

Kenya Youth Solar Project Report 2009-2010



Production of Solar LED Lamps and promotion of solar energy in Kenya and Switzerland.

[*The sun does not forget a village just because it is small*] African Proverb

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Executive Summary

Kerosene lamps are still the major source of lighting in Kenya. The lamps produce inadequate illumination, are toxic to human health and moreover expensive for the poor people. Less than 10 percent of the Kenyan rural population is connected to unreliable grid connection. This has resulted to poor health from inhaling toxics from the lamps, students perform poorly in schools and rampant poverty as the little money earned from farming is used to buy expensive kerosene and medicine. A lack of reliable energy sources has led to underdevelopment, poor education and abject poverty. Furthermore, kerosene fumes produce tons of carbon dioxide (CO₂) gas into the atmosphere, which has been directly linked to global warming.

Solar energy resource is plentiful in Africa, capable of serving all the energy needs of millions of people who still use Kerosene and other fossil fuels. The main challenges being, high upfront costs of installations of solar systems, a lack of technological know-how and suitable solar products that meet the needs of poor people.

Solafrica.ch has identified the gaps and since 2009 trained 15 young solar technicians, initiated a production of portable solar lamps and installed several solar systems in homes and schools. Currently, 4 technicians have been employed and produce the lamps regularly for local and Swiss market.

We work with young people as change agents and providing them with the necessary skills and capacity to achieve our goals. Solafrica.ch plans to install more solar home systems, double the production capacity and train more solar technicians. Solafrica.ch is also collaborating with World organization of Scout Movement and Greenpeace youth support centre in a pilot project to train scouts in solar know-how. The outcome if successful will be scaled-up to scout centres or camps worldwide.

We wish to thank all our sponsors for supporting us both financially and otherwise. We truly appreciate and could have not managed without them. Solafrica.ch calls sponsors, donors and friends to join us to promote solar energy, as it is clean and abundant.

A. Background

Kenya is endowed with abundant solar energy resource but has not seen significant growth in solar energy assimilation despite government chronic inability to provide grid electricity to its people. It is also unable to address negative health and environmental impacts arising from the dominant application of fuel wood and kerosene for lighting.

Only less than 10 percent of the Kenya's rural population is connected to national grid. A lack of adequate supply of reliable electricity has affected all sectors of the economy and contributes directly to reduced productivity, under development, unemployment and poverty.

The use of Kerosene, wood fuel and candle for lighting needs is not only expensive in cost but also affects human health and destroys the environment through the carbon dioxide emissions. Children often cannot read in the evening, family go to sleep early to save on fuel expenses and business have to close immediately after dark for security concerns.



Homes in the rural villages are sparsely populated making rural electrification harder to access even if the government was willing and able to take this ambitious project. The most efficient and best alternative is through decentralized sustainable alternative sources like solar energy systems, which can reach many people faster. Besides these poor people are small-scale farmers who do not earn much money from their farms.

Solution

Solar energy offers the best solution to solve lighting problem now by converting the sunray into electricity. Most people need a basic solar system comprising a small solar panel, a battery and two to three lighting point. This will provide light for 3 - 4 hrs and power a small radio.

As we have noted from our past installations, this will give superior light, children will do their homework better and improve their performances. More importantly families will



stay together longer in the evening, which is important for family bonding. There will be increased access to information through radios and televisions. In overall it will contribute to improved life quality and dignity. Since 2009 we produce portable solar LED lamp (Kibera solar lamp in picture above) in Kibera slum. The lamp is made of a mini solar panel and three rechargeable batteries.

B. Who we are

Solafrica.ch is a Swiss not for profit association founded in 2009 to promote use of solar energy in Africa through solar technology know how transfer from Switzerland to Africa.

Our activities involves:-

- a.) Training of solar technicians
- b.) Production of solar LED lamps
- c.) Installation of solar home/school systems
- d.) Supplying quality solar materials
- e.) Capacity building to empower communities.

Committee Member

Dr. Kuno Roth President
Mr. Andres Wirz V. President
Mr. Marc Lombard Treasurer
Mr. Joshiah Ramogi Executive Director

Solafrica.ch works with young people and local community organizations as change agents by providing them with training and capacity to achieve its goals. Solafrica.ch is actively involved in Kenya, Cameroon, DRC Congo and South Africa. In Switzerland, solafrica.ch organizes workshops for young people and scouts to sensitize them on solar energy systems besides other sustainable energy sources. Furthermore we also discuss in the workshops issues of climate change and particularly how individual activities contribute to accelerate climate change.



Discussion session during Training

C. Activities

Activities in 2009

- Completed training of 15 solar technicians in 2009
- Production and sales of 300 LED lamps in Kenya
- Installations of solar for Senator Obama primary and a secondary schools including a computer classroom powered by solar panels.
- Installations of 4 home systems at private homes



Solar technician training in Kenya

Activities in 2010

1. Training in production

In February and June 2010, Mr. Andres Wirz, our Swiss solar expert offered two training for Kibera youths to strengthen their already acquired skills in mass production of the kibera solar lamps. This was necessary as a new wooden casing was developed. The new casing is easier and faster to make compared to its predecessor.

