



# sun connect

## rural electrification with photovoltaics

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Harald Schützeichel

## Will the last ones be the first?

On-grid solar energy struggled for many years with the image of being too expensive and not powerful enough. Only recently has the realization become more widespread that massive state subsidies are what make atomic and coal power affordable.

There has also been a growing awareness that political risks, environmental damage, and radiation make the use of fossil and atomic energies increasingly problematic. Alternatively, various programs have worked to introduce the solar industry onto the market, making it an attractive capital investment. This has happened, no least, because the so-called “developed” world is most easily convinced by money. Unfortunately, this has also led to a situation in which banks and investors have reduced the solar market to an investment property. The off-grid solar world looks a lot different! For many people in developing countries, solar energy is the only possible energy supply. For them, discussions about environmental protection, still being carried out with ideological undertones in Europe and the U.S., play no role. Those who have been forced to live with diesel or kerosene powered instruments would not hesitate in choosing a clean and healthy solar solution. Yet questions still remain: Is this energy too expensive? Electricity prices from solar facilities are clearly lower than those of diesel or kerosene. Is it energy efficient? Solar energy stipulates the use of LED rather than energy saving bulbs and televisions and refrigerators with low energy consumption rather than energy wasters with a stand-by function. Is solar energy subsidized? Hardly. People at the lowest end of the world income scale are demonstrating how to create an economically and ecologically sensible energy supply. They may still be at the bottom of the world affluence scale. But time is working for them. After all, they have the advantage of a non-subsidized, clean, independent, and safe energy source. Soon enough, those who are last could become first.

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## Solar facilities for the Philippines

The Philippines are a forgotten land with regard to solar energy – reason enough for the Solar Energy Foundation to become active there and bring in their comprehensive approach. In March 2011, the national Solar Energy Foundation was called to life.

With more than 7000 islands extending a length of 1850 kilometers and a width of 1060 kilometers, the Philippines are a very special country, and not only geographically. Although the land has a huge potential for economic and social development, it continues to remain a developing country. A major gap reigns between a small, wealthy upper class and the majority of the population.

An economic gap also exists between north and south. Whereas Luzon, the main island in the north, has an export-oriented industry, the people on Mindanao, in the south, live largely from agriculture.

The energy supply is frequently unstable, which precipitates in regular electrical outages. An estimated 20 million inhabitants have no access to electricity.

The topography of the Philippines actually offers ideal conditions for using an off-grid electrical supply with solar energy. That much more surprising is the solar industry's virtual non-existence there. The existing solar enterprises can be counted on one hand. This could be due to the many years of concentration on state subsidy programs, whose mechanisms always run the same way: when subsidies are available, solar firms are active, move into the countryside, install facilities,

and then return to the capital to wait for the next subsidy program. In the past, almost no firm on the Philippines built up a network with trained solar technicians or sold solar systems without subsidies. Among the major exceptions was Shell Solar, which at the beginning of 2000 trained a great number of solar technicians and built up a nationwide service network. The project came to an abrupt halt, however, when the company shut down its solar technology division after just a few years.

It was not until two years ago that several micro-credit organizations began offering their members solar facilities. Among the first were Peace and Equity Foundation (PEF) in Manila and also Negros Women For Tomorrow Foundation (NWTF) in Bacolod. The latter has successfully worked together with the Stiftung Solarenergie – Solar Energy Foundation since 2009.

The Solar Energy Foundation will use its experiences from Ethiopia in the Philippines. The Foundation is currently building up a nationwide service network of solar centers with trained solar technicians – together with HSSI, a solar enterprise founded by Jim Ayala. A training center based on the model of the Ethiopian International Solar Energy School will open in 2012. *hs*



Ride for Light reached villages across the Philippines, where 26.4 percent of the population still lives without electricity.

## Illuminating the Philippines: Ride for Light 2011

Ride for Light is a project of Stiftung Solarenergie (StS) Philippines. Three riders on BMW motorcycles, 6400 kilometers, and a mission to donate portable solar home-lighting systems to 40 communities in off-grid villages, including protected areas, indigenous people tribes, Bangsa Moro, fishing, and farming communities.

Dusk arrives almost imperceptibly in an Aeta resettlement community in Botolan, Zambales, where these indigenous folk rebuilt their lives in the aftermath of the Mt. Pinatubo eruption in 1991. Yet for these Aeta families, the setting of the sun has a clear meaning: once evening begins, the resettlement area is cloaked in darkness, and all human activity slows down to a halt.

This scene is echoed in thousands of other villages across the Philippines, where 26.4 percent of the population still lives without electricity. At night, these Filipinos make do with meager light from kerosene lamps or



On April 16, 2011, the three Light Riders started their mission in Botolan, Zambales.



During their 19-days ride, they covered 6400 kilometers around the country.



During Ride for Light, 582 solar lanterns were provided to over 80 isolated villages.



The Riders' mission was to donate portable solar home-lighting systems to the country's most impoverished off-grid communities.

wood fuel, two energy sources that have negative long-term effects on human health and the environment.

Last April 18, 2011, however, the Aeta community in Botolan finally took its first step towards a brighter future. Ride for Light 2011, Stiftung Solarenergie (StS) Philippines' flagship project, chose the resettlement area as one of its many stops in its campaign to bring solar energy lanterns to unelectrified areas across the Philippines. The project, which began on April 16, 2011, spanned the entire archipelago, targeting some of the country's most impoverished off-grid communities.

