Newsletter 3 / 2021

STIFTUNG SOLARENERGIE
SOLAR ENERGY FOUNDATION

Dear friends and supporters of the Solar Energy Foundation,

As the year ends, I am pleased to be able to report on a number of successfully completed projects.

In addition to our proven projects (solar villages, health stations, education), we would like to test new areas of application for solar energy in pilot projects in the future. A lot has changed since the beginning of our work in Africa almost 20 years ago. While at that time it was mainly about light, today new applications for solar energy can be found in almost all areas of life and work.

Many of the new solar products and services are now being created in Africa itself, based on experience and knowledge of the local market. We have accompanied some of these new ideas for weeks at Energy Camp East Africa - and they are now "ripe" for pilot project implementation.

Therefore, read more about these projects in this newsletter:

Implemented projects:	Two new solar villages in Uganda Solar milk cooling for Maasai in Kenya Energy Camp for Energy start-ups in East Africa
Ongoing projects:	Training for solar technicians Light and cooling for health stations Solar system for the MST school
Pioneering projects:	Solar trolley for street food Repurposing solar batteries (Second Life)

Let me say a word about our partner country Ethiopia: We regret the political development there, which has led to a civil war and a renewed state of emergency. This uncertain situation is also the reason why we are currently suspending our work there. We very much hope that the situation will soon improve and that the country will find inner peace.

We hope you enjoy reading the newsletter!

Freiburg, November 2021

Dr. Harald Schützeichel, Director

✓ Implemented: Two more solar villages in Uganda

We call our successful village development concept "solar villages": the basic solar supply for an entire village. The Solar Energy Foundation provides all households with a basic electricity supply with solar energy at a subsidised price as a start-up aid.

The price to be paid by the households in monthly instalments is based on what the poorest families in the village can pay. This is to ensure that every family receives a basic electricity supply.

Sustainable success is ensured by having local technicians responsible for maintenance and service. In this way, the programme also promotes local solar craftsmanship. Since 2005, we have realised 17 solar villages in Africa and Asia. Two more have been added thanks to the support of Glas Henrich GmbH (Hofheim am Taunus):

- Ruhita, District Kabala
- Nsanvu, District Buikwe

Installation and maintenance were done by the local solar companies Solar First and Xpreme Solar. Project management was carried out by Sendea, a Ugandan solar cooperative initiated by us.

What we want to achieve	… and what the residents say
Health:	“I have lung problems. I was often sick because of the smoke from the kerosene lamp. Why? Because every morning I spit out black slime that was in my lungs through the smoke of the kerosene lamp. But since I have solar light, I feel better.”
Education:	“Before we got solar light, we also learned in the evening, but much less than today. Today we can use the extra time for both: homework for school and to help our parents do housework.”
Security:	“The crime rate is significantly reduced, not only because of the street lamps, but also because of the solar light inside the huts. That keeps many thieves away. Even the hyenas are no longer coming.”
Income:	“With the solar light, I can do handicrafts in the evening, for example sewing clothes or baking bread. So I have significantly improved my income. At the same time, the cost of light has decreased because the solar light is cheaper than the kerosene lamp.”
Water supply:	“In the past, our women and children had to go long distances during the day to get water from the source. With the solar energy and the water pump, this strenuous path is no longer necessary every day. Time can now be used much more productively.”
Communication in the village:	“Before we got solar light, we didn’t meet so often in the evening to talk. Now we use the light to come together, discuss and exchange experiences. “
Communication with the world outside:	“We now have the opportunity to stay in touch with the outside world. For example, we can easily charge our mobile phones. The operation of radios is also much easier, because we no longer need dry batteries. Solar energy has taken our village a big step forward.”

We switch the lights on!

✓ Implemented: Solar milk cooling for a Maasai community in Kenya

The Maasai families in Oloo Oishobor have joined together in a so-called "Community Based Organisation" (CBO): a state-recognised, non-profit organisation. The CBO has 125 registered members and is led by 12 board members.

