Guided by an exploratory framework, it analyzes the community needs and its growth potential in depth. By adopting a holistic approach, the private sector creates solutions that are tailored to the needs of the local communities. This in turn creates jobs and local development opportunities.

LOCAL COMMUNITY

Empowered with new skills, technology and services, the local community can start new economic activities and improve the productivity of existing ones. This in turn creates increased demand for companies' products and services in a sustainable way.

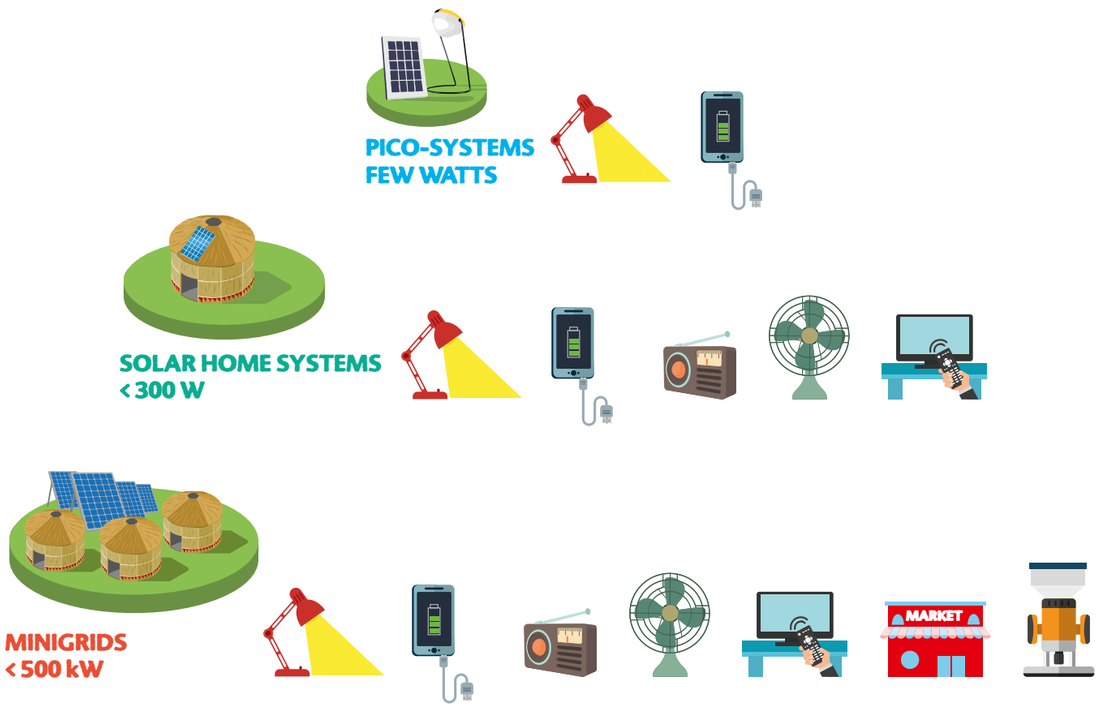
HARNESSING ENERGY TO TRIGGER ECONOMIC DEVELOPMENT

Energy: necessary but not sufficient

Current systems can already light up small shops and service businesses, such as hairdressers, in rural villages. Some companies are working on scaling them to provide power also to small farms. But even so, off-grid solar power alone will not start up the economic and social growth in the served communities.

Recent publications and our experience demonstrate that a successful business strategy should do more than providing clean, affordable off-grid renewable energy. Electrification is an integral part of the equation to support and empower local communities and needs to be coupled with quality inputs such as education and capacity building, access to markets, machinery and equipment and information, that in turn will unleash the productive capacities that can create local economic development and transform communities.

OFF-GRID SYSTEMS



Three actions to overcome main barriers and put rural communities on a path to sustainable growth

First, triggering economic development requires a wider definition of electricity access that includes basic services (e.g., lighting) as well as energy levels for productive use. In rural villages with low electricity demand, **energy access should be approached as a journey** and not as a quick fix for immediate needs. Renewable energy can put local communities on a rapid, cost-effective sustainable development path, while adapting over time to their evolving needs, which can eventually integrate with long-term solutions (i.e., grid).

Second, **off-grid renewable energy technologies must be embedded into holistic solutions** primarily supporting the economic development of rural areas. By increasing access to inputs, sharing technology, developing skills and providing financing, local productivity can be substantially improved. To this end, joining forces with other players becomes a must.

Third, **local communities must be an integral part of the solution.** From listening to their voices and exploring their needs, to involving them in the customization and delivery of solutions. The industry's field of vision is still too narrow. Off-grid energy players should focus their attention on the broader socio-economic environment surrounding their operations and endorse a community engagement strategy.

Our idea for a "Renewable-energy-powered Community Business Hub"

Our Call for Collaboration

When something is told often enough, it becomes easier to believe. Few things have been repeated for so long as the axiom: the low-income customer segment in Africa is unprofitable and risky.
Our research and experience in the field show that this is not entirely true.
Africa has vast untapped potential, and best-practice examples - mainly start-ups and local entrepreneurs - demonstrate that it is possible to operate successfully in its markets.

To succeed, off-grid renewable energy companies will have to adopt a holistic approach.
Going beyond the provision of a technological solution means harnessing renewable energy sources not only to provide light, but also as a catalyst to create employment, to boost income for the rural poor and to provide sustainable solutions within local communities.

Such an unprecedented transformation will not happen all by itself. It can only be made possible with a concerted effort from private sector, Government, civil society and in equal measure from local communities.
With this paper, we aim at promoting "action".
We are looking for partners interested in experimenting new ways of triggering a cycle of business and community prosperity, which can lead to enduring profits and benefits.

The time is ripe to make a meaningful impact. Do you want to join us?

WHITE PAPER CONTRIBUTORS

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