Together with Light Riders Philippe Saubier, Ibba Bernardo, and Toto Villanueva, as well as various corporate and community partners and village sponsors, StS Philippines covered 6400 kilometers around the country over 19 days. Since the conclusion of Ride for Light on May 6, 2011, the foundation has provided 582 solar lanterns to over 80 isolated and off-grid villages and communities in the Philippines.

Christian Schmidt

## Five watts are enough

The new generation of solar-capable laptops and desktop computers require barely more energy than a flashlight. That is quite convincing, but development has just begun.

Too beautiful to be true! For the competition “Next-Gen PC Design,” the Serbian designer Nikola Knezevic designed the ultimate solar laptop in 2008. Foldable to a small case whose outer covering is simultaneously a solar panel for charging the battery, Knezevic built a persuasive tool for use beyond all electrical connections: However, without success. He was not even selected as a finalist in the competition.

For very good reason: until now, industry has been unable to build an all-around acceptable laptop with integrated solar panel. Solar panels built into the back of the screen are capable of producing only enough energy to run a 400 MHz processor, which is not powerful enough. Another problem is that most laptop screens are not bright enough, making it necessary to use them in the shade. However, there, the batteries do not charge sufficiently.

### Demand unanswered

Accordingly, until today, no supplier is able to deliver useful solar laptops. The Taiwanese manufacturer MIS announced such a machine already in 2006, for a price of 2500 US dollars, but failed to further develop it to a market-ready state. The same is true of the Spanish firm iUnika. Their extremely inexpensive solar notebook was meant to be available in summer 2009 for 320 US dollars, but is apparently still under development. No answers are given to the question of when it will be introduced onto the market. Thus, remaining for use in the off-grid area are mainly devices whose built-in rechargeable batteries can be charged by means of external solar panels, such as the OLPC-Laptop, Classmate PC 4 by Lenovo, and the Edubook Gecko by NorhTec. Such laptops were developed mainly for schools in remote areas and are characterized by the

Name	Manufacturer	Energy consumption	Price (US\$)	Operating system	Processor
<b>Laptops</b>					
Classmate PC4	Intel/Lenovo	5 (average)	600	Windows 7	1.66 GHz
Gecko Edubook	NorhTec	6.5 (average)	199	Watt OS	1 GHz
OLPC X0 1.5	Quanta	8–18.3	200	Linux	400 MHz–1 GHz
<b>Desktop computers</b>					
Gecko Surfboard	NorhTec	5	99	Linux	1 GHz
T1 Fanless PC	Aleutia	14	300	Ubuntu/Windows 7	1.66 GHz
SolarLEAP	SolarLEAP	33	499	Ubuntu/Windows	1.6 GHz
SS945i	SolarPC	n.a.	495	Ubuntu/Linux/Windows	1.46–2.5 GHz



Classmate PC4



Gecko Edubook



OLPC X0

lowest possible energy consumption. They have approximately ten times less energy consumption than the average laptop on the market and nonetheless achieve comparable performances with 1 to 1.66 GHz processors.

### Ninety percent less energy

The offer of desktop devices is hardly any greater. Here, too, only a few devices are available whose energy consumption is so low that they can be run with solar energy – and car batteries as cache. Among the suppliers of 12-volt desktop computers are firms such as NorhTec, SolarPC, SolarLeap, and Aleutia. The greatest differences can be found in the processors' performance capacity, which greatly influences electricity consumption – and price. On average, the devices use around 20 watts, which is approximately ten percent of what the average desktop machines on the market use when operating at full speed.

Particularly interesting is that several suppliers know, from first-hand experience, what is required of computers in third-world countries: For example, Mike Rosenberg, CEO of the firm Aleutia founded in England in 2006. Rosenberg had previously opened an internet café for street children in Ghana and thereby learned what is needed. Due to a lack of offers on the market,

Rosenberg decided to take the matter into his own hands and created a palette of solar-capable desktop devices that are now sold in 59 countries.

Charles Watson has a similar, direct connection to the theme. The young American had already dedicated himself to solar powered desktop devices during his high school days. He then traveled to Nepal and saw what school children in rural regions were lacking. Watson subsequently founded the non-profit organization SolarLEAP in Hong Kong in 2009 and began building desktop machines that are meanwhile in use in Nepal, Ghana, India, and also in Ethiopia – for the Solar Energy Foundation. Worldwide, 1.6 billion people have to make do without electricity, which opens up a huge market whose demands are not satisfied by the currently available devices. Solar cracks like Rosenberg and Watson still have a lot of work ahead of them.

Christian Schmidt is a scientific journalist in Zurich.

Screen	RAM	Main memory	Website	Special features
10.1" LED backlit	1–2 GB	16–32 GB	<a href="http://www.classmatepc.com">www.classmatepc.com</a>	rotating screen turns the Classmate into a tablet PC
8.9" LED backlit	512 MB–1 GB	n. a.	<a href="http://www.norhtec.com">www.norhtec.com</a>	can be operated with 8 rechargeable AA batteries
8.9" LED backlit	512 MB–1 GB	4 GB	<a href="http://one.laptop.org">one.laptop.org</a>	dualmode screen for use in sunlight
optional	512 MB	8–16 GB	<a href="http://www.norhtec.com">www.norhtec.com</a>	all-in-one: the computer is built into the keyboard
optional	1–2 GB	40 GB	<a href="http://www.aleutia.com">www.aleutia.com</a>	has no moveable parts
17.3"	2 GB	250 GB	<a href="http://www.solarleap.org">www.solarleap.org</a>	only desktop model with a specially developed energy-saving screen
optional	1–2 GB	n.a.	<a href="http://www.solarpc.com">www.solarpc.com</a>	already on the market since 2006



Gecko Surfboard



SS945i



Technician of the Solar Energy Foundation Ethiopia checks the functioning of a ST2 lamp she just sold "on the spot."

