

**Deutscher Bundestag. Ausschuss für Wirtschaftliche  
Zusammenarbeit und Entwicklung  
Hearing on renewable energies in development cooperation, with  
Africa as an example, on 28 January 2009.  
by Prof. Dieter Holm (ISES), South Africa.**

**PREAMBLE**

I speak to you from the perspective of a life-long experience in the application of renewable energies (RE) in a developing country. Practising what I preach, I designed the first modern self-sufficient home office in Africa during 1974. On the other hand I am conversant with the culture that led to Germany's acknowledged world leadership in RE, a role that puts a responsibility on your shoulders. By your good reputation in technology, your sustained choice to go the RE route and by refusing to take part in the oil wars you have gained an international status.

In my view REs are the ultimate weapon of mass empowerment. Universal empowerment, in both senses of the word, leads to liberty, equity, democracy, health, peace, prosperity, and sustainability.

In the current world economy I propose one should aim to achieve maximum results per input, strategically addressing root causes at the right places, rather than attempting to address symptoms through bottomless individual projects. The key questions will be addressed in this light.

**1. What role can renewable energies play in combating climate change in Africa?**

Climate change affects all of us, but Sub-Saharan Africa most perniciously (Stern review). In economies reliant on (eco)tourism and subsistence farming, the poor inexorably bear the brunt of climate change caused by better resourced large polluting industries who can reposition with ease. For example, South Africa's vertically integrated state owned monopoly, Eskom, generates about 50% of Africa's total electricity and concomitant pollution through power stations running over 90% on coal. Eskom and Sasol alone produce 45% of the country's greenhouse gases. Many similar large companies in Africa feel little pressure as they are shielded by the Developing Country status of their host country.

Africa has 95% of the world's best winter sunshine area, receiving more than 6,5kWh/m<sup>2</sup>.d (Germany receives less than 1,0kWh/m<sup>2</sup>.d). Therefore Africa could generate 95% of the world's solar thermal and solar electrical energy. Other RE resources are also abundant. This means Africa can produce ample clean and sustainable energy for its own use, plus a good surplus for export – yes we can!

The issues of externalities, life cycle and work generation costs/benefits need not be repeated here. So what is constraining Africa?

The most important constraint is not the lack of money, men, machines, material or management but the motivation: it's the lack of inspired political will. Therefore, given suitable laws like the EEG and others, Africa could rapidly and effectively combat climate change while achieving the crucial local needs of sustainable job creation. Given a framework of low-risk, long-term contracts and reasonable (feed-in)

tariffs, industry and investors will flock to Africa, implementing technology transfer creating local RE enterprises.

Africa has invested relatively little in the old centralised and vulnerable sunset fossil infrastructure. It could leap-frog to the sunrise renewable energy technologies, including distributed generation and co-generation: cellular telephones are displacing old technology fixed landlines at a breathtaking rate.

The Low Carbon Future is inevitable. The question is not whether, but when.

## **2. What links exist between development/poverty reduction and energy supply in Africa?**

To illustrate: The lack of Eskom electricity in South Africa caused Rio Tinto, a major global player, to shelve a huge beneficiation project indefinitely, which probably means permanently. This entails the loss of 20 000 jobs in a country with an unemployment rate of about 40%. The EEG (or REFIT) law could have avoided this and similar catastrophes in Africa. The situation in affected neighbouring SADC countries is comparable: None have implemented the REFIT laws and all are restrained under the lack of private initiative through RE.

The direct linkage between RE and the eight MDGs is obvious: they all depend on energy which currently is not being provided reliably. Goal number 8.6 “to build global partnerships with private sector new technologies” is pertinent and merits special attention.

The mistake of spreading developmental resources too thinly, creating unrealistic expectations while disappointing stakeholders through sub-optimal technologies and services should be avoided. Instead, a focussed strategy of building a viable RE installation and service industry through the REFIT, followed by local manufacturing, where practical is indicated. A visible market penetration of at least 15% should be targeted per area and technology.

