

# **Infrastructure – Focus on Alternative Energy**

## **a case for Botswana**

**Speech by Marianne Nganunu, Coordinator, Botswana Innovation Hub at the Commonwealth Business Council Africa Outsourcing Summit 2009**

Botswana Innovation Hub intends to address its carbon footprint through a clean-tech programme, which includes efforts to attract research and technologies that promote sustainable energy production. The utilisation of solar energy is particularly attractive.

Botswana has 315 cloudless days per year and being along the Tropic of Capricorn the sun is strong. This translates into an average irradiation of 21 MJ m<sup>2</sup>/day throughout the country. Botswana's solar regime is one of the highest in the world. It therefore offers an opportunity that can be utilised to create a more sustainable source of energy, thereby helping to preserve the environment. It is for this reason the Botswana Innovation Hub has included energy as one of its focus areas. If you go into our website, you will see that we have included solar panels in the top banner to demonstrate our commitment to environmental responsibility.

The utilisation of solar photovoltaic energy is currently a challenge for most African states because of the high initial cost. On the other hand, the photovoltaic solution is the perfect energy option for the African continent. Once installed, and technicians are trained to maintain the system, it offers a cheap energy option for the rural masses in Africa.

We have done a few solar energy pilots projects in Botswana. We started with the design of buildings. In Africa, the challenge is to reduce the intensive heat of the sun, the opposite of Europe where you are trying to harness the heat from the sun. The interesting thing is that, in the traditional African society, we had the skills to manage energy in a sustainable way. The traditional rondavels that were designed by our forefathers, were designed to control the heat with insulating thatch on the roof, large overhangs to control solar radiation and an excellent ventilation system. Some pilot projects have been done in Botswana to emulate the ventilation features of the rondavel, for example having a ventilation space between the ceiling and the roof of the house. If in addition, you have large overhangs, paint the house white, and plant large trees on the east and the west side of the house to prevent the morning sun and afternoon sun from shining directly into the house, you can be fairly comfortable.

With civilisation came air-conditioning. Our people in the cities now live in houses that are less energy efficient and they just turn on the air conditioning when it is hot or cold, both in the offices and in the homes. Until recently, energy was not an issue.

Nowadays there are many technologies and building materials available on the market that can filter out the heat and solar radiation. In building the facilities at the Botswana Innovation Hub, we have ensured those companies that have pre-qualified in the architectural competition have the skills and experience to deliver environmentally sustainable buildings. The buildings at the Botswana Innovation Hub could therefore become a model for new and better building designs for Botswana and Africa.

In Botswana we primarily use coal to generate electricity and power the economy. In the years ahead both South Africa and Botswana need that coal to satisfy the energy demands of their expanding economies. At the same time, both countries are pursuing options of increasing the import of hydro-electric power from our neighbours in the north. What is critical at this point is that environmentally friendly solutions are found to deal with the greenhouse gases associated with the use of coal, including coal washing, improving efficiency of burners, as well as carbon capture and storage (CSS).

However, in Botswana and many parts of Africa, the sun is the attractive alternative, that is environmentally friendly. The costs need to come down to make the installations affordable for African countries. In Botswana we have started with small steps. Many buildings have solar water heaters, although there are still some technical challenges with respect to dissolved substances, linked to the quality of underground water sources.

Botswana is also experimenting with photo voltaic power generation. The slide shows such a plant, which was piloted by the Botswana Technology

Centre in one of the rural villages. The project was able to deliver limited power as planned and technically, it was a success. However, once electricity was provided the demand grew rapidly and the pilot could not meet public expectations. The country has now taken this pilot to a higher level and, following the initial pilot, a large rural solar photovoltaic electrification project will be implemented as a partnership between the Botswana Government and UNDP.

Apart from using the energy from the sun, there are also opportunities for developing and implementing biogas technologies in Botswana.

It is government policy to provide electricity to all its people. Botswana is a large country and sparsely populated in the desert and swamp areas. The national grid is currently being expanded to reach all villages with more than 500 people. For smaller settlements, the government has settled for a stand-alone solar photovoltaic power plant as a more economical option.

The time has now come to harness photovoltaic energy in large quantities and feed into the national grid. To facilitate this, the energy sector in Botswana has been liberalised to allow independent power producers to operate. The land is also available for solar installations. Some companies have already approached Botswana with proposals for solar power stations, although these discussions are still at a very early stage.

Botswana Innovation Hub, as an entity wishing to promote sustainable energy solutions, welcomes companies and organisations that develop or produce photovoltaic panels and other solar appliances, that can produce

photovoltaic power, as well as organisations wishing to do research in this field. All the incentives described this morning as applicable to the Call Centres and BPOs, are also applicable to solar technology businesses and organisations, i.e. flexibility in importing labour, a training grant, an attractive tax package, access to a competitive telecommunications package and an Innovation Fund.

Botswana is a signatory to the Kyoto Protocol and has set up a national authority to manage the Clean Development Mechanism or CDM. In addition, the Botswana Innovation Hub has set as one of its objectives to help build local capacity to participate in the carbon credit market. This opens doors for greenhouse gas reduction projects in Botswana.

As you may be aware, *“under the CDM, projects that reduce greenhouse gas emissions in developing countries can earn saleable certified emission reduction (CER) credits. These CERs can be used by countries with an emission reduction or limitation commitment under the Kyoto Protocol to meet part of that commitment”* (UNFCCC, Press Release). The developed country is given credits for meeting its emission reduction targets, while the developing country receives the capital investment and clean technology. We also know that such *“emission reductions claimed under CDM must be real, measurable, verifiable and additional to what would have occurred without the project”* (UNFCCC, Press Release). Here is a win-win for both the developing and the developed country, while at the same time improving life on earth.

Botswana is ready to talk. Photovoltaic power stations, other solar applications, biotechnology options, and various environmental coal technologies are all top on our agenda. The Botswana Innovation Hub will not itself invest in such development projects, but can act as a facilitator and catalyst in linking foreign and local investors and in pursuing the opportunities under carbon finance.

Thank you.

***Acknowledgement:*** *This paper was produced with valuable inputs from Mr David Lesolle (Botswana) and Mr Sten Stenbeck (Sweden).*