2. Production of lamps

Four youths (Elizabeth, Judy, Fredrick and Johannes) are employed to produce, market and sell the lamps in the Kibera slums. They produce an average of 100 lamps per month. A part is sold at subsidized rate in the slum and some are exported to Switzerland. Here they are sold with a premium to finance the jobs and cover parts of material costs that are still high since we buy in small quantities.



Elizabeth Otieno
Team coordinator



Judy Wandia



Fredrick Oginga



Johanes Oriany

3. Development of solar home systems (Solar power station)

A solar power station was developed with a simple concept of plug and go system. The technology is uncomplicated because the batteries, charge controller and inverters are assembled in a box by the technician. Solar panel is plugged in the inlet box while the outlet is designed for lighting and other charging devices. The technology protects all the gadgets, as the customer cannot tamper with any parts of the system. It is suitable for homes, schools and

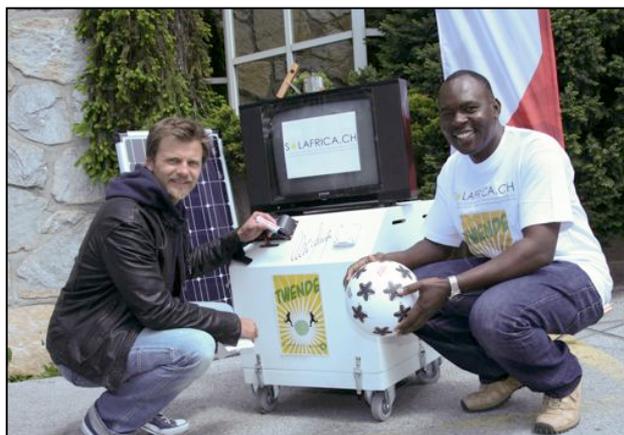


Solar power station prototype

small businesses. For small business there is a wide range of possibilities like charging mobile for a fee, Barbour shop for cutting hair and powering small kiosks in the villages.

4. 2010 FIFA World Cup Football

FIFA World Cup 2010 Football was for the first time hosted last year in Africa. Most Africans were thrilled when it was announced and at the same time sad that the football is so close and yet cannot access it. We therefore hosted an open-air World Cup public viewing solely powered by solar energy. It was also a chance for solafrica.ch to show the solar lamps and also to interact with the larger Kibera slum residence. Similar solar powered public viewings were also held in South Africa, and in a pygmy's village in Cameroon where solafrica.ch facilitated the materials and the technology.



Alain Sutter supported solar public viewing

5. World Scout movement moot workshop in Nairobi

Every four years scouts from all over the world gather to celebrate together. Last year Kenyan Scouts Association (KSA) hosted moot with over 20'000 scouts from all over the world at their Nairobi camp in the neighbourhood of Kibera slum. Solafrica.ch together with KCYP offered several workshops and exposition during this event. Scouts members learned about solar energy in the workshop and later assembled their own solar lamps that they carried back home.



Maria and Alice display their solar lamps

6. Supply solar materials and lamp assembling kits to various workshops

Solafrica.ch held joint solar workshops with Greenpeace and trained several young people in South Africa, Cameroon and Mexico. Solafrica.ch supplied the solar materials and expertise for these events.

7. Export of lamps to Switzerland.

Since February 2010 there is a regular export of the solar lamps made in Kibera to Switzerland. The lamp was developed here in Switzerland and is now being produced in Kibera, with the young people we trained. They first sell the lamps there and a part is sold in Switzerland mainly for workshops. The money is used for paying the salaries, materials and also to help lower the cost to make it affordable to the people there.



Production of Lamps

8. Two Kibera youths on a solar mission to Switzerland

Elizabeth and Billy from KCYP had the opportunity to learn first hand solar installation in Switzerland during the international solar camp in St. Moritz. Organized by Jugend Solar of Greenpeace. They learned hands-on solar installations during the two weeks stay where they installed solar systems and had a good opportunity for networking and exchanging experiences with youths from Switzerland, China and Poland.

D. Milestones

- 15 Trained solar technicians from Kibera community youth
- More than 1,000 solar lamps are in use in Kenya less than expected but this was due to the new production method, which required additional training.
- 5 homes with solar electricity with more than 50 people benefiting from the solar light and they charge mobile phones for their larger community members who need now not to walk for 2 hours to charge mobile phone.
- 2 Schools with solar electricity. Over 400 students and 20 teachers have benefited directly from the solar system. Students study at night and early morning whereas teachers offer night classes and charge their mobile phones.
- A production centre making 100 lamps per month. We expect to double the production when we move to a new proposed location.
- Four fulltime youth employed on the production. More youths could be hired to produce more lamps or home systems.
- Two prototypes:- a). A solar power station prototype and b). a solar lamp/charge for charging mobile phones and light.
- More than 12 workshops held in Switzerland with over 200 benefited.
- Supplied materials for solar workshops in Mexico, South Africa and Cameroon.
- Solar World Cup attracted many people who were informed about solar energy thus creating awareness. There was also a high media attraction both on print, digital and TV reports.

