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## Indigenous communities show the way with renewable energy project

By **HILARY CHIEW**

While the central government is only beginning to dabble in renewable energy, indigenous communities living in remote parts of Sabah and Sarawak are forging ahead with sustainable hydro and solar electrification.

Little known to most Malaysians, Long Lawen in Belaga, Sarawak, became the first interior settlement that can boast of a sustainable source of energy. The 70-family Kenyah community switched to hydro energy in April 2002, discarding the fume and noise from diesel-powered generators.

Reliable electricity is supplied by a 10 kilowatt-capacity micro-hydro dam built at a cost of RM180,000 – a fraction of the government-funded RM12mil hydro-electricity project in Bario in the Kelabit Highlands. The 100kW Bario project was a dismal failure as it only generated electricity for 45 minutes!

The Long Lawen project began in early 2001 with financial, technical and administrative assistance from two US non-governmental organisations – Green Empowerment and The Borneo Project – that are promoting community-based renewable energy development as a means to social and environmental progress in developing countries.

Construction of the micro-hydro system was carried out

by two local NGOs – Sahabat Alam Malaysia and Sabah-based Partners of Community Organisations (Pacos).



Pipes for the community-based renewable energy project being flown to the interior.

### **Benign technology**

Pacos' coordinator Adrian Lasimbang who took over supervision of the project implementation mid-way said the project is sustainable as it does not alter the hydrology of the river too much nor involve the displacement of communities often associated with big dam projects.

The system harnesses the power of small streams that have a significant vertical drop to generate electricity. Being small-scale, electricity is produced with benign environmental impact.

In addition, the people are made aware of the importance of protecting the 300ha watershed to ensure an uninterrupted and sufficient flow of water to turn the turbines that power the generator which in turn produces electricity.

Shifting cultivation which involved clearing of vegetation within the watershed is banned. Instead, the community carried out enrichment planting to protect the catchment area.

“At the initial stage, workshops on resource management were held to discuss the significance of the watershed and the link between forest and a good watershed in ensuring continuous water supply. At the end of the project, the water quality had improved tremendously.

“Fossil fuel dependence was eliminated. The community saved RM150 a month on diesel consumption for each generator. There were about 15 of them. The project also boosted confidence in our technical ability.

“Till today, there has not been a single power disruption,” enthused Lasimbang.

Besides lighting up the bulbs at night, electricity also enabled the community to develop cottage industries that supplement their income.

The success story of Long Lawen is of special significance given that the Kenyah community had defied official relocation plans. Instead of moving to the government settlement village downstream at Sg Asap, the villagers chose to return to their ancestral land upriver.



'We are keen to try out any renewable energy technology.'  
– Adrian Lasimbang

The Long Lawen community was part of the displaced Long Ghang village that was to be inundated with the implementation of the controversial RM5bil Bakun Dam project. Touted as the largest dam in South-East Asia and covering an area the size of Singapore, the project displaced about 10,000 people from 13 communities.

Pacos is currently installing the second micro-hydro system in Kg Terian, 25km from Penampang, Sabah. Like other remote villagers, the community living along the boundary of the Crocker Range National Park relies on diesel-powered generators.

Diesel supply is replenished once a week. Villagers

carry the fuel on their back in an arduous eight-hour trek through hilly terrain. The burden also means that they could not transport other household items or groceries that are enjoyed by urban folk.

However, the 180 Kadazandusuns will soon be able to harness clean energy with the completion of the 5kW micro-hydro system next month.

The Kg Kerian project also includes the installation of solar home systems for five families that live in isolation in the national park.

Another village in the protected area, Kg Longkogungan, is tapping solar energy to power its Communication Technology Centre in a primary school to bring the Internet to the forest community.

A third micro-hydro system is being planned for Kg Bantul, Pensiangan, in Sabah at the border with Kalimantan, Indonesia, with funding from the Global Environment Facility-Small Grant Programme (GEF-SGP). Fifteen families of the Murut tribe are set to benefit from the 5kW hydro-electricity plant.

Another GEF-SGP funding provided drinking water to six families at Kg Kanibungan in the Pitas district. The RM20,000 pilot project initiated in 2003 uses a solar-powered pump to extract groundwater.

“We are keen to try out any renewable energy technology. In fact, we are also looking at hybrid systems to suit the local condition. For instance, during the dry season, we can offset the shortfall in hydro energy with bio-diesel derived from used cooking oil,” said Lasimbang, adding that the bio-diesel energy scheme is still being tested.

Pacos is also experimenting with potable water for families living along mountain ridges, using a hydraulic ram pump that delivers water from rivers in the valley.

### **Community effort**

A key feature of the renewable energy initiative is the

involvement of the local community from conceptualisation to completion of the project.

Villagers are involved in feasibility studies, the technical design of the system as well as civil, electrical and mechanical engineering works.



Villagers of Kampung Terian building a dam over a section of the stream for its micro-hydro system project.

Lasimbang, who is the international representative of Green Empowerment for the Borneo region, said Pacos organised technical and community development workshops to prepare the communities for the micro-hydro power and solar power systems.

“To ensure sustainability of any project, local communities have to be given the chance to actively participate in the project and not just accept it.

“We also proved that the cost can be reduced when communities are encouraged to contribute their part and have a sense of ownership of the project,” he added.

He said the project had provided an opportunity for the villagers to acquire the necessary skills to maintain the system once it is operational. They are also trained to manage the distribution and collection of tariffs, hence providing employment for some villagers.

With the micro-hydro scheme, the community owns the facility and decides on the charges for each household.

The tariffs cover operational costs and the balance goes into a fund for maintenance and future upgrading of the system.

“At Long Lawen, consumers pay RM2 per light bulb every month. It works out to RM700 per month and after deducting the operational costs, there is a balance of RM300 per month,” explained Lasimbang.

The renewable energy project is part of Pacos’ community resource management programme that covers watershed, wildlife, ethno-botany and eco-tourism management to empower indigenous communities in Sabah and Sarawak.

Pacos works closely with local as well as regional community groups in neighbouring Indonesia and the Philippines to disseminate clean technology and sustainable land use practices to the indigenous people.

*Pacos welcomes volunteers to assist in its projects. For further inquiries, contact [pacos@tm.net.my](mailto:pacos@tm.net.my).*

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