### Founding of StS International Federation

A conviction that combining the advantages of an NGO with the advantages of socially responsible business creates long-term development is StS International for rural electrification's founding motif. The StS International Federation was founded by Dr. Harald Schützeichel



(President), Samson Tsegaye (Stiftung Solarenergie – Solar Energy Foundation Ethiopia), and Jim Ayala (Stiftung Solar-energie – Solar Energy Foundation Philippines) on 22 March 2011. The StS International is an international network of foundations and socially engaged enterprises that aim to combat energy-based poverty through measures such as education, infrastructure, and microcredits.

### Newsletter – staying informed

A free, online Stiftung Solarenergie – Solar Energy Foundation newsletter will be available beginning 1 July 2011. Subscribers hereby receive monthly news from the association of the STS International Federation. The newsletter can be

subscribed to at: [www.stiftung-solarenergie.org](http://www.stiftung-solarenergie.org). Sun connect subscribers will automatically receive this additional information.

### Facebook

Knowing what is going on, participating in discussions, spreading ideas, and informing the public. The Stiftung Solar-energie – Solar Energy Foundation is now also on Facebook. [www.facebook.com/pages/Stiftung-Solarenergie-Solar-Energy-Foundation/220233974661138](https://www.facebook.com/pages/Stiftung-Solarenergie-Solar-Energy-Foundation/220233974661138)

### Ethiopia

#### Solar home systems locations on Google Map

More than 5000 of our solar home systems supply 25,000 people with solar electricity. The systems are serviced from 13 different locations, with 62 technicians on duty. In order to find the houses, which are often quite remote, the location data (GPS) of the solar home systems is captured upon installation. These locations can now be viewed on Google Map. The solar villages Rema, Rema-Dire, and Kechemober are not shown as every household in these villages has a solar home system.

[www.stiftung-solarenergie.org](http://www.stiftung-solarenergie.org)



In order for the technicians to find the often remote houses with solar home systems, all locations of the Solar Energy Foundation can be viewed on Google Map.

### Targeted brightness for the microscope

With the help of just one solar lamp, twenty patients per day, rather than the previous four, can be examined for pathogens at the health station in Rema. The examining doctor uses one of four solar lamps



Thanks to the targeted brightness of a solar lamp, more patients can be examined at the health station in Rema rather than at a station located far away.

as background lighting for his microscope. The targeted brightness also allows him to make more precise analyses of the secretion samples for tuberculosis and malaria. Previously, patients had to visit a different health station located quite far away for this examination.

### Hong Kong

#### SunTransfer changes location

In order to be closer to the supplier market, speed-up product development, and also lower transport costs, the business of SunTransfer Germany will be transferred to the newly founded SunTransfer Hong Kong. On the board of directors, in addition to Dr. Harald Schützeichel as President of StS International, are Marc Castagnet (Hong Kong) and Jim Ayala (Manila). SunTransfer Hong Kong is a daughter company of the Stiftung Solarenergie – Solar Energy Foundation and part of the StS International Federation with headquarters in Zurich. A road show for investors is currently traveling through Europe and Asia.

## When breathing becomes deadly

They are sold a million times over. They break down a million times over. They endanger people, animals, and the environment a million times over: compact fluorescent lamps (CFLs). In contrast to normal light bulbs, they contain highly toxic mercury. They are not suitable for use in remote regions.

CFL energy saving lamps transform circa 25 percent of the electricity into light. That is five times more light output than with a common light bulb, which emits 95 percent of the electricity as heat. CFLs are, additionally, more durable than light bulbs: Two qualities that support their use in areas where electricity is limited, such as rural regions. Solar light suppliers also distribute CFLs, because they can operate with smaller modules and batteries.

But: CFL energy saving lamps are hazardous waste. They contain mercury and are composed of various elements (electronics, luminary, socket) that have to be disposed of separately. In order to protect the health of workers, this is only possible in specialized facilities. Such facilities are cost and energy intensive.

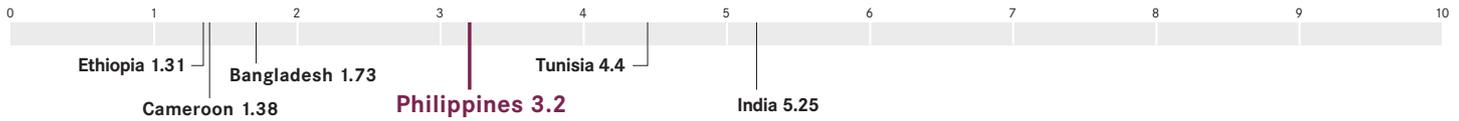
The WHO, the EU commission, and practically all health authorities rate mercury as a health hazard. When it accumulates in the body, it damages the nervous system, lungs, and kidneys. For babies and fetuses there is an intensified health danger. Should a CFL break, authorities recommend airing the room and leaving it for fifteen minutes and the shards are not to be gathered with bare hands.