In this typical Maasai village, cattle breeding is the most important part of the local economy and livelihood. About 1,000 litres of milk are produced daily in the village, 50% of which is sold. The rest is for the village's own consumption.

Until now, the milk was taken daily to middlemen who then cooled it and sold it at regional markets. However, the price paid by the middlemen is low compared to the market price.

To improve their income, the CBO proposed to bypass the middlemen. To do this, the milk that is milked must first be collected and stored in a refrigeration plant before being transported to market.

For this cooling, the CBO proposed a solution with solar energy because it enables a reliable supply of electricity for cooling. Thanks to funding from Energiebauern GmbH in Aichach, the pilot project could be implemented: In October 2021, our Kenyan partner SunTransfer installed the solar milk cooling system.

The cooling system is a development of SelfChill, a spin-off of the University of Hohenheim. The special feature: cooling is provided by an ice storage system that compensates for fluctuations in solar energy or cooling power. This makes the use of batteries superfluous.

✓ Implemented: Energy Camp East Africa

The number of African energy start-ups is growing steadily. Their advantage over international companies is often their proximity to the specific social and cultural requirements of the new energy products.

However, local start-ups in Africa also face specific challenges. One of the biggest is their lack of visibility for (international) cooperation partners and investors.

Supported by numerous East African organisations and companies, we held the **"Energy Camp East Africa"** in summer 2021: Five selected start-ups from East Africa received several weeks of coaching from experienced African entrepreneurs. Finally, a workshop was held in Kampala in September 2021, with prizes awarded to the two best start-up concepts.

The five start-ups of the Energy Camp are:

- **Drop Access (Kenya)** has developed the "VacciBox": a portable, solar-powered cooler for storing vaccines in remote health posts. The box also includes a medical data management system.
- **Inno-Neat (Kenya)** manufactures second-life lithium-ion batteries from recycled cells for use in solar applications, providing a solution to the legacy batteries of Africa's millions of solar home systems.
- **Fin-e (Uganda)** is a fintech start-up that aims to optimise financing for local SMEs to improve living conditions in sub-Saharan Africa.
- **SolarPipo (Uganda)** makes solar energy accessible to the dairy sector. SolarPipo makes it easier for dairy clients to purchase solar equipment for cooling, water pumping and other productive purposes.
- **Zuhura Solutions (Kenya)** developed a fully solar-powered vending trolley for food vendors on Kenya's streets. This avoids the use of environmentally harmful charcoal.

→ Ongoing: Solar system for the MST Junior School, Uganda

Founded in 2016 by Dr Emma Naluyima and her husband Mugerwa Washington, the MST (Maths | Science | Technology) Junior School is a mixed day and boarding primary school with a kindergarten section. The school works across denominations and offers children of different religious affiliations the opportunity to learn at the school.

The students acquire modern agricultural skills while implementing conventional school requirements based on Uganda's national curriculum.

The educational approach

The school follows Uganda's national curriculum, which was designed by the National Curriculum Development Centre (NCDC). The school also offers practical training or hands-on learning: agriculture, aquaculture, vermiculture and hydroponics are subjects that go beyond the national curriculum. They are taught on the school's own farm and in the laboratory. The other additional subjects are information technology, home economics, arts and crafts. In addition, certain inner attitudes are taught: Conscious use of time (time management), appreciation of financial resources and economical use of them.

The MST Junior School education is designed to encourage and develop critical thinking, innovativeness, creativity, love for nature, passion for agriculture. The school thus ensures experiential, experimental learning aimed at preparing students for life beyond the school gate.

Today, the school has 285 students who are taught by 45 teachers.

The problems of energy supply

The school operates 24 hours a day, with classes from 6am to 9pm (especially for older students).

Due to the specific age group of students (4-12 years) at MST, it is important for the school to have electricity and water at all times.

However, the state grid power supply is not stable: daily power cuts are the rule and hinder the school's daily routine. Usually, the school gets four hours of mains electricity per day, but sometimes it is cut off for two days at a time.