On overall solafrica.ch achieved a considerable results but we are determined to double our efforts this year. We have planned several activities building on the success of the last one and half year.

Solafrica.ch won 2010 Swiss sustainability award prize (Nachhaltigkeit Prix Nature 2010)



Mr. Andres Wirz of Solafrica.ch was awarded the first prize by Bertrand Piccard in Feb 2010 in Basel

E. Outlook

■ Training of 20 more solar technicians

Kenya needs qualified solar technicians to make the portable solar lamps, install solar home systems and carry out maintenance services. We are devoted to providing quality and continuous training of 20 or more youths every year to acquire the necessary skills to be leading solar technicians. There are no institutions training solar technicians. It is estimated that more than half of all solar installations in Kenya do not work well. Partly due to poor installation made by untrained people or partly because of substandard products. Solar experts are not available to carry out proper installation or advise customers on the choices for solar systems.

■ Increase production of Solar lamps to 200 per month

We plan to increase the production of Kibera lamp from the current 100 to 200 per month. We estimate that the demand for the lamps will increase as we develop new marketing strategies and also the foreseen increase of uptake by scout members.

More space will be required for production. We are planning to partner with Kenya Scouts Association (KSA) to train and produce the lamps at Rowallan camp. There is adequate space at the camp and this will enable productions and workshops to be within one place.

■ Pilot project of Solar home systems and Solar school system

Kibera youths have developed a prototype solar power station of a plug and go system that we plan to test in 10 better 20 schools in Abura village.

The pilot project is to first test for a period of 6 months on the daily uses of the home system, then scaled up the project to other rural schools. Solafrica.ch will provide sustainable clean light to homes and schools. We estimate that more than 3,000 students will benefit by extended study in the evening therefore better performance besides the project will empower local communities.

This is a first step for the community to learn the benefits of solar energy before they can access them when the program is officially rolled out to the entire community.

■ Capacity Building

As we train solar technicians we want them to maintain high standard in installations, maintenance and also in the production of solar LED lamps. To achieve these goals we will offer continuous improvements in quality and efficiency through discussion and experiments. We also intend to offer management and marketing skills to the solar technicians to increase their capabilities and widen their occupation.

Solafrica.ch plans to introduce more solar community economic empowerment programs. The more we engage people and encourage them to be part of the project and not to impose things on them. This makes the community accept the project, nurture it and makes it sustainable.

■ **World Scout Solar Badge programme.**

We have a joint venture with the World scout movement to develop the content of a solar scout badge. A Scout solar badge will be acknowledgment of an accomplished specific task or training or activity and passing a test by a member. It will include assembling of the kibera solar lamp, PV besides learning other solar related tasks, like cooking, games etc. The badge will be won as a show of achievement and very attractive and popular with Kids. The first tests of the programme has been proposed to begin in summer 2011 in Switzerland at Kandersteg International Scout center and Rowallan camp in Nairobi (Kenya) and maybe in South Africa.



Workshop at the Moot in Rowallan Camp in August 2010.

F. Links

a. Newspapers and website articles

1. A short portrait of Solafrica.ch participation at Natur messe market in 2011.

<http://www.nachhaltigleben.ch/vorbilder/Isolafricar-hilft-mit-solarlampen-in-den-slums-von-kenia>

2. An article on the Zeitpunkt.ch magazine: [http://www.zeitpunkt.ch/news/artikel-](http://www.zeitpunkt.ch/news/artikel-einzelansicht/artikel/solafrica-die-sonne-scheint-auch-fuer-die-slums.html?cHash=9a75a29b71&type=98)

[einzelansicht/artikel/solafrica-die-sonne-scheint-auch-fuer-die-slums.html?cHash=9a75a29b71&type=98](http://www.zeitpunkt.ch/news/artikel-einzelansicht/artikel/solafrica-die-sonne-scheint-auch-fuer-die-slums.html?cHash=9a75a29b71&type=98)

b. Videos

1. Training young solar technicians in Kenya

http://www.youtube.com/watch?v=LxIB9KOeL4w&feature=player_embedded#at=21

2. Prix Natur 2010 nomination video: http://www.youtube.com/watch?v=Tiq_Xvp9rMU

3. Kenya youth Installed solar system at the Grand mother of President Obama

http://www.youtube.com/watch?v=19IVrm_Ku-o&feature=related