

# From lights out to lights on

*By Ravi Chidambaram*



How Sunlabob went from providing affordable, sustainable energy in rural Laos to becoming an international turnkey operator and co-developer.

Progress is inherently iterative, and solving difficult problems usually requires multiple attempts. This is even more so when looking to alleviate unmet human needs in underdeveloped countries, where corruption, poverty, low-levels of human capital and inadequate infrastructure make providing the essentials a herculean endeavour. Often the challenges are so great that it takes multiple attempts—with partners working in concert—to develop an effective solution.

When German Andy Schroeter arrived in northern Laos to work on a food security programme in 1995, he realised there was a huge unmet demand for electricity. Only about





30 percent of the country, mostly along the populated Mekong Valley, had access to grid electricity. The rest of Laos was basically dark, save for villages that ran diesel generators which provided limited power.

“These could only run for a few hours at a time,” said Schroeter, an electrical engineer by training. “After that it was lights out. So I realised there’s a huge potential for rural energy, and specifically, renewable energy.”

In 2000, Schroeter relocated to Vientiane, the capital of Laos, to found Sunlabob Renewable Energy, which was officially established the following year as a foreign-owned commercial

enterprise with the goal of providing affordable energy solutions to disadvantaged communities in rural Laos.

### **Learning on the job, adjusting to reality**

As rural areas are often remote, they lack the necessary infrastructure to effectively and affordably extend electric-grid coverage. Modular solar photovoltaics (PV), more commonly known as solar electric panels, are the perfect solution: it is the cheapest option to generate power even after taking into consideration diesel generators, and can be set up to provide clean power to a single home or an entire village.



PV is also more affordable than wind or hydroelectric power (hydro) as the latter two have higher capital costs and depend on the availability of consistent wind or flowing water, respectively.

The first obstacle Schroeter faced was the location of customers: a population of six million people living in an area the size of the U.K. (which has a population of 64.1 million<sup>1</sup>), but with very little infrastructure. Most of Schroeter's potential customers lived in remote and rural areas, far away from Vientiane. Although many NGOs and international donor agencies operated in Laos to reach these communities, Schroeter was leery of copying their working models, as he thought they focused too much on one-off PV projects. "Some of these donor-funded projects may electrify 20,000 households here and 50,000 households there," Schroeter explained. "But there isn't enough focus on long-term sustainability. [PV] technology should run for 20 years, but a lot of these systems are failing after two to three years—it's quite sad."

Instead, he opted for a more sustainable approach that used a private sector model: a countrywide franchise network that started with 70 people from various ethnic groups who came to Vientiane to receive technical and business operations training. Upon completion of training, these franchisees

opened an account with Sunlabob and returned home to set up energy-focused micro-enterprises. Sunlabob supplied the franchisees with everything they needed regardless of the project size, from a small solar lantern to entire village grids.

However, this sales and installation model proved too costly for poor, rural communities that could not afford the upfront capital to develop such off-grid capabilities. Schroeter had to adjust; and Sunlabob switched to a 'fee for service' financing model where the company paid the upfront capital investment for rural electrification and essentially rented out the equipment. The franchisees then handled maintenance and payment collection from end users.

While it addressed the issue of upfront investment, such off-grid electricity was much more expensive than grid electricity, as the latter was subsidised by the government. That posed a problem. Schroeter elaborated, "We had an arrangement with the village and the provincial authorities for them to pay US 24 cents per kilowatt-hour. This was the best we could do to make such off-grid rural electrification commercially viable. In Europe they pay about US 30 cents. But here in Laos, the government subsidises grid users, so they only pay US 6 cents. So it's in operation for a couple of months and then people realise that their cousin, grandfather,

nephew or whoever is paying six cents in the electrified area. All of a sudden they start manipulating the metres and eventually stop paying. I ended up burning US\$1.5 million and still haven't recovered the investment."

## Doing good and doing (not so) well

Sunlabob's model was due for an overhaul. As Schroeter discovered, "The return on investment is too low, it's absolutely too low! We made a big mistake when we saw the people, the beneficiaries, in these remote areas as our paying clients. Rural end-users' return on investment is too low, and they have to carry a financial burden for too long. With regard to the poorest of the poor, such as much of the population in rural Laos, they're oftentimes better off making investments in agriculture, in cash crops and productive use...not energy. Energy is a basic need, and public donors need to play a role to help ensure that these models are truly commercially viable and sustainable for a long time."

One of the many lessons in the evolution of Sunlabob's business model was that third-party capital was needed to fill the investment gap. This could be in the form of grants from corporate sponsors or international donors, with Sunlabob, as the private partner, taking on the responsibility to make rural electrification sustainable.

Schroeter also realised the importance of securing a reliable revenue stream to anchor the business. To this end, Sunlabob operated as an independent renewable power producer and sold electricity back to the Laotian utility agency through a purchasing power agreement.

After overcoming the initial steep learning curve, Sunlabob understood clearly the needs of the developing world

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- Andy Schroeter, founder of Sunlabob Renewable Energy.