All RE technologies (RETs) should be very robust, low-maintenance, fail safe, modular, tamper and theft proof, and protected against insects, rodents, dust and high ultraviolet radiation levels.

The full gamut of RETs should be applied, depending on public domain resource assessments and local conditions, as well as probable climate changes.

Solar thermal cooling and electrical vehicles are neglected technologies that are suitable for Africa.

Before embarking on diverse projects, the great German EEG experience should be brought to bear. This lays the foundation for a rapid, steady and large scale deployment of RETs in Africa, giving equal access to poor, small scale entrepreneurs as well as large international players.

## **3. What role do the different forms of renewable energies/energy efficiency and conservation play in providing access to energy in Africa?**

Currently all three play a miniscule role, demonstrating a wide market gap.

If the well-heeled role-model sector of the population is not seen to be using RETs, then these become stigmatized as “the poor man’s energy”. This situation is worsened if the rural poor get the impression that experiments are being done on their back with unproven technologies in remote rural areas with typically problematic service delivery and very difficult communications. Obviously cellular phones, electronic watches and radios were not introduced first in the poor remote rural areas.

Provided the necessary environmental, water and food security precautions have been taken, energy crops/biomass can play an important role. Waste-to-energy technologies also fall into this category.

Major energy parks in the Sahara could contribute to regional development as much as oil wells could: It depends on the structure of the value chain.

Small-scale hydro plants (less than 10MW) are a very attractive option but have been found to be onerous to implement because of the non-existence of REFIT laws. A small South Africa hydro scheme took at least 5 years, while the Government wind demonstration project even took a decade.

#### **4. Areas of potential, obstacles, incentives, instruments?**

The main barrier, and the way of overcoming this, has been identified under question number 1.

Other flanking incentives are:

- Awareness creation (radio is most popular in Africa)
- Levelling the playing field by terminating overt and covert subsidies to non-renewables (€42 billion are projected to be sunk on subsidizing fossil power plants in the developing world until 2030 [UNDP, 2000]. Despite its policy the WorldBank is often the financier.
- Tax rebates often make little sense in a poor developing country, and can lead to distortions.
- Uniform and transparent industry standards, planning permits and building codes foster fair competition and more reliable performance.
- Africa has a community tradition. Community power systems ensure public buy-in and support.
- The energisation priorities should be a) productive use of renewable energy (industry, business); b) health (clinics, hospitals); c) education (schools, training) with d) social and amusement, as well as residential uses coming provisionally last in Africa’s relatively benign climate.

In Africa women generally are in charge of the household chores, plus food production/processing, and of energy procurement. If firewood collection could be reduced/eliminated through RE, then this would reduce/eliminate deforestation or even desertification in Africa, and climate change would be abated. It would reduce the health impact of open fires, and allow more time for study, leading to better work opportunities and family planning, reducing poverty. African women play a strong and decisive role in the household, probably needing little external gender related interventions. Political decision-makers require relevant objective information, enabling them to make rational RE decisions. However there is no harm in knowing

the difference between kW and kWh or between energy carriers and energy services. In developing countries politicians are inclined to believe that the only energy carriers are grid electricity and oil.

### **5. Overlap with external economic policy**

Most of Africa is importing fossil energies and their technologies. The populist tendency is to subsidize energy delivery through centralised systems, which are mostly under government's political control. Consequently service delivery suffers and foreign debit increases, causing more calls for debt release.

At present REs replace little imported energy, except in countries with hydropower. Transport is entirely fossil based. Substantial replacements are feasible.

Africa exports minerals to the EU, USA and China.

Energy R&D plays a minor role in Africa; RE related R&D even less, as borne out by the very small number of scientific papers at international conferences or in journals.

CDM has been a failure in Africa. This is attributed to exorbitant transaction costs, slow processing, volatility of the carbon price and the additionality condition. International carbon agents seem to be more enthusiastic than the African poor.