

# ENERGY SECURITY IN AFRICA WITH RENEWABLE ENERGY

*By Preben Maegaard, Chairperson, WCRE, World Council for Renewable Energy; Director, Nordic Folkecenter for Renewable Energy, Denmark.*

More than any other continent, Africa needs an energy revolution and independence from the international fossil fuel economy; a change to renewable energy and energy autonomy is paramount for survival. Africa depends largely on the import of fossil fuels to meet a significant and growing part of its modern energy needs, which has created perverse effects on the economy and lives of Africans. Renewable energy is the only viable alternative that has the potential, when properly managed, to improve quality of life on a national and continental scale.

The current sky-high oil prices are disastrous for the fragile economies in most African countries. Already with the much lower oil prices of the past, several African countries were spending half of their foreign trade expenditure for the import of oil. With oil prices doubling and US\$ 200 per barrel in a foreseeable future, the misery we already see in Darfur and other regions will spread and people will suffer and continue to bleed.

## **Energy Rich Africa**

The end of the fossil oil era has the potential to foster energy innovation based on Africa's tremendous renewable energy resources. The continent has an abundance of wind resources, biomass and not least, solar energy, all in sufficient quantities for satisfying future energy needs. Africa has all of the renewable resources. What it needs is access to know-how and practical technological solutions.

Within this context I ask why the *Africa Energy Forum*, gathering July 2 to 4, 2008 in Nice, France, will focus almost entirely on the conventional energy system but not on renewable energy. The Africa Energy Forum brings together senior government officials and private-sector executives to discuss opportunities in expanding public and private power. I received an invitation for the conference and answered that I would not be able to attend. I also asked for a better representation of the renewable energies as most of the presentations of the Forum focus on conventional energy options that will not be affordable for the masses of the African continent.

## **No renewable energy at Africa Energy Forum!**

The prompt answer from the director of the conference revealed that the priorities of the conference were already decided and did not intend to include renewable energy. The conference manager, Rod Cargill, e-mailed to me:

*“...One thing is certain, conventional power is pivotal to Africa's economic growth. To claim that Africa's problems of poverty would be alleviated by relying on renewable energy is folly. The number of failed renewable energy projects in Africa over the last 20 years is unacceptable, and verging on the irresponsible. These failed projects have setback development by raising aspirations and then failing to deliver, thus curtailing self-help in Africans...The aim of the Africa Energy Forum is ultimately poverty alleviation in Africa. We are well aware of the difficulty of bringing power to rural communities and the consequences of untrammelled power expansion on climate change. But we believe that cooperation between all power providers is the only way to achieve our objective. We find a strong reaction in Africa to the moralizing of western countries, particularly when they are the ones selling the renewable technology”.*

Well known suppliers of renewable energy solutions like Sharp, Kyocera, Vestas, Solar World, Enercon and many other world brands within wind and solar power are not the sponsors, while the conventional fossil fuel energy sector will be well represented. One might get the impression that the solar and wind industries, despite a large annual turnover of € 60 billion, are still not considered a professional sector. Some might say the sector should be considered as a whole responsible for a *“..number of failed renewable energy projects in Africa over the last 20 years as they failed to deliver..”* and thus preventing energy change in Africa.

## **Disastrous solar project by Eskom and Shell**

Even though renewable energy has seen tremendous technological achievements, there will of course be failures as it happens in any other innovative sector. In Africa the renewables sector undoubtedly suffered their most severe setback ever when oil giant Shell tried to pave the way for solar power but failed with their widely advertised solar initiative in rural South Africa.

Shell Renewables and Eskom, South Africa's national electricity supplier, embarked in 1998 upon a joint venture to supply homes in the remote and rural communities of South Africa, with a unique solar home system. This project was the largest commercial solar rural electrification venture ever undertaken. The aim was to bring illumination to 50,000 rural homes in South Africa. After some years their token payment system failed, and systems were either not functioning, or panels were stolen. As the project did not succeed organisationally, technically, and commercially Shell was forced to withdraw. What was planned as a model for the 2 billion people globally that have no grid electricity, ended up in a disaster for the reputation of solar power.