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when it came to providing access to energy and clean water in remote locations. It developed expertise in end-user training, engineering, and project implementation and management. It maintained a high quality supplier base for procurement, and had the know-how and ability to effectively transport equipment like solar panels and batteries to remote, rural locations.

The company also recognised that each community it served had unique needs, and to meet those needs it provided a flexible, customisable approach toward designing solutions—even employing energy sources beyond solar. “Some of our projects that electrify 100 homes, 200 homes, 300 hundred homes, need different energy sources,” said Schroeter. “One is just PV, hydro is another. We also have hybrid grids with a combination of energy sources depending on the location of the project and services required to improve energy efficiency.”

As Sunlabob gained invaluable experience and built expertise, it started to better reach its designated rural customers and was publicly recognised for providing social good. But even though the company was doing good, it was not doing well. As Laos approached full electrification, the domestic market for new business started to shrink, which further eroded profitability.

Sunlabob had mastered a unique set of skills as an on- and off-grid, rural renewable energy developer, but now faced a limited market in which to monetise that expertise. Schroeter’s solution was to go beyond Laos.

### More money, more problems

In 2010, Sunlabob had won its first International Competitive Bidding<sup>2</sup> project, and by 2014 it had won 19 more bids in Cambodia, Micronesia and the Marshall Islands. It had also worked on projects and consulted in many other countries like Uganda, Afghanistan and Bhutan, and revenues had gone up tenfold.

But where there is money to be made, there will be competition. Sometimes the desire to win a bid comes at the expense of the project’s quality. Schroeter added, “We are highly recognised and have a good reputation, but we are still very small. We’re competing for smaller projects against other small, often local, companies. Many of our competitors aren’t as focused on sustainability. They’ll undercut us on a bid, and too often these donor agencies place too much emphasis on low cost when considering a bid. The result is energy systems that are in pretty bad shape after a few years.”

He was also worried about the risk that corruption played. Operating in countries with known corruption issues could place Sunlabob at higher reputational risk. Sunlabob was committed to transparency, and voluntarily submitted




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itself to international auditing by PricewaterhouseCoopers or KPMG once a year at significant expense.

Even when Sunlabob did convince international donors to choose it over other competitors, the funds were not handed over directly. The money was given to local governments, who then paid the contractors. For Schroeter, this arrangement had the potential to interrupt the company’s cash flow, making it difficult for it to operate and grow. Schroeter explained, “It has not been possible for us to attract capital through investment or acquire it through loans. Because Sunlabob is registered in Laos and is foreign-owned, we have to put up 130 percent collateral to receive a loan from a Laotian bank if we’re headquartered in Vientiane...We just can’t get access to finance, and foreign investors simply aren’t coming to Laos and investing in us.”

**The Myanmar project**

While Laos was no longer as attractive to investors, neighbouring Myanmar was a different story. In 2015, the World Bank estimated that only about 30 percent of the population in Myanmar was connected to the electricity grid, and that “average annual per capita electricity consumption is 160 kilowatt-hours, one-twentieth the world average... (and) in the countryside, the situation is even worse. As of 2014, only 16 percent of rural households had a connection.”<sup>3</sup>

With the country finally opening up, 70 percent of the 55 million population were ready-made customers for Sunlabob.

But Schroeter felt it made little sense to install PV solutions because Myanmar was much bigger than Laos (676,578 square km versus 236,800 square km). Bigger projects—with bigger potential for profit—were the order of the day, but Sunlabob was too small to take advantage. “We can handle an [electrification] project of, say, US\$5 million,” says Schroeter, “but Myanmar is so big. The global donor agencies aren’t even looking at anything less than US\$20 million. And even with all our great ideas and approaches, it’s hardly possible for us to absorb the costs of a US\$20 million project.”

One solution was for Sunlabob to become a turnkey operator and co-developer in a private-private partnership (refer to Figure 1).

If successful, this model would be rolled out to other markets where Sunlabob could apply renewable energy and clean water solutions. To gain the necessary expertise, Sunlabob held talks with its partner Relitec, a Yangon-based company that specialised in engineering, installation, and maintenance of solar technology. Schroeter believed the partnership would help both companies deliver high-quality, renewable, reliable and affordable energy to off-grid communities, while providing the means to support clean water solutions as well.