In July 2010, the Committee on the Environment, Public Health and Food Safety of the European Parliament published the recommendation to adopt measures for improved recycling systems for electronic trash, by means of which a quota of 65 percent is achievable. The consulting group hereby refers to the European Electronics Recyclers Association (EERA). However, that which is promoted for the EU does not apply to countries in Asia or Africa. Whereas the Restriction of Hazardous Substances Directive (RoHS) formulates at least borderline values for Asian and other non-European countries, for Africa there are no guidelines. There, it remains up to CFL distributors to determine what happens with the used lamps.

When the EU calculates with a mere 65 percent recycling quota after increased efforts (e.g., a deposit system), then what will the situation be in countries in which the majority of the population lives in rural regions? With a population that has no experience with recycling in the form of returns? Where there is no recycling infrastructure? The quota will most likely be around zero.

There are alternatives. For example, LED lamps are becoming less expensive and are producing stronger light, and their disposal does not present any problems in terms of pollutants such as mercury (see also the report in *sun connect* no. 1). *yd*

**Rural Solar Energy Index:** 3.2 (1=poorest, 10=best performance)



## Geography/demography/education

**Location (continent):** Southeastern Asia

**Form of government:** Republic

**Surface:** 300,000 sq km

**Population:** 101,833,938 (est. 2011)

**Population density:** 303/sq km

**GDP per capita:** US\$ 1790

**Life expectancy:** 72 years

**Urbanization:** 49%

**Literacy rates (of population 15+):** 95 %

**Religions:** Roman Catholic (80.9 %), Muslim (5 %), Evangelical (2.8 %), Iglesia ni Kristo (2.3 %), Aglipayan (2 %), other Christian (4.5 %), other (2.5 %)

**Human Development Index (HDI):** 0.638

## Economy

**Gross national income (PPP):** US\$ 353.2 billion

**Economic growth:** 7.3% (est. 2010)

**Share of agriculture:** 15%

**Inflation rate (CP):** 3.8 %

\***Economic transformation index (Bertelsmann):** 6.06

\***Corruption index (Transparency International):** 2.3

\***International Property Rights Index (IPRI):** 4.7

## Electricity

**Electricity consumption:** 54.4 billion kWh (est. 2009)

**Electricity production:** 61.93 billion kWh (est. 2009)

**Electricity export:** 0 kWh

**Electricity import:** n.a.

\***Share of PV in electricity production:** 0.002 %

**Percent of the overall population with access to electricity:** 80 %

\***Percent of the rural population with access to electricity:** 26.4 %

## Photovoltaic (PV)

**Daily sun-hours:** 5.1 kWh/sq m/day (161.7 W/sq m)

**Tax exemptions/incentives for PV:** yes (7-year income tax holiday [after holiday: 10% corporate income tax instead of 30%], carbon credits generated from renewable energy sources free from taxes; 1.5% realty tax cap on original cost of equipment and facilities, VAT exemption for generated power)

\***Market introduction programs for PV:** no

\***Market introduction programs off-grid specific:** no

\***Number of jobs in solar energy:** <1000 (installation, maintenance, repair, distribution)

**Amount of installed PV capacity:** 567 kW (2000); 4619 systems (2001)

\*included for calculation of Rural Solar Energy Index (n.a. = data not available)

Sources: Bertelsmann Transformation Index 2009/10, CIA, www.climatetemp.info, Human Development Report 2007/08, IMF, International Energy Agency, International Property Rights Index 2009, Philippine Department of Energy, Transparency International 2009, Rural Poverty Portal, Unctad, Unido, World Bank.



# Philippines



Harald Schützeichel

# StS Network for rural development with solar energy

There has been a lot going on in rural electrification and development in the past several years, but nonetheless, little has changed.

On the contrary: the number of people who have to live without electricity continues to grow. That shows that the hitherto attempts have not gone far enough, and a more comprehensive approach is necessary: a hybrid network.

There are two main handicaps to the success of all previous efforts to implement rural electrification:

**Handicap 1:**

**Focus on one single aspect of rural development**

To initiate a long term and sustainable development, it is not enough to focus on one single aspect only. What is needed is a holistic approach, considering the whole range of requirements for rural development by providing access to energy.

**Handicap 2:**

**Strict separation between non-profit and for-profit approaches**

Neither non-profit work nor for-profit work alone can reach the goal of sustainable rural development. Neither approach alone is sustainable enough:

The non-profit approach (foundation) is not sustainable in financial and economical development.

The for-profit approach (business) is not sustainable in social and community development.

It's not enough ...	You also need ...
to sell solar lanterns	to establish a local network for maintenance and service
to train solar technicians	to provide start-up support for their small businesses
to offer solar products to the rural population	to enable people to buy them by using a micro-credit
to replace kerosene lamps	to cover the entire energy needs of a rural household, enterprise, or community
to install solar systems	to train end users and show them new economical opportunities
to realise projects funded by donations	to consider financial sustainability
to build a solar business	to consider social sustainability

**Our solution: Hybrid Network for rural development**

Network, because it combines solutions for single aspects to a holistic approach.

Hybrid, because it combines the special sustainability of non-profit and for-profit.

Our relationship to marginalized populations is basically a relationship from person to person, which is more than a customer relationship.

