green empowerment

Interview with Grace Tio, TONIBUNG Engineer

TONIBUNG - TObpinai NIngkokoton koBUruon KampuNG (Friends of Village Development) is an indigenous-lead non-profit group that develops sustainable alternatives for rural electrification while advocating for native rights and supporting local entrepreneurship and innovation around Southeast Asia.

Since 2002, Green Empowerment has worked with innovative, regional partner TONIBUNG to build renewable energy micro-grids with remote indigenous communities in Malaysian Borneo.

What is your role at TONIBUNG?

I help to design and implement the electrical and electronics part of TONIBUNG's work in different communities, whether it's in the form of solar or micro hydro systems. That could be anything from designing the circuit and components used, to sizing all the electrical equipment, to budgeting and purchasing, and even to the actual installation and wiring itself.

Could you share a little about your background? Where did you go to school? What work did you do before joining TONIBUNG?

Ever since I can remember, I'd always been curious and enjoyed disassembling broken down things to find out how they worked, and repairing them if possible. This included changing light fixtures and sockets and switches around the house. I got electrocuted more than a few times in the process but the feeling after successfully repairing something was really satisfying. I did a degree in Electrical and Electronics Engineering in Kuala Lumpur but somehow ended up working as an after-sales technician in a phone company. I learned some basic troubleshooting techniques as well as how to disassemble phones and put them back together with new working parts. It was fun at first but then became repetitive and boring after a while. By God's grace I was financially able to quit so I came back to my hometown to rest before looking for another job. I stumbled across TONIBUNG while scrolling through Instagram (they'd just won an award from The Star newspaper so there was an article about them) and decided to ask for an internship. After the internship, they extended an offer to stay on and I accepted, which brings us to today.

What inspires you to do this work?

It doesn't seem right to know that there are still many villagers who can't escape poverty due to lack of education caused (partly or fully) by an inability to study at night, while I take my electronics and internet and lights and aircond for granted. Since I've been blessed with this knowledge and ability, I should then share it with others by doing what I can to help brighten up their lives (literally). Seeing the excitement and gratitude on the faces of the villagers is rewarding and satisfying as well as fulfilling.

How do you and Dan Frydman, Green Empowerment Project Engineer, and other team members work together on developing appliance controllers and monitoring technology?

TONIBUNG might hear about a certain need somewhere that can be solved through engineering and technology. Sometimes the technology exists but on an industrial level and therefore might not be suitable in rural communities. We then brainstorm together with Dan and other team members for possible solutions using the tools and resources we have available. Many of our designs start off as calculations and simulations, along with a lot of trial and error, that eventually result in prototypes. Some of these are implemented on site and in the process, we might realize some things aren't actually feasible or necessary so we might have to come up with a workaround on the spot. The villagers or other team members might also give input on what features are good or improvements that can be made. All these are noted down and taken into consideration so that changes can be made before another unit is deployed.

What are some of the biggest benefits that you have seen in the communities that are testing the new appliance controllers and monitoring systems?

One big benefit is being able to reduce or even prevent blackouts in small grids. The new monitoring system enables us to predict and warn the operators of possible blackouts so that action can be taken before a blackout does occur. Less blackouts mean less damage to their stored crops or food and therefore less financial damage. It also helps the operators who no longer have to spend a lot of time and energy walking from the village to the powerhouse just to monitor or reset the system.

Learn more about our project Smart Grids for Small Grids