Alternative power supply with solar power

To ensure a secure energy supply, the school will receive a solar system with 3.2 kWp. Installation and maintenance will be carried out by Anuel

Energy Ltd - a local company that is a member of the Sendea cooperative initiated by the Solar Energy Foundation. Anuel has already reliably implemented numerous projects of the Solar Energy Foundation.

This is how you can support the school:	
Costs of the solar system:	18,000 Euro
Already financed:	7,500 Euro
Own contribution of the school:	1,800 Euro
Still missing amount:	**8,700 Euro**

Co-founder of the school and driving force behind the MST Junior School: Dr Emma Naluyima

→ Ongoing: Light and cooling for health stations

Primary health care

In rural areas, health stations are the basis of medical care for the population:

- Treatment and diagnosis of diseases
- Preventive care and vaccinations
- Care after accidents
- Care for pregnant women and support during childbirth

Together with its local partners, the Stiftung Solarenergie has already equipped more than 200 health stations in Africa and Asia with solar systems for lighting and cooling since 2004.

The solar equipment we install varies according to need and local possibilities. Wherever possible, we install solar-powered refrigerators for medicine cooling in addition to indoor and outdoor lighting.

We have always been able to rely on experienced local partners for the installation and maintenance of the solar systems.

Fighting the Corona pandemic

The health posts are also particularly important in slowing down or preventing the spread of the Corona virus:

- They are centres for educating the population about health and protection measures;
- They serve as the first point of contact for assistance coordinated by the state and international aid agencies;
- They facilitate or support vaccination activities.

International aid is first deployed where there is reliable infrastructure and personnel.

Trained personnel, in turn, are sent first to where there is a developed infrastructure. This always includes sufficient power supply for light and communication.

We will continue this important work in 2022.

This is how you can support us:

2,500 Euro: Solar light for a health station; 2,500 Euro: Solar refrigerator for medicine cooling

→ Ongoing: Training of solar technicians

The growing solar sector in Uganda needs more and more well-trained professionals. For a long time, solar companies operating in Uganda trained their new employees on their own. On the one hand, this is costly for the companies and on the other hand, it only offers employees a knowledge base that is closely aligned with the company's needs.

The Sendea Academy, which we launched in 2020, has changed this situation. The independent training centre for solar energy is run by the Ugandan cooperative Sendea, an association of local solar companies.

In the past two years, more than 100 solar technicians have already been trained and received a state-recognised certificate.

For us, the success of the dual and company-independent training concept is shown above all in the successful integration of the graduates into the Ugandan labour market:

- Some of the graduates had a job at a local solar company when they started the training and have been employed there with a better salary after the training.
- Some found employment with national or international solar companies in Uganda after the solar training, usually with much better salaries than they had before.
- Still others have become self-employed and offer services as individual companies: from installation to maintenance and service.
- And finally, some graduates have decided to pursue an engineering degree at university. Two students have received a scholarship from the Solar Energy Foundation to cover part of the costs.

The Sendea Academy offers solar technology courses for two different target groups:

Advanced training for trained electricians:

A five-week course with a certificate of completion and integrated practical training in a solar company.

The courses are supported, among others, by the Rivera Foundation, the association "Schöpfung nachhaltig bewahren" and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ).

That's what solar training costs:

200 euros for a two-week course

400 euros for a five-week course

Training for freelancers

In Uganda, many solar installations are carried out by freelancers. These usually have little knowledge of solar technology and are therefore unable to provide professional information to clients. The new freelancer programme of the SENDEA Academy aims to change this by offering a two-week basic training course specifically for freelancers.

The first courses have shown that the freelancers are consistently happy about the opportunity for further training. Many are aware of their lack of knowledge of solar technology, but there has been no opportunity to acquire the necessary knowledge specifically for their needs.

Freelancers who attend the two-week course and pass a final exam receive a certificate that identifies them as solar installers with basic knowledge.

The training is supported by the Austrian aid organisation Jugend Eine Welt and the Stiftung Entwicklungszusammenarbeit Baden-Württemberg (SEZ), among others.

