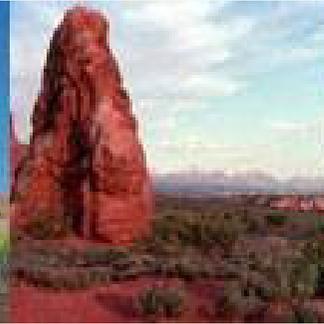
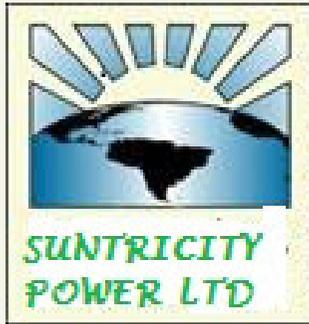


Practicability of Solar Home Systems', and 'Overcoming Barriers to Rural Electrification'

World Future Council
Italy
2012

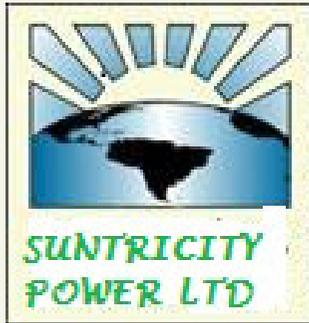
Billy Katontoka
Eco Merge Africa Ltd





Presentation Overview

- ❖ ABOUT EMA
- ❖ INTRODUCTION
- ❖ PRACTICABILITY OF SOLAR HOME SYSTEMS
- ❖ BARRIERS TO SHS AND RURAL ELECTRIFICATION
- ❖ OVERCOMING BARRIERS TO RURAL ELECTRIFICATION
- ❖ FEASIBILITY STUDY COSTING



About Eco Merge Africa

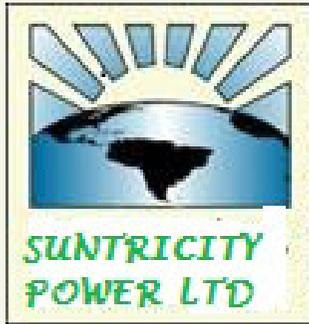
Established in 2009 started operating 2010

Eco Merge Africa limited: promote and accelerate the commercialization of energy development that integrates national and community development needs with reduction of greenhouse gases.

Through innovative technologies and unparalleled industry experience, EMA is ushering in a new era of rural energy entrepreneurs(REE)

We are engaged in;

- the voluntary and compliant carbon market, as consultants/project developers
- Our primary goal is development of "win-win" activities: those that displace carbon-based fuel combustion while also providing positive environmental, economic, and social impacts in marginalised off grid communities.



Introduction

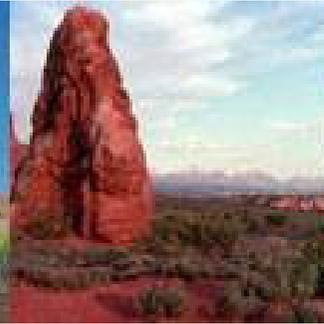
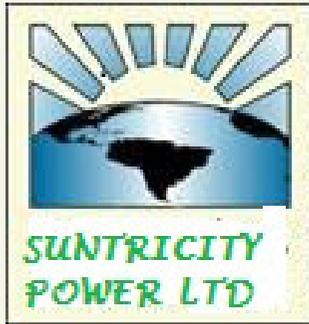
At the rate we are moving in Zambia and other African countries when it comes to rural electrification and adoption of RE, rural and remote areas will continue in their state and Business as usual scenario.

I have a question, please help me answer:

If RE offers Africa, which is richly endowed with RE, a path way to break the shackles of energy poverty and catalyse development to the extent we have seen it happen elsewhere, why are we tip toeing around RE for lighting only or if we push hard cooking?

When will we dream of solar farms? Enterprises that can transform villages into productive centers that thrive on the abundant free resource we have?

Don't give me the lame excuse!



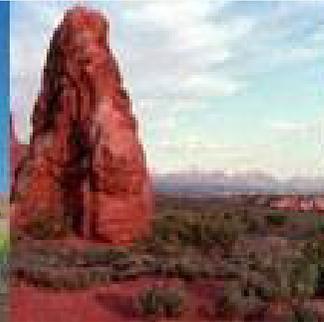
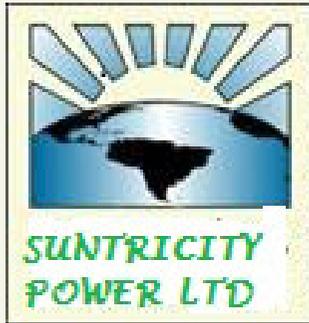
Introduction

We know that grid connection often is economically prohibitive or a potential scenario in the far distanced future, especially in developing countries.

