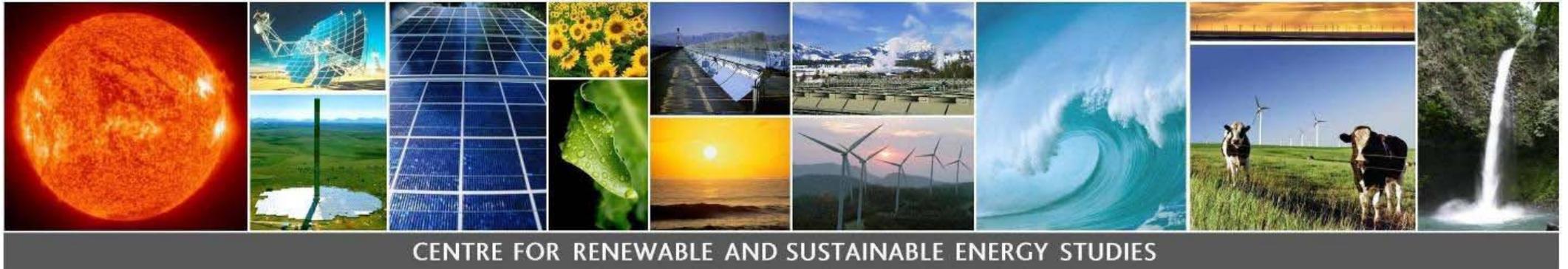




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Off Grid Electricity supply to low cost shelters, based on a sustainability concept. Current issues and the future opportunities

3rd AFRETEP REGIONAL WORKSHOP
Cape Town, South Africa , Feb 21st, 2012



RENEWABLE & SUSTAINABLE
ENERGY STUDIES

Presenter: Dewald le Grange

- Electronic Engineer from profession, CEO of Liberté Software, active in the export market of ICT Software and Services to Nigeria.
- Currently reading for a M-Degree in Renewable and sustainable energies (MEng RSE) at the University of Stellenbosch.
- New venture setup - 2012 in RE Space





The scramble is on.....



**Several entities are looking into
Renewable Energies.**

**Politicians
Industry
Business
General public
You and Me**



But Where is the Focus ?

- Countries
- Industries
- Big Businesses

But what about the forgotten generations, slumps, rural and informal settlements?



Enkanini - Stellenbosch

- **More than 10 000 people call it home**



Project *I-Shack* (Improved *Shack*)

- Driven by the Sustainability Institute based at the Lynedoch Eco Village near Stellenbosch, with Post Graduate students.
- Introducing sustainable building materials to create a more liveable and IMPROVED Shack.
- Delivering basic Electricity to a shelter
- Creating sustainable businesses to support the initiatives.



Shelter & Insolation

U-Beam wood frame structure

Corrugated Iron walls

Card Board Insolation on the inside

1 high meter COB* Wall inside shelter

* Cob is a building material consisting of clay, sand, straw, water, and earth, (based on the adobe brick principles)



I-Shack



- * Overhang in front to deliver shade (North facing)
- * Gutter at the back to catch rain water.
- * Weather station for study purposes only





View of COB wall inside the shack- for thermal storage.
Also notice the cardboard insulation on the inside walls
and roof



Solar PV Installation

- 25 Watt Solar PV Panel
- 3 x 3 watt LED Lights
- 12V – 7AH Battery
Can power the 3 lights for 7-9 hours
- Cellphone Charger point
- Charge Controller with fuses.





View of 25 Watt Solar PV Panel





View of one of the three, 3 Watt LED lights



Weather Station – with logger



Basic Controller Version 1





Controller Version II



Job Creation

- Every 100 shelters will have a Solar technician that will install and maintain the units
- Technician will be fully trained



Project Status

- Currently, 4 Solar Power units installed at Enkanini and 4 units installed at Siyahhlala.
- The group is in the process of installing another 20 Solar Power units funded by the National Research Foundation (NRF)
- Should Funding be granted from the Gates Foundation, another 2000 PV units will be installed. 500 each at Enkanini, Siyahhlala as well as Dar Es Salaam in Tanzania and in Accra in Ghana.

(new units will have a 50 Watt T plug as well)



Future Developments

One of the focus areas of my thesis for the MEng Degree is looking into new storage technologies.

One of the weak links in any battery operated process is the batteries. The world of renewable energies is going to change that space forever.

The study will look into opportunities in new Storage Technologies that can be successfully used to assist rural electrification like the *I-Shack*



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QUESTIONS ??