For that reason, as a non-profit organization we go to rural areas, listen to the people, talk with them, think together what can be helpful – and then decide together how we can support them for a sustainable development – either as business or as foundation. But always as help for self-help.



**StS International (not-for-profit)**

StS International is the non-profit federation of the national Stiftung Solarenergie – Solar Energy Foundation foundations worldwide. Its three main duties are:

1. Build, supervise and coach the network of national organizations of the StS Network, implementing the mission of StS in different countries worldwide (“network building”)
2. Control implementation and improvement of the mission (“mission control”)
3. Lead for-profit affiliated companies, which are part of the network (“business control”)

**Stiftung Solarenergie – Solar Energy Foundation (non-profit)**

National foundations in each partner country.

Responsible for social sustainability of the network:

- Prompting awareness and advocacy of rural people/communities
- Building a national network for rural development with solar energy
- Initiator, enabler and facilitator of rural development: pilot projects, management of solar systems, end user training ...
- Realizing social and charitable solar projects, such as solar light for schools or solar fridges for rural health centers.
- Supervising and supporting local business partner(s).
- Fundraising for national and international work.

**International Solar Energy Institute for Rural Development (ISEI, social business)**

Based in Switzerland and Germany and working mainly in Ethiopia and the Philippines, ISEI is responsible for:

- Training in solar technology
  - Training in business management
  - Research for new and better rural development
  - Test laboratory for solar components
- ISEI is a social business company.

**SunTransfer Ltd. (social business)**

As “technical department” of the StS Network, SunTransfer is responsible for:

- Design of solar products for the network, according to rural needs (input from foundations and national distribution partners)
- Production and quality control
- Technical support for the network

SunTransfer is based in BVI and Hong Kong. Only ordinary shareholder of SunTransfer is StS International. Financial social investors (corporations and individuals) are invited to join as preferred shareholders.

**National Distribution Partners (social business)**

To implement the mission, the national organizations of StS International work together with national distribution partners. They have to share the mission of StS International.

National Distribution Partners are mainly responsible for technical implementation and service:

- Import and local logistic of solar products
- Installation
- Technical after-sales-service

The national distribution partners are mostly independent entities, but closely connected to the national organizations of StS International. They provide exclusively SunTransfer solar products.

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## On the market: 7.5 hours of DVD without electricity

Sony introduced onto the market a new and improved version of its DVD player DVP-FX950 in summer 2010. As a great improvement, the machine now has LED background lighting.

The player, which has a 9-inch screen and a resolution of 800 × 480 pixels, now uses only 6.5 watts at 9 volts.

The most captivating feature of the DVP-FX950 is its extremely clear picture. The stated battery time of 7.5 hours is attainable only with screen brightness reduced to minimum and the use of headphones. With maximum brightness and active loudspeakers, batteries last 5.25 hours.



Meanwhile, Sony has brought another update to the market, the DVP-FX970. Exactly why they have decided to do without the LED background lighting on this model remains a mystery.

The DVP-FX950 is available from the manufacturer for 159.99 US dollars, the newer model costs 10 US dollars less. *cs*

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## Microfinancing – friend or foe?

Ever since Yunus Muhammad called microcredits to life in 1976, it has become a widespread tool for rural development throughout the world. Despite their success story, MFIs have been in the crossfire of critique again and again recently, especially because of their increasing commercialization by major banks.

My great grandfather was a rich farmer in a village circa thirty kilometers away from the financial metropolis Zurich. He owned half the village and a lot of people were indebted to him because they had taken out loans from him. The family chronicles remain silent on whether he was fair or greedy as money-lender.

A hundred years have past since then. Raiffeisen Bank, founded at the end of the nineteenth century, gave poor rural households, especially in Switzerland and Germany, fair credit conditions. Nowadays, local profiteers are a thing of the past in most parts of the Western world. Similar to that Zurich village, access to affordable financial services is essential for people in rural regions in developing countries: For example, to build up a business or make an expensive investment.

Ever since Muhammad Yunus discovered that poor, Indian families reliably pay back their loans with interest, and can thereby escape poverty on a medium term, microcredits have been a success story. The tool is now used in development aid throughout the world. That corresponds with a total of circa 25 billion US dollars worldwide paid out to circa 140 million customers.

Yet for some time now, critical voices can also be heard. For example, in a BBC News report last December entitled “India’s micro-finance suicide epidemic,” in response to the increasing number of highly indebted Indians who see suicide as the only way out of their situation. A study by the Microcredit Summit Campaign, on the contrary, stated in January 2011, that “Microcredit lifted 10 million Bangladeshis out of poverty between 1990 and 2008.” What is the truth here?

### Commercialization: Chance or disaster?

It is clear that the microfinance industry has changed fundamentally since its founding. Most multinational banks have discovered the business over the past fifteen years, and have thereby brought about a trend that has gone as far as commercialization. Rather than the original non-profit institutions, it is increasingly profit-making firms who have become involved in the microfinance market. Their promoters argue, “Without commercialization, microfinance does not grow fast enough.” After all, today’s microfinance industry still only reaches one in ten of those affected. Even traditionalists, such as Muhammad, can hardly counter this argument. His Grameen Bank is, by the way (like most MFIs), not greedy for profit but in any case, a profitable enterprise. Commercial expertise is also required, when along with microcredits, services such as savings and insurance are to be offered in a secure context.