One matter remained unresolved: How would this project be financed? Schroeter’s idea was to provide off-grid electricity to telecoms; 10,000 to 15,000 telecom base stations had to be built off-grid to meet the country’s demand for wireless communication, and these stations needed power. Instead of

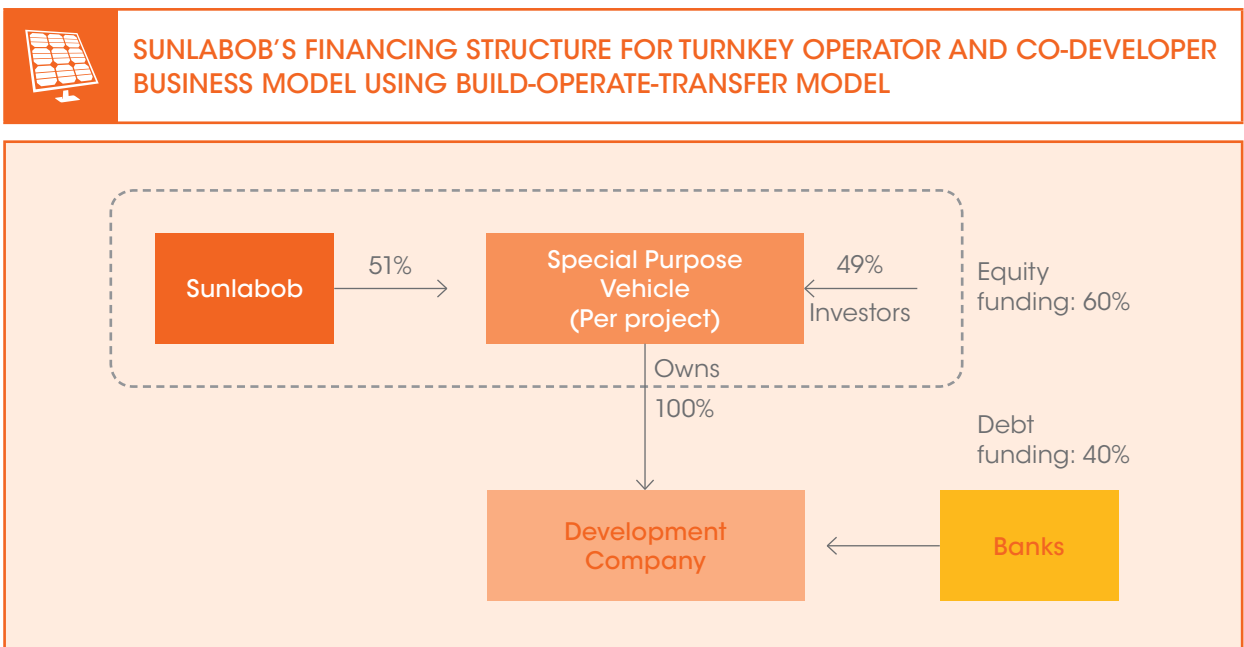


FIGURE 1

Source: Sunlabob



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The market-based model of building village mini-grids and off-grid rural telecom towers in Myanmar offers huge potential for growth.

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the traditional method that used diesel generators, Sunlabob's managing director in Myanmar, Evan Scandling, proposed going solar with diesel as backup.

"You size the system appropriately so, yes we're supplying viable electricity to that anchor client [the telecom], but we also provide excess energy to the surrounding community," Scandling explained. "Now these communities have energy access and they can charge their mobile phones, they can buy more phones, which in turn creates more customer demand on the telecoms side. There are other models too for anchor clients, say, a mining camp somewhere that is often off-grid. They're also going to bring in some off-grid electricity—the idea of this anchor client is that you can get stable revenue streams coming through an established business and that 'de-risks' your cash flows. So that's just on the topic of partnerships when we are looking at how to make rural electrification financially viable."

Sunlabob's strategy for continued international expansion rested mainly on its tried and tested method of winning international competitive bids and donor projects. However, the market-based model of building village mini-grids and off-grid rural telecom towers in Myanmar offered huge potential for growth. If implemented properly, it could improve the well-being and socio-economic status of rural communities not only in Myanmar, but around the world.

### **New models, new opportunities**

Social enterprises such as Sunlabob understand that tackling poverty requires cautious optimism and perseverance. The solutions must be sustainable, and cannot rely solely on charity. That said, business alone is not the answer either. Partnerships must be deployed in order

to spread risk while leveraging expertise and resources. Moreover, it should be kept in mind that such capital investment has to have a long-term horizon. It is also more than likely that any investments into economic infrastructure may not yield direct dividends to financiers.

Sunlabob has successfully overcome challenges faced by social enterprises such as the lack of financial support, a lack of skills among the locals, and mistrust by the community. It managed to secure donations from corporate sponsors and international donors, and succeeded in providing electrical coverage to 75 percent of Laos, aiming to reach 90 percent by 2020.

The company has also adapted to market conditions to scale up and venture into other countries. It decided to restructure its business model to include greater flexibility in funding sources; a base in Hong Kong to attract foreign investors; partnerships with companies that had strong local knowledge and expertise; and a move toward a market-based pricing model.

Sunlabob's experience in Laos and Myanmar, and its agility and willingness to learn and adapt, will go a long way in its pursuit for international expansion and profitability.

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#### **References**

- <sup>1</sup> The National Archives, Office for National Statistics, "Population & Migration".
- <sup>2</sup> The World Bank guidelines states that the objective of International Competitive Bidding is to provide all eligible prospective bidders with timely and adequate notification of a borrower's requirements and an equal opportunity to bid for the required goods and works.
- <sup>3</sup> The World Bank, "Electricity to Transform Rural Myanmar", September 16, 2015.