But fortunately we find in Africa numerous successful renewable energy solutions that obviously did not get the same negative response as the disastrous Shell top-down

project. In Namibia **small solar shops** charge mobile phones and many towns and villages get their electricity from PV. In Kenya thousands of solar systems give light to homes after sunset. Egypt and Morocco already have wind farms and are planning many large-scale uses of wind and solar. They have better resources than most industrialized nations and have begun to mobilize their own industrial capacity to collect in full the fruits of their natural resources.

### **Decentralized solar technology can improve the conditions of life**

I have personal experience from solar projects in Uganda and Mali. These projects are in no way comparable with the Shell experience. At the 2004 project inauguration every solar panel installed was serving the rural population with electricity for schools, clinics and other basic institutions. Some of the installations had already been producing electricity for years. With extremely modest financial resources dozens of villages are now demonstrating that modern technology can improve the conditions of life among the poorest in rural areas. Ninety-three percent of the population does not have access to electricity. The nearest power line may be 100 km away and will never find its way out to the thousands of villages where you find the majority of the population.

In the last 10 years solar cells fortunately have become more efficient and reliable and can deliver electricity to schools and clinics, improve the supply of water, all for the common good. Meanwhile the residents with sufficient income have started to buy their own solar installations. This energy revolution, admittedly still at its very beginning, has been made possible by a small dedicated team at the Mali Folkecenter, [www.malifolkecenter.org](http://www.malifolkecenter.org) that has implemented other pioneering projects in some of the poorest countries of the world.

### **Energy supply and revitalization of local ecosystems**

In 2006 the **rural commune of Garalo**, in the south of Mali, celebrated the implementation of a bio-fuel project based on jatropha oil. The facility will help bring bio-fuel generated electricity (245 KW) to approximately 8000 residents of the Garalo commune and possibly later to the rest of the people in the surrounding villages. For the 70% of Malians who live in rural communities this project shows that living rurally does not have to mean a cash-crop dependent economy with no running water, or that the only alternative for electricity is petroleum generators.

The Sahel environment is fragile and arid, yet jatropha is resilient and can grow under these harsh conditions. Jatropha can thrive in the region's difficult land and restore eroded areas, effectively generating environmentally friendly energy, helping reduce CO<sub>2</sub> emissions, and helping to revitalize local ecosystems. Such projects will also stimulate the economy and create disposable income. Extra income can in turn be used to develop healthcare, education, small-business needs, living conditions, and much more. The project will be closely monitored and documented, so others interested in similar initiatives can learn from this experience. Jatropha is expected to transform Garalo, offering residents greater opportunities, stable energy prices and a chance for sustainability.

## **Renewable energy requires new financial mechanisms**

Most crucial for any of successful local projects is access to the same long-term investment solutions that were normal when the industrialized countries extended the power grid to the most remote corners of their societies. Those societies found practical ways to provide the benefits of electricity to their populations. Today the widespread implementation of renewable energy requires new financial mechanisms. One valuable example is the Grameen Bank that has enabled thousands of poor in Bangladesh to enjoy the benefits of solar cell electricity, a model that has much to teach to the rest of the developing countries. Such solutions clearly deserve at least a session at the 10<sup>th</sup> Africa Energy Forum in Nice in July 2008.

## **An urgently needed international renewable energy agency**

Considering the fact that the fossil energy sector does not see the challenge of the emerging renewable energy economy, the world community must pave the way for an urgently needed renewable energy international agency. The fact is that existing organizations cannot help well in this crucial endeavour.

The International Atomic Energy Agency (IAEA) promotes atomic energy worldwide. The IAEA began with a small number of countries, and now acts as a powerful international lobby for nuclear interests. The IEA focuses on fossil fuels and only sees some need for renewable energy in 2040 or later. However, time is short for this imperative transition. Therefore the initiative of the German government in April 2008 to invite the nations of the world to prepare an International Renewable Energy Agency (IRENA) [www.irena.org](http://www.irena.org) upport of all concerned citizens and organisations.

Emerging initially from a coalition of proactive countries IRENA will act as an advocate for renewable energy in the international political arena in much the same way that the IAEA promotes atomic options.

IRENA, will have as its main focus, increasing the percentage of renewable energy in the global energy mix. Bringing together international experience and expertise in the field of renewables, IRENA will develop policies and institutional and technological capacity across the world, helping countries achieve the effective and efficient use of the renewable energies.

IRENA has the potential to develop the capacity and expertise needed for continents such as Africa to begin the transition to energy security and prosperity through the use of renewable energy solutions.