Nonetheless, one-sided commercialization harbors dangers, as proven by countless negative examples. In Andhra Pradesh, for example, an unhealthy competition in 2010 led to unstable awarding of credits. The extreme indebtedness of many households led to a collapse of repayment discipline and thus, the system.

### High interest and low transparency

Another critique is that commercial suppliers demand very high interest: 100 percent annually (APR) after tax, or even more. This strategy, oriented on fast growth and high returns, disregards customer orientation and long-term development. Fast and high profits can only be achieved with the “middle-class poor.” A study carried out in South Africa, for example, showed that the majority of customers at the poverty line, who nonetheless had a career position, could also develop positively with a high interest rate. The original concept of MFIs, however, aims at the bottom of the pyramid (BoP): Old and handicapped people, widows, and orphans, for example, do not have the possibility to pay interest that covers the effective costs.

A fundamental problem is the lack of transparency in terms of interest rates. This makes it almost impossible for customers to compare MFI loans and choose the most suitable partner. In addition, the choice in rural regions is certainly not that great until now. Perhaps a Kenyan small-animal breeder has the choice between a MFI with 40 percent APR or a local profiteer who demands twice as much, or more. Many customers also fall into the trap of debt because they take out several loans at different MFIs. Here, MFIs must appeal to their own responsibility and consider their customers’ financial possibilities. Customers must also be explained all terms when signing a loan contract. In the end, it was similar mechanisms as in the 2008 sub-prime-mortgage meltdown that led to disaster in Andhra Pradesh.

### Professional MFIs with select partners

Despite all criticism, there is no real doubt about the necessity of professional microfinance services. They are required when at issue is supporting more customers and regions; and mainly, offering additional services, such as building up of savings for emergencies, and insurance for lost harvests and other risks.

Criticism of MFIs must, nonetheless, be accommodated. Partner institutions and banks must be carefully chosen and monitored. And final customers must be reviewed in terms of suitable loan amounts, and they must be explained the mechanisms of the system. *me*

# Awarding of microcredits for solar products: Eight tips

The costs of purchasing solar home systems are usually too high for customers in rural areas to pay in cash. As a rule, payment through an installment plan is possible without any problem. Experiences in Asia, and also Africa are evidence of this.

The Stiftung Solarenergie – Solar Energy Foundation has five years of experience with microcredits for solar products in Ethiopia. The repayment rate is one hundred percent. What has to be done to make installment plan financing so successful?

## 1. Integration

A successful installment plan model demands integration in a village community's social structure. It is not advisable to support isolated individual customers living in remote areas, but rather, much more sensible to link into a social network such as a village community, a church community, or the members of a cooperative. The head of such structures or other authorities should be informed and should also take part in the responsibility.

## 2. Contracts

Mutual rights and responsibilities – installation and maintenance of a solar system, on the one hand, and prompt repayment, on the other – must be established in a written contract. The contract must also contain possible sanctions for non-fulfillment of terms (for both parties).

## 3. Repayment moral

Even more important than contracts are social and moral obligations. Contracts made with customers in remote regions are difficult to legally enforce. It is thus crucial to clarify to customers, the social and moral obligations that they are entering into. Guarantors within the customer's personal environment can also provide support, for example, informing the neighbors works as a form of social control. Customers must understand that their non-compliance with the contract will be known by third parties.

## 4. Keeping to rules

You must also stick by the rules! A contract is always binding for both parties involved. Therefore, the installation firm remains responsible for not only giving customers good advice and installing solar systems professionally, but also for carrying out periodic maintenance, service, and customer service as agreed upon in the contract. Poor customer service after installation is the basis for poor repayment moral.

## 5. Installment collection and maintenance

Periodic technical maintenance and collection of installments should be carried out in conjunction as this increases obligation for both parties. Experience with models in which technical maintenance and financing operate separately show that this often leads to considerable organizational problems.

## 6. After-sales service

The contact persons for technical matters and installment credits must be easily reachable. When a problem arises, customers must not only be able to reach a technician without any problem, but the technician must also appear at the customer's within the agreed-upon period. The Solar Energy Foundation's credit customers are assured that at the latest within three workdays after reporting a problem, a technician will appear. This not only creates trust, but also increases customers' willingness to stick by their side of the contract.

## 7. Intelligent solar technology

Prompt payment of installments can be supported by intelligent charge controller technology. The products used by the Solar Energy Foundation have a clock timer. After entry of a payment, the charge controller is sent information as to how long the system should continue to operate. If the next payment is not made on time, the system turns off automatically. The system cannot be started again by the user. A code is required that is sent only when the payment has been made.

## 8. Credit management

Credit management should be supported by appropriate software, such as a Management-Information-System (MIS). Administration and professional supervision of tens of thousands of customers cannot be managed by long-hand or excel lists. The use of an MIS that is maintained by local technicians and management is necessary. The MIS of the Solar Energy Foundation also manages additional, important information, such as the customers' GPS data and information on maintenance work that has been carried out. *hs*

You want to introduce a microcredit system for solar products? The Stiftung Solarenergie – Solar Energy Foundation offers individual support and supervision. Questions and further information: [mal@stiftung-solarenergie.org](mailto:mal@stiftung-solarenergie.org)

## Talk about poverty penalty

Jaime I. Ayala, 49, Chairman of the Board of StS International and the Stiftung Solarenergie – Solar Energy Foundation Philippines is founder of Hybrid Social Solutions. Jim Ayala was President of Ayala Land, the largest real estate company in the Philippines, and senior partner at McKinsey & Company. He is a member of the board of the World Wildlife Fund (Philippines) and the Hero Foundation. He graduated with honors from Princeton University (BA, Economics) and Harvard University (MBA).