A promising alternative has evolved with the maturation of small-scale stand-alone systems like SHS. Nearly 3 million households have access to electricity from small solar PV systems today (REN21, 2010).

For the purpose of this discussion and to remove ambiguity, lets define the SHS we are talking about.

Since the focus is on rural off-grid electrification with (SHS), often a viable alternative to grid extension. These SHS are defined as having a 10- to 50-watt peak (Wp) PV module, a rechargeable lead-acid battery, and sometimes a charge controller. The systems generate modest amounts of electricity for lights, radio, television, and other small appliances



Introduction

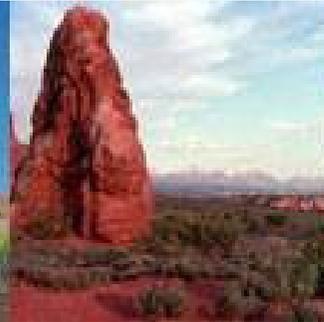
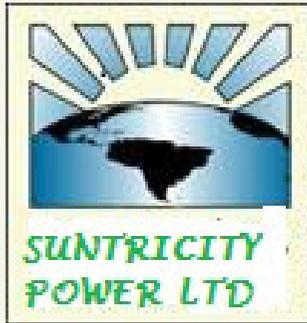
Energy-related activities are the major source of carbon emissions and the provision of electricity for rural off-grid areas requires large extensions of energy services.

The substitution of kerosene or diesel lanterns has important health benefits due to reduced in-house air pollution(THE KILLER IN THE KITCHEN) and risk of fire.

SHS can serve micro-enterprises or home-based income-generating activities and lead to better education outcomes when lighting is used for extended study hours

How can we overcome barriers to SHS adoption and penetration which will lead to high rural electrification rates?

In order to make SHS economically viable for households and micro-businesses, further financial resources are needed. One opportunity lies in coupling micro-energy lending with the international carbon market in order to generate carbon revenues from emission reductions.

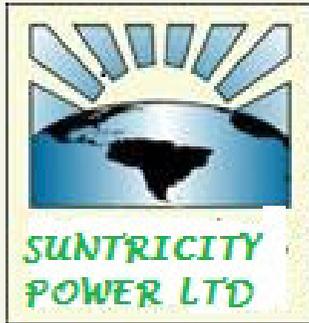


Introduction

The combination of the two financing mechanisms, PoA CDM and Micro-energy lending can address major barriers to rural electrification, most importantly the lack of infrastructure, the lack of access to credit for end users and high upfront costs.

Solar home systems (SHS) achieve significant cost savings for rural households and provide clean energy for lighting, communication, information and entertainment.

Programme of Activities (PoA), a specific project type also known as the programmatic CDM (pCDM), allows for an aggregation of emission reductions from a number of projects and thus addressing high transaction costs, which pose a barrier for micro-scale projects in the CDM market

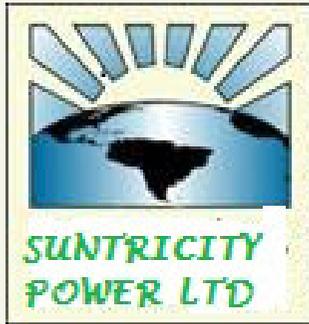


PRACTICABILITY OF SOLAR HOME SYSTEMS

Due to high cost of grid extension, stand-alone PV systems represent the least-cost option for electrifying homes in many rural areas. These "solar home systems" (SHSs) are the most practical for providing small amounts of electricity to households beyond distribution networks.

Experience from countries such as India have shown that SHSs can contribute to the energy supply mix of rural communities while directly displacing GHG emissions. Since the carbon dioxide (CO₂) reductions that result from replacing kerosene with electric lighting can be readily documented, the CDM potentially offers a great opportunity for developing a country wide business by taking advantage of PoA CDM

On a life-cycle basis, the systems frequently cost about what rural households would otherwise spend on lighting fuels, dry cells, and car batteries. Yet the convenience and quality of service provided by an SHS generally far exceeds that of traditional alternatives.



