

Let there be light

AYAD Susan Conyers shows that private sector innovation and the power of the sun can make a big difference to communities in Laos.

It was dusk at the end of a long day, and it was time for a celebration. Khamsao knew exactly what we needed – a jar of lao hai, fermented rice wine which we would gradually add water to each time one of us took a drink through a bamboo straw, so it never became empty. Together we headed across the bridge, while children bathed and giggled in the river below. As we walked through the village, more and more of them started to follow us, surprised and perhaps a little scared at the sight of foreigners – we tried to speak to them in Lao but were told that they probably didn't speak Lao as they were from another ethnicity. With our jar of lao hai successfully collected, we stopped to watch a game of kataw, which looks like an impossible mixture of volleyball and soccer played with a woven bamboo ball. But with darkness fast approaching, we headed back to start our celebration, complete with a tasty assortment of Lao delicacies like fried buffalo skin.

We were celebrating the first installation of a solar powered water purification and bottling system by Sunlabob in a village in Laos.

My name is Susan Conyers, and I arrived in Vientiane, Laos, in October 2007. I was to be working as an Electrification Project Development Engineer with Sunlabob, a Lao-German owned private energy service company that specialises in rural, off grid energy supply. Two years earlier I had completed my Bachelor of Engineering, majoring in Photovoltaics and Solar Energy. My studies had a heavy focus on the implementation of solar technologies in developing countries and the ability to improve people's lives, including a short-term project in Nicaragua helping an NGO to locally produce solar panels. So I was excited by the prospect to be part of Sunlabob's innovative work.



Sunlabob staff installing solar panels.

Sunlabob uses all sorts of technologies in its approach to off-grid energy supply, including solar, hydroelectricity and biofuels. However it is the methods that are used to implement them that are the truly interesting part.

Sunlabob rents solar home systems to villagers in Laos through a network of franchisees, so that the cost becomes affordable to Lao villagers and maintenance can be performed quickly and reliably. By training village-based franchisees in technical and business skills, Sunlabob is also enabling small enterprise development in Lao villages. Over 1000 households throughout rural Laos have a Sunlabob rental system.

Sunlabob also rents solar systems to various community groups in order to meet their collective goals. For example, in Ban Koy, a village in Vientiane province, a medical clinic is using solar power for a vaccine refrigerator, while nearby a village collective is using a Sunlabob solar powered water pump for irrigation.

Sunlabob is developing an innovative solar charged battery lantern that can be rented for a fraction of the price of a solar home system. This lantern, when fully charged, can be used for 10 hours and then returned to be exchanged for a new lantern. This product has provoked technology transfer between Sunlabob and interested parties in Uganda, and as a result Sunlabob recently won the 2008 World Bank 'Lighting Africa' award. It has also enabled Sunlabob to enter the carbon trading market, as the lights can be directly substituted for kerosene lighting.

Sunlabob is implementing village grids in locations where the national grid is unlikely to reach for many years to come. For example, in Nam Ka village in Xieng Khouang Province, Sunlabob has built a grid powered from hydroelectricity, solar and diesel. This project has a unique public-private partnership mechanism where

Sunlabob provides the generating equipment and a public donor provides the distribution infrastructure. In this way, there is incentive for both public and private investors to provide funding for the aspects of the project that meet their criteria. For this project, Sunlabob has also partnered with the Swiss NGO Helvetas to encourage income generating activities in Nam Ka that were previously not possible due to the lack of infrastructure.

Solar isn't just about providing electricity. In the continued search for innovative products that would aid rural Lao villages, Sunlabob formed cooperation with the company OurWorld, whose UV water treatment system could be powered by a small solar system, and the NGO Antenna Technologies, whose small solar powered electrolysis device produced chlorine that could be used for purifying water or as a disinfectant. Clean water is desperately needed in these communities – a 2004 WHO/UNICEF survey revealed that 57% of the Lao rural population is without access to an improved water source. But the question was – how could Sunlabob, as a contributor to development from the private sector, make this work?

Inspiration came from the bottled water delivery systems already in use in Vientiane and other major centres in Laos. 20 litre bottles are delivered to houses at a charge of 3000 kip (approximately 20 US cents). Once these bottles are empty, they are picked up and refilled. We quickly saw that we could replicate this idea locally in a village, by using the UV water treatment system to fill bottles with clean water, and our electrolysis device to disinfect the bottles when they were returned.

However, sustainability was the key. The villagers – and the private sector – have nothing to gain from products or projects that are not sustainable. As we traveled around rural Laos talking to our franchisees about who

would like to support a pilot installation in their village, we came across hand driven water pumps in closed wells that had been previously installed by a NGO. The pumps were broken, and the villagers had returned to collecting water from the river and boiling it. Was there a way that the public and private sector could cooperate to achieve sustainability?

Sunlabob envisaged a system similar to that of the village grids, where a public donor would provide funding for the initial infrastructure and Sunlabob would provide technical, operational and business consulting – one step crucially missing in the past to make these systems sustainable. Another step that was routinely overlooked is financial sustainability. With this model, the villagers could pay a small sum for each bottle of water, and this would be enough to support the franchisees operating the system, ongoing maintenance, as well as the replacement of the system at the end of its lifetime.

We spent several months working with a Lao counterpart, Khambang, to train him in the technical use of the system. Sunlabob has more than 20 Lao technicians who staff the onsite workshop and go into the field to install systems all throughout the country. I found their practical experience to be invaluable and often found myself asking for their advice and assistance, rather than the other way round! Khambang was a delight to work with, very easy to teach and was a great resource to what ideas would work in Lao communities. For example, the bottles sold in Vientiane used a plastic seal that could only be used once before being thrown away. After much research, we could not find a more effective or cost efficient seal. We knew that we could return these seals to Vientiane for recycling, but did not know how to encourage people to return their seals to the franchisees when villagers were used to throwing away plastic and burning it. Khambang suggested the idea of getting children to collect the

seals and paying them with the money received from recycling the seals.

Installation of the pilot system occurred in Ban Sor village in Vientiane province, 3 hours from Vientiane, in September 2008. It was exciting driving into the village and seeing a solar panel attached to every second house – I had never seen anything like it! We surveyed the water quality and conducted surveys to ensure that the villagers were able and willing to pay for bottled water in order to make sure that this would make a good pilot village.

The most intriguing part of the installation came when we discussed the financial aspects of the system with the franchisees, Khamsao and Boualai. We had been determined, while putting together the business plan, that we would be able to sell water at a cheaper price than those who brought water from Vientiane to Ban Sor on a truck. This greater accessibility to water for the poorer members of the village would surely be an advantage – and we instinctively thought that a cheaper product of the same quality would be a great idea. However Boualai and Khamsao's first response was objection – because by selling our water at a cheaper price Sunlabob might put their friends and neighbours out of business. This insight into Lao cultural behaviours will certainly be helpful as Sunlabob seeks to install more systems through Laos.

Working for Sunlabob has opened my eyes to how the private sector can work in development, as well as how technology can be adapted and made affordable to those with little money. Working in Laos has opened my eyes to another culture vastly different to my own, and it has been a rewarding challenge working in this environment (and sharing in the lao hai celebrations!).