**Jim is sitting across from me with an edition of the *Philippine Star* and is upset. The poor have to pay more for energy than the rich? Why is that?**

For light, they have to buy expensive kerosene. If they want to listen to the radio, they pay as much as 4000 times more in energy costs because batteries are so expensive. Every fourth Filipino (26.4 percent) lives without access to electricity and pays for his or her impoverished living standard with energy costs that no rich person would pay. Poverty is additionally punished.

**And what about the article upsets you?**

That people, like this journalist (he holds up the paper), do not distinguish between solutions for the poor versus the affluent. It is true that solutions for the affluent, who are on the grid, should be concerned about the amount of subsidies going to alternative energy, which is still much more expensive than traditional power sources. However, for the poor, solar electricity is already much cheaper than the alternative ones, and should be given unequivocal policy support.

**You could have a great career in business or politics, but you choose to work there where poverty rules.**

I have always wanted to be involved in development. Growing up in a poor country, you either want to escape (we have one million Filipinos leaving every year to pursue opportunities abroad) or stay and help. I am one of the latter. The number of poor and hungry in the Philippines increases every year, and surely, given the advantages I have had in life, I am obliged to give back.

**Wouldn't it be easier to do that in a powerful position?**

I studied development economics at university, but found it far removed from the realities of daily poverty. I joined McKinsey and worked in emerging markets, advising governments on competitiveness and devel-

opment, but implementation was poor. I joined a leading real estate development company so I could ensure implementation. We developed many communities, but they were for the rich who wanted us to build walls for security reasons. While we were leaders in Corporate Social Responsibility, most of my energy was spent on serving the interests of affluent customers and shareholders. I served on boards of NGOs, but all were reliant on donations and couldn't scale up their good work. I finally realized that I needed to work in institutions working directly with the poor and taking a market-based approach. The hybrid network system of the StS International is a chance to get out of the dead-end street of traditional development policy.

**Today you support solar island systems which, in rural regions, are superior to all other energy systems.**

Calculated roughly, a family spends 500 to 1000 pesos per month for kerosene and batteries; for expensive, poor, and unhealthy light. That works out to 6000 to 12,000 pesos per year. A solar lamp costs 3500 pesos. With these savings alone, people could invest in a better life, such as education for their children.

**So the idea is to introduce as many solar lamps and systems as quickly as possible.**

To make it really pay off for people, not only solar systems are necessary, but also reliable structures for their operation. Development can only happen when a solar lamp functions reliably for years. When that happens, the benefits for people are immense.

**How is that meant to happen? Rechargeable batteries and bulbs also do not last forever.**

First of all, one example from hundreds that show the advantages of reliable and bright light: One woman used solar lighting to improve her fruit harvest by finding and shooing away the fruit bats that were eating her fruit at night. Her harvest was so much better that she was able to buy a motorcycle! Now she can reach far-away markets and earn much more money. When we offer people after-sales service and maintenance, reliable structures grow, within which development is possible. The woman from the given example can then invest and become financially independent. That is precisely what we want to achieve with our work.

**Thank you very much for the talk. *yd***

## New books

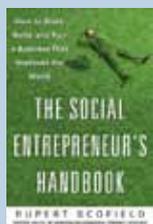
Rupert Scofield

### The Social Entrepreneur's Handbook: How to Start, Build, and Run a Business That Improves the World

272 pages, hardcover, English

McGraw-Hill, 2011

ISBN 978-0071750295, 28 US\$



Whether your mission is to pull millions of people out of poverty or to feed the people in your neighborhood, now is the perfect time to get started.

Social entrepreneurship has never been more needed and achievable than today.

In his handbook, Scofield leads you through the entire process of starting up and running a nonprofit business. The cofounder and president of a nonprofit MFI serving in 21 countries shares personal success stories and advice on what not to do. Becoming a social entrepreneur isn't as difficult. You need only two things: an idea and a plan. You provide the first while Scofield's book supplies the latter. He tells you how to create a realistic plan for getting started: assemble the perfect team for putting it into action – and keeping it rolling; develop a business model for a nonprofit organization; and to keep yourself, your staff, and your cause in solid financial shape.

Inspiring and motivating: for entrepreneurs who want to go social.

Jamie Bedson

### Microfinance in Asia: Trends, Challenges and Opportunities

89 pages, PDF, English

[www.bwtp.org/files/MF\\_Trends\\_Challenges\\_Opportunities\\_ELECTRONIC.pdf](http://www.bwtp.org/files/MF_Trends_Challenges_Opportunities_ELECTRONIC.pdf)



Providing an overview of the themes at the Asia Microfinance Forum 2008, this report seeks to address questions for the future. How can the supply of microfinance services begin to match unmet demands in Asia?

Asia houses some of the oldest and most vibrant markets for microfinance (i.e. Bangladesh and India). At the same time, some of the world's most advanced technologies and cutting-edge innovations are also being developed in Asia (i.e. Japan, South Korea, Taiwan, and India). In some countries, this proximity provides easy access to new and relatively inexpensive technologies.

The report also identifies a future shift: consumers in new microfinance markets don't want simply basic lending services, but also remittance transfers, life insurance and pension planning products, and loans customized to fund modern energy services.

