Solar Publication

A regular and saveable module to build knowledge of solar power, build on Zimbabwe's experiences and build the Zimbabwean Solar Industry

Vol 1
Issue1

Why?

Before you start, and going solar is a big, often expensive, and **VERY** good thing to do, it helps to know why you are doing it. There are many reasons to go solar, especially here in Zimbabwe, and there are many ways to get to what you particularly want. And as a new field, and new industry, there are many unknowns out there, so the more you know, the faster, cheaper, easier, and more interesting the process will be.

A first step, the best first step usually, is an energy audit. There will be more on this in subsequent issues, but basically it is about what do you want to run with your solar energy? A fridge and freezer will take a certain amount, and how many hours a day do they run? Do you need to keep computer (or computers) on? All day or all day and night? And printer? Just lights? TV? And VCR / CD player / decoder? An understanding of these, times on (time of day and hours in use) and power required will greatly assist in what you get and how you use it.

Are you trying to save money?

If you want to do that, the first step is a solar geyser. Solar cookers are also available. And what most people think of, PV. Photovoltaic – Solar panels! The thing we see the most of, and what everyone thinks of when "solar" is mentioned. But it is not the only solar, nor the most cost saving.

Solar geysers

Heating water is one of the highest consumption uses of electricity known. And your water heater (s) probably uses most of your electricity. My experience – Solar Geyser cost me $950 to buy and have installed, and my electricity bill dropped from $40 a month to$20.

So for an investment of $950, I was 'making' $240 a year. That is a 25 % return on my investment. What bank, or financial institution will give you a return of that amount? Internationally, 10 % (or more often 9.5 %) is a very good investment.

In four years it had paid for itself, and since then, I have been making money, and having a hot shower at the end of every day!

There are many details and aspects to Solar Geysers, and future publications will get into them.

Solar Cookers are very good, and a proven technology. One came up with the Pioneer Column, in 1890, into what was to become our country of Zimbabwe. And it was noted that they could be drinking a cup

Technical assistance has been sought and is acknowledged!
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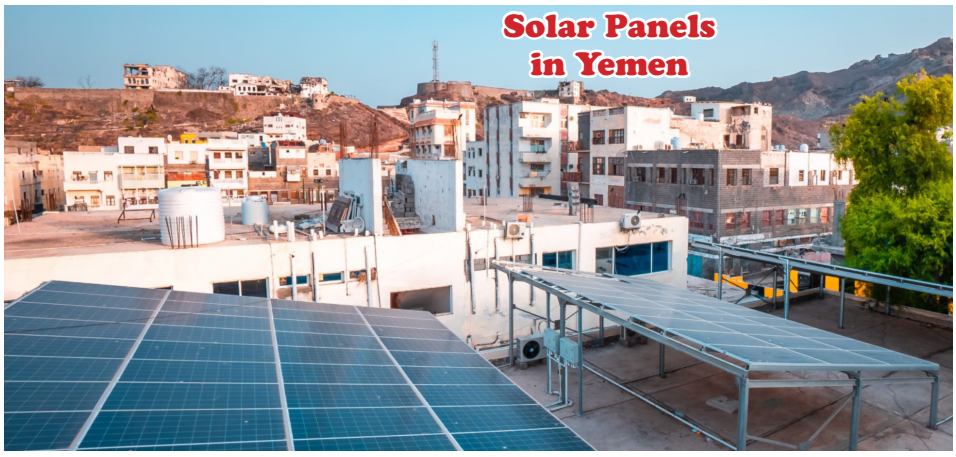

of tea before others had finished looking for wood to make a fire! It does though, have obvious limitations. Nothing hot after the sun goes down! However, if you want to save money, and can plan your day, a Solar Cooker will do that for you.

Solar Panels. Zimbabwe has some of the cheapest power in the world (although the price has just gone up!). Kept that way for political reasons. This has also resulted in a 'sub-economic' electricity regime in Zimbabwe. So the revenue made has not been enough to conduct maintenance. Which means investment in new plants and expansion has been very short.

This low cost / low revenue is also an impediment to public or private solar electricity generation. Which is unfortunate, as Africa is generally consider the best place in the world to generate solar PV power. With an average of some 300 sunny days a year, there is great potential. However if you want to save money, you need to look very closely at all your electricity needs and PV production.

You want reliable power

Aside from the simple monetary cost of electricity, there are costs involved in having no electrical power. On an individual /family level, food stored in fridge / freezer can and will go bad if power is lost for too long. This represents a cost in lost food stuffs. And while food may not be lost, unfrozen ice cream and warm beer or soft drinks are unappetizing. And other lifestyle degradations will occur without electricity.

On a business level, there will be a loss of productivity with no electricity or power. From an inability to access or input computer data, or print documents, to no machine work, or water pumped for livestock / irrigation.

In the medical field, an interruption in power can be fatal! Some drugs and medications must be kept cool. Blood needs to be refrigerated. The 'cost' of failure is not merely economic.

The potential to harvest electricity from the sun could solve these problems. Knowing your requirements, and the ability of PV or other sources to meet these, is vital to planning a solution.

A brief look at Zimbabwe's power may assist in making an assessment of future needs

The Hydro schemes in the Eastern districts are about 20 MW.

Station	Design Capacity	Production March 2018	Production June 2019
Munyati Thermal Power Station	120MW	0MW	17MW
Bulawayo Thermal Power Station	90MW	0MW	16MW
Harare Thermal Power Station	90MW	14MW	17MW
Hwange Thermal Power Station	920MW	320MW	413MW
Kariba South Power Station	1050MW	725MW	881MW

To save the planet!

At the simplest level, it is obvious. Use sustainable energy, stop burning fossil (polluting) fuels!

But there is much to learn in the detail. What is the carbon footprint of the manufacture of panels? What is the environmental impact of battery production, and disposal? And what kind of batteries? There is much to learn.

Aside from PV electricity, there are other alternatives to fossil fuels.

- Biogas. How much methane, one of the major greenhouse gasses, is produced, used, escapes?
- Wind power. This used to be a lot more common in Zimbabwe. Why has this changed?
- Solar Geysers. It is now law in Zimbabwe that all new homes constructed include solar geysers. Why not put them on old existing accommodation? What are the problems (there are always problems!)? How to buy them, install them, use them to the best effect?
- Solar cookers. Many benefits and obstacles to the use of solar cookers. A factor that needs to be looked into, and discussed.

And more items to discuss.

Once you have decided **why?**, there will be more questions!