Barriers to SHS and Rural Electrification

Economic and Financial Barriers

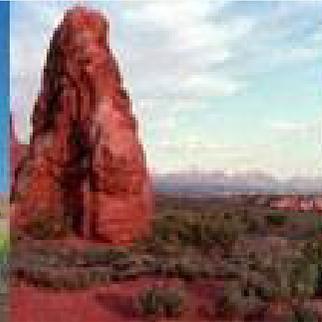
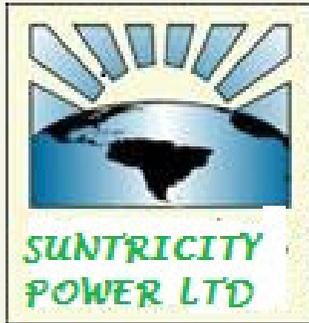
- ❖ High initial upfront costs for end-users and providers
- ❖ High Transaction Costs
- ❖ Subsidies for fossil fuels and non-renewables
- ❖ Environmental Externalities

Market Performance Barriers

- ❖ Lack of Access to Credit
- ❖ Lack of Market Infrastructure & Distribution Network
- ❖ Lack of Capacity & Information

Legal and Regulatory Barriers

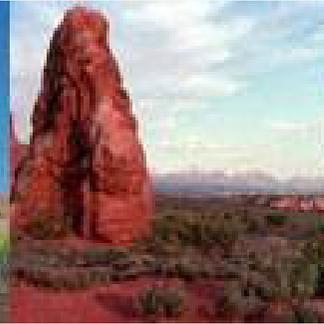
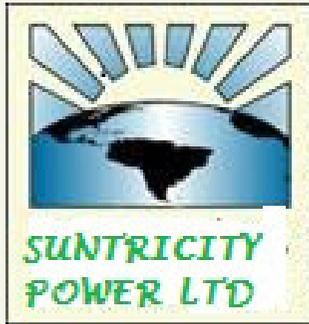
- ❖ Lack of Level Playing Field between RE and Conventional Energy
- ❖ Lack of Industry-Wide Technical Standards



OVERCOMING BARRIERS TO RURAL ELECTRIFICATION

To create an environment that will best enable growth in private SHS markets and maximize system use and the associated GHG benefits, developing-country governments should:

- ❖ clarify and publicize grid extension plans;
- ❖ require imported equipment to meet international quality standards;
- ❖ lower import taxes on SHS components;
- ❖ eliminate kerosene and/or rural electrification subsidies, or provide equal treatment for SHSs; and
- ❖ if providing subsidies for private SHS markets, embed them in the most stable framework possible and, where feasible, use a competitive mechanism to keep subsidy levels as low as possible.



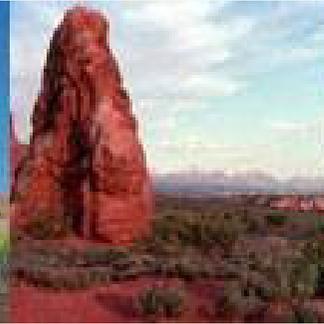
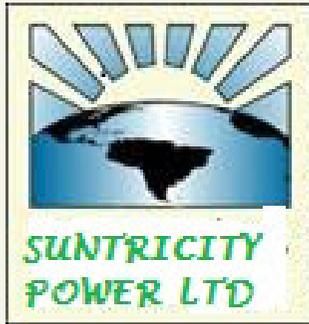
OVERCOMING BARRIERS TO RURAL ELECTRIFICATION

Bilateral and multilateral agencies and philanthropies should:

- ❖ fund SHS technician and business training, technical assistance, feasibility studies, and public education;
- ❖ support government capacity-building in the areas of renewable energy and the environment;
- ❖ provide seed capital and credit enhancement (such as loan guarantees) for SHS businesses and end-user credit programs, ideally as co-financing that leverages larger private investments; and

Finally, businesses, private institutions, and citizens concerned about climate change should consider investing in SHS activities.

How many of us in here have any form of RE at their homes or farms? The revolution starts with us.



CONCLUSION

Although major technical and financial breakthroughs have been achieved internationally with respect to renewable energy, besides large hydropower their contribution to Africa's energy problems remains minimal.

To increase their contribution using market-based approaches, major barriers to the wider dissemination of renewable energy on the African continent will need to be overcome. These barriers can be categorized as being

- ❖ policy,
- ❖ regulation and institutional;
- ❖ information and technical capacity; and
- ❖ financial.



THANK YOU!

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