

Technologies that change our mindset.

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There is an interesting talk on Youtube by Amar Inamdar from East Africa about a technological revolution that is taking place all over the world but also here in Sub Saharan Africa. That revolution has to do with solar energy. It is happening because of the advances in technology that are taking place.

I take excerpts from his talk but add some of my own observations that I have made locally.

When Edison invented the light bulb in 1879, the idea was that there should be power stations that generate electricity and grids that transport the electricity to our homes. But that mindset is changing rapidly because of advances in technology. In Africa it is costing \$21 billion annually to maintain that distribution system and this is becoming unsustainable. We in this country are painfully aware of this reality.

In this country farmers and large industries that rely on the electricity grid are turning to solar energy to ensure that they have power when they need it.

We are realising that it is possible to use energy from that great nuclear power station in the sky that provides more energy than we need and that it is free, sustainable and is wireless.

The cost of solar panels has decreased dramatically in the last few years and is likely to decrease further. I am not an expert in this field so you may have to do some reading on your own if you wish to know more. What I do know is that present solar panels use silicon and that the manufacturing process happens at a very high temperature and that the product has to be extremely pure. But there is a material that is making scientists excited and it is called Perovskite. It is much easier to handle which should make it less expensive to handle and uses a part of the light spectrum that silicon panels do not use. Much work still has to be done but progress is rapid. I read that efficiencies of 32% are envisaged.

It is encouraging to see that there is a Centre for Renewable and Sustainable Energy Studies at Stellenbosch University and even a solar panel manufacturer in the Western Cape.

We have a large number of people in this country who live in self built shacks without being connected to the grid. Some connect illegally but this has apparently caused a number of accidents to people who contact such installations and often lose their lives.

What do these shack dwellers need?

I think they need to charge their cell phones, have enough light for learners to do their homework by, and maybe some devices like a rechargeable radio and portable lighting like a rechargeable flashlight.

For this they need a small solar panel with a charging circuit to charge a cell phone battery. A lot of people have cell phones and they use them for various purposes. I saw on TV a woman who has to get up every day while it is still dark to collect water from a spring before the cattle come to drink and muddy the water. She uses the LED in her cell phone to light the way. In another program I saw three Consol jars hanging on the wall of a shack in the Western Cape, so that the small solar panels in the lids can charge the battery that supplies light at night. I noticed a group of shacks outside Stellenbosch, each with a small solar panel, presumably used in the same way.

There are portable lights, torches, radios and other gadgets that can all be charged from a solar panel with a suitable charging circuit. A big need is for learners to have a better light than a candle to do their homework by. This is now possible. I see that a minister in Uganda asked the Panasonic company to supply solar lanterns for homes that live off the grid. Panasonic supplied 100 000 such lanterns to African countries.

Storage of electricity is still a problem but battery technology is advancing rapidly and hopefully we will have better storage systems in the future.

It is possible to cook using heat from the sun and you can make it yourself using a cardboard box, aluminium foil and a few other bits and pieces. Google for DIY solar cooker. Such cookers are also commercially available.

I believe that living conditions for people in shacks can be improved a lot by using energy from the sun for cooking, lighting, cell phones and hot water. Solar powered boreholes are already well known to the farming community and many city dwellers with access to the grid are installing solar systems to provide uninterrupted power during power outages. We are making progress!

