

RENEWABLE ENERGIES: Africa's untapped leapfrogging potential

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Women collecting fuel wood, Ghana.
Image © Nathalie Bertrams.

'THE RAPID EXPANSION OF RENEWABLE ENERGIES ACROSS AFRICA WILL HAVE A POSITIVE IMPACT ON THE WORLD AT LARGE'

ENERGY IS ONE of the key stones for social and economic development and affects all its major aspects such as environmental protection, gender equality, food security, climate change mitigation, health, education, and poverty alleviation. This is why access to affordable, sustainable modern energy services - electricity as well as thermal applications - is a major determinant for progress in achieving poverty reduction and the attainment of the millennium development goals (MDGs) in Africa.

According to the International Energy Agency (IEA), almost two thirds of the African population of one billion people have no access to electricity. In rural areas of African countries, the share of people with access to modern energy services is as low as eight percent. Only 4 percent of the worldwide produced electricity is generated on the continent. On average, Africa consumes about 492 kWh per capita compared to the EU with over 3,000 kWh and the US which consumes 7,700 kWh per capita. With a total installed capacity of 103 GW, Africa

has less power generation capacity than, for instance, Germany with 120 GW. Of these 103 GW, 46 percent are located in South Africa and 34 percent in Northern Africa [JRC 2008].

Despite its fast growing population and economies demanding ever more energy, the high and ever increasing costs of fossil fuels lead to a situation where 80 percent of the African population still relies primarily on traditional biomass, including fuel wood or charcoal, agricultural waste and animal dung to fulfil their daily energy needs. The consequences of the lack of access to modern energy technologies are severe. Because of the inefficiency of traditional energy forms, the poor often pay higher unit costs for energy in comparison. In many cases, fuels are burned in poorly ventilated or enclosed spaces leading to indoor air pollution. The World Health Organization (WHO) estimates that 400.000 mainly women and children in Africa die of indoor air pollution every year. Through unsustainable use of biomass, Africa is losing more than four million hectares of forest every year – twice the world's average deforestation rate, which makes the continent even more vulnerable to the effects of climate change. A large percentage of household incomes is spent on energy for electricity and cooking (diesel, kerosene, charcoal, etc.). At the same time, women invest a substantial amount of productive time in collection and transport of fuel wood.

In order to reach the energy poor, political and business concepts for sustainable energy services will have to be developed. Renewable energies can contribute to a large number of political objectives, such as job creation and poverty eradication, a sustainable use of resources, the protection of both human health and the ecosystem. This is particularly true for small to medium scale renewable energy systems that provide affordable energy to livelihoods currently defined by energy poverty, and help in creating employment by powering enterprises for both rural and urban populations. The rapid expansion of renewable energies across Africa will have a positive impact not only on the African people, its economical progress and the protection of its environment, but also on the world at large, leapfrogging the fossil fuel based development of the industrialized countries. Energy services have a significant role in facilitating both social and economic development – energy underpins economic activity, enhances productivity, and provides access to markets for trading purposes. In addition, it enables fulfillment of the basic



Production of solar home systems, Bangladesh. Image © Nathalie Bertrams.



Solar powered mobile transmitter, Morocco. Image © Nathalie Bertrams.

human needs of nutrition, warmth, and lighting; and enables access to education, health, information and communication services. The shift from fossil fuels to renewable energies across Africa also has the potential of giving a boost to the achievement of all eight UN Millennium Development Goals (MDG).

Generally, almost all African countries are going through severe energy crises, as energy demand increases more rapidly than energy supply. The continent's future energy production and consumption are expected to soar. However, infrastructure is poor and outdated, resulting in high efficiency losses. Deficient power infrastructure dampens economic growth and weakens competitiveness by having a disadvantageous effect on productivity. In addition, skyrocketing prices for fossil fuels and huge costs for nuclear power plants (as well as issues of hazardous waste, mining and operations) leave

societies with little alternative to renewable energies. In many cases, large scale hydro power projects are no recommendable alternative considering their negative environmental and social impacts. Since an overall energy scarcity has resulted in high costs for transport and industrial/commercial sector operations in most African countries, sustainable economic growth can only be achieved on the basis of renewable energy provision for industries.

Also, empirical evidence has shown that the diversification of electricity production in African countries such as Kenya or Mauritius, resulted in a stabilization of the power sector. Africa's vulnerability to external shocks, the risks related to volatile prices for fossil fuels and droughts in the case of large hydro power capacity were reduced without high subsidies or increases in the electricity price.

By now, many renewable energy technologies have reached competitive levels with conventional energy sources. In order to meet the energy needs of African people in the future, massive new investments will be required in the coming decades. The investment decisions will decide upon the structure of their energy systems in the next 30 to 40 years. Therefore, we will have to use this window of opportunity to transform the national energy systems from large-scale conventional power plants to decentralized renewable energy technologies. These offer great economic potential in an expanding market, as the renewable energy resources in Africa have hardly been exploited, mainly due to limited policy interest and investment levels.

Business is a main driver of development. One recent example is the massive success of the mobile phone market in Africa which is exceeding all expectations. New technologies, a huge demand and the liberalisation of the telecommunications sector, supporting active competition, revolutionised the market drastically and led not only to improved service delivery and quality but to a surge in overall business activities. Drawing on this success story, individual entrepreneurs as well as major corporations offer demand driven, tailor-made energy services in Africa – applications from solar home systems providing basic lighting to wind farms powering industrial production. Innovative financial schemes are being developed; new distribution and service networks are established to guarantee maintenance. In addition to the activities of the private sector, communities and municipalities have begun to decide on alternative energy provision, fostering social stability through local empowerment and public participation.

Africa's energy challenges require a radical scaling-up of access which calls for an improved enabling environment, effective policy and regulatory frameworks, improved management capacities and financial services. Keeping in mind the unlimited renewable energy availability, there is a huge opportunity in directing investments into clean, efficient, renewable energy for the growth of a green economy in Africa. ●

FURTHER INFORMATION

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