Substantial and exciting: for microfinance practitioners in search of ideas for growing and strengthening their businesses.

## New Media

### [www.betterplace.org](http://www.betterplace.org)



You want to initiate a project or are already engaged in one and need support?

Present yourself, the project, and the people who benefit from it on [betterplace.org](http://betterplace.org) – whether as an individual or an organization. Specify exactly what you need. Find supporters. And report regularly on the project's progress.

The Berlin based organization guarantees that one hundred percent of all donations will be forwarded, without any deductions, to those responsible for the selected project. The responsible persons in the organizations or respective projects who receive the forwarded donations are required to use the money for the realization of the work and specific needs as described in their project descriptions for which donations are collected.

Fascinating and optimal use of multimedia: for initiators and project partners in need of support.

### <http://sun-connect.org/video>



Microfinance has become established over the past 35 years as an effective means in development work.

Yet what happens when a small borrower becomes ill, can no longer work, and in desperation uses their loan for a doctor's visit or urgently needed medication?

MFIs must be armed for such situations in the future and expand their services. Freedom from Hunger, together with five other microfinance organizations, shows in this film how to realize a successful solution that combines microfinance and health care.

The example of Bandhan, a large MFI in India, is used to show how microfinance and health services can be combined as a strategy for reducing poverty and chronic hunger.

Innovative and reproducible: for future-oriented MFIs.

## Dictionary



### gov|ern|ance [gʊv'er'nens]

General term for a system of control and regulation, i.e., governing, in the sense of structures of socio-political entities, such as states, administrative bodies, communities, or institutions. "Corporate governance" is often used in the business world and refers to organizational and managerial structures or the relationship between shareholders and management of a corporation. Nowadays, governance has a permanent place on all territorial and social levels. The World Bank, e.g., created the term "good governance" as a criteria for efficient and legal management practices for awarding loans to developing countries.

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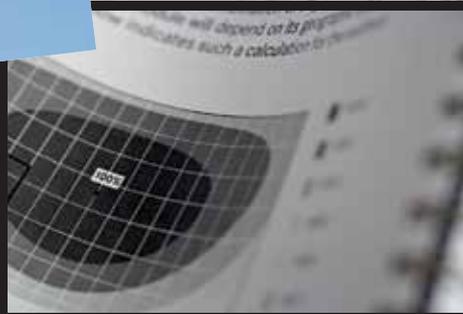
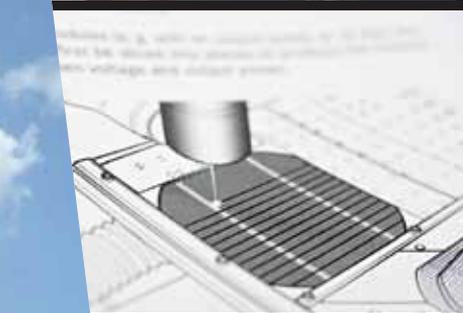
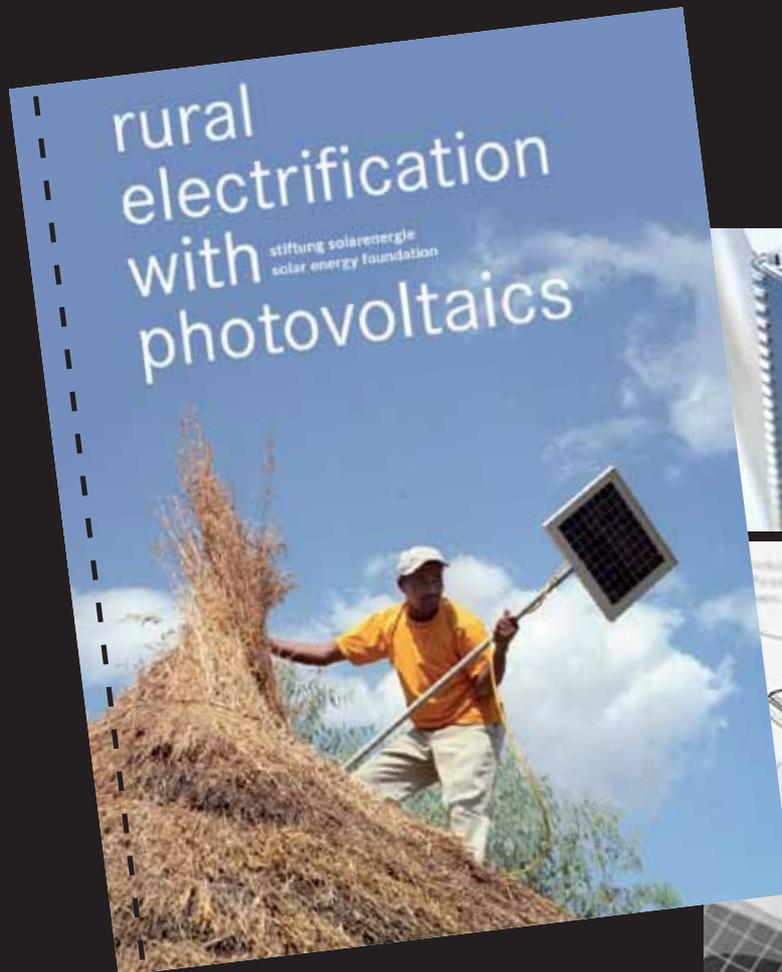
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# rural electrification with photovoltaics



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