→ Pioneering project: Solar trolley for street food

Esther Mwanga is a young mother who works as a street vendor in Nairobi. The food is prepared in a central kitchen and then kept warm by her on her small street trolley. One of the biggest challenges for Esther Mwanga - as for three million of her Kenyan colleagues - is that she relies on charcoal to keep the food warm.

Charcoal is harmful to the environment and health and the price has doubled in the last two years.

The Kenyan start-up Zuhura Solutions therefore developed a solar-powered sales trolley: the battery charged by the solar module makes it possible to keep the food warm throughout the day. Clean and without harmful smoke.

Esther Mwanga has tested the first stand and is thrilled. The customers especially appreciate that the food is presented much cleaner than at the usual charcoal stands.

In a next step, we would like to test 20 solar vending stands in Nairobi for their practicality in order to initiate a broad market introduction.

If the pilot project is successful, the solar vending trolley will be sold to street vendors through a credit system. This would be an environmentally friendly and low-cost alternative to the current charcoal-powered vending trolleys.

This is how you can help: We need 18,000 euros (900 euros per trolley) to carry out the project.

→ Pioneering project: Repurposing of Lithium-Ionen Batteries

Millions of off-grid solar systems are sold every year in developing countries, and the market is expected to grow exponentially.

The provision of clean electricity does solve the problem of environmentally harmful electricity generation with diesel and kerosene. But solar systems are only ecological and sustainable if their environmentally friendly disposal is also clarified. An important issue is the recycling of the batteries that are needed to store the solar energy.

The lithium batteries mostly used in the new solar home systems could be reused with relatively little effort: As refurbished batteries, they have the same technical performance as newly manufactured ones - only they are significantly cheaper.

We want to promote the reuse of batteries from solar systems. To this end, we are using the experience of the Kenyan start-up Inno-Neat, which was awarded a prize by the jury of the Energy Camp East Africa in September 2021. It has successfully refurbished and tested solar batteries in initial field trials.

In a joint project, we want to demonstrate that the reuse of lithium batteries is not only technically mature, but also economically attractive for customers (households, schools, small businesses).

For this purpose, we use, among other things, batteries from solar home systems that have been installed by our partner company SunTransfer Kenya in recent years.

The recycling of solar batteries must become an integral part of decentralised energy supply if solar energy is to maintain its credibility as a clean energy source.

This is how you can help: The costs for this pilot project are 15,000 Euros.

What we do

We promote the distribution of solar energy:

- On village development
- In schools
- In small and medium enterprises
- To improve the harvest
- For better health care

We promote the local solar trade:

- We train
- We support young entrepreneurs
- We create jobs
- We make micro-credits
- We alleviate poverty

Small and medium-sized enterprises are important factors in the fight against poverty and for job creation. Therefore, we always use our donation-funded projects to support local solar companies as well.

A dual approach that has proven its worth since 2004.

Here we are active

Country	Period	Our local partners
Ethiopia*	since 2004 (no projects at present due to the dangerous political situation)	Stiftung Solarenergie – Solar Energy Foundation, Addis Ababa
Kenya	since 2009	Stiftung Solarenergie – Solar Energy Foundation, Nairobi
Philippines	since 2010	FREED/Stiftung Solarenergie Philippines, Manila
Uganda	since 2015	Association of Sendea UG Ltd., Kampala

This is how you can support us

- Send this newsletter to interested people.
- Donate to our work:
  - 200 Euro: Light for a household (solar village)
  - 200 Euro: Solar training of a freelancer
  - 400 Euro: Training of a solar technician
  - 1,000 Euro: Solar light for a village school
  - 2,500 Euro: Solar light for a health station
  - 2,500 Euro: Solar fridge for medicine cooling in a rural health station
  - 30,000 Euro for a whole solar village

Contact:
Stiftung Solarenergie - Solar Energy Foundation
Basler Landstr. 8, DE-79111 Freiburg
mail@stiftung-solarenergie.org

Our donation bank account:
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