

Lao Institute for Renewable Energy



ETC-LIRE Pico-hydropower
Innovation and Capacity
Building Program – Phase 2

Lao Institute for Renewable Energy (LIRE)

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Pico-hydropower Innovation and Capacity Building Program – Phase 2

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About us

LIRE is a non-profit organisation dedicated to the sustainable development of a self sufficient renewable energy sector in the Lao PDR. The institute offers agronomical, technological and socio-economic research services, and works to provide a free public resource of information and advice on the use of renewable energy technologies in Laos. LIRE strives to support the development of the country by exploring commercially viable means to establish renewable energy technologies in rural parts of the country, in areas without connection to the national grid and with little access to technical expertise.

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1 Introduction

The fourth quarterly report summarises the progress of the Pico-hydropower Innovation and Capacity Building Programme Phase 2 from the 1st March to 31st May 2010. The report is divided into two main sections, a narrative progress report and a financial report.

Certain parts of this report retain the same structure of previous quarterly reports while other parts are either changed and/or updated with additional information about the ongoing progress of the project.

This report details training activities in two target Provinces, Phongsaly and Huaphanh, as well as describing the update of training materials that took place after training participant feedback. During the period covered by this report, training was provided to all target groups; Provincial Technical advisors (PTA), District Technical Advisors (DTA), Village Technical Advisors (VTA) and shop owners. This concluded the training phase of the programme, with all target groups in the three target provinces having received their respective training.

2 Narrative Report

2.1 Main activities conducted

Between the months of March and May 2010, further programme progress was achieved with both newly launched and follow up activities. The activities were conducted in Phongsaly and Huaphanh provinces. Two separate field trips were conducted for each province during the period covered by this report. The following activities were included:

1. Training of Provincial & District Technical Advisors (Phongsaly)
2. Village Technical Advisor Training (Huaphanh & Phongsaly)
3. Shop owner Training (Huaphanh & Phongsaly)
4. Update of Training Material
5. Development of Poster and Leaflet

2.1.1 Activities in Phongsaly Province

During the past three months, there were two field trips undertaken to organize two major events for this program. One of these was training which took place in the middle of March 2010 for provincial and district technical advisors (PTA and DTA). The other event was carried out two months later in order to conduct workshops for shop owners and training for village technical advisors in three targets districts of Phongsaly province.

Training for technical advisors in March 2010

On 16th March a training workshop for provincial and district technical advisors was held in Phongsaly. This began the training programme in the third target Province, Phongsaly, after the assessment had been carried out in January. Held between 8.30am and 6pm in the PDEM offices, the workshop followed the same format as previous PTA and DTA training. Theoretical and practical

components covered assessing sites, selecting turbines, constructing draft channels and installation. The training methodology followed the structure that has been developed over previous training sessions; with examples and exercises given as well as a very productive discussion session. Mr Hattaphone acted as trainer throughout the day.

There were six Technical Advisors invited to the training workshop. Three of these were invited from PDEM Phongsaly while one district technical advisor was from each of three target districts, Phongsaly, Bounneua and Bountai.

Again, feedback was gathered through evaluation forms and discussion. In general the participants found the training interesting and useful but all participants again stated they would like to have extra time (an extra day) to help their understanding and gain more practice.

Shop owners workshop and VTA training in May 2010

Following this a further field trip was made between the 7th and 15th May, targeting both Village Technical Advisor and Shop owners for training. Workshop and training sessions were conducted in each of the three districts namely, Phongsaly, Bounneua and Bountai, on different days at the same locations. The training for VTAs took a day while it took only half a day for training the shop owners.

Feedback from shop owner workshop

Shop owners were happy with the manual and the training video. Nevertheless, they expressed their worry about the decrease in sales due to many household already owning turbines, although they report that spare parts can still be sold easily. They further complained that the products from Vietnam which were introduced by the trainer are much more expensive than Chinese ones, so they think that people will not be able to afford them and therefore will not be interested.



Shop training in Phongsaly district

Apart from the general feedback above, there was feedback on specific topics as follows:

Village Technical Advisor acting as a broker for the shop owner

The concept of a village technical advisor as a broker for shop owners (to get paid on a commission basis) was discussed. Most shop owners said that it may be possible and also suggested that if VTAs want more discount, they should buy more than three turbines at any one time. One owner of a large Chinese shop, Ahsing, whose shop is located in Bounneua district, pointed out that if the village technical advisor buys more turbines from him, he can give the VTA discounts of up to 10%.

Selling locally manufactured, prefabricated draft tube and draft channel

This concept did not really interest the shop owners due to the fact that most end users can make a draft tube and draft channel by themselves. Usually, the end users just purchase the turbine from their shops and never ask for the draft tube and draft channel. The shop owner who is selling this product in Bountai district said that in his experience, most of the end users in Phongsaly province use the lying installation method, so what they need are the extension shafts and propellers. This is the reason why people are more likely to buy spare parts such as winding and bearings from their shop rather than these prefabricated products.

Selling of electricity to neighbouring households

This is not new concept for the shop owners. In fact, there is one shop owner, namely Ahsing in Bouneua district, who has tried this idea before. He had a discussion with a village chief as he found that it is quite difficult to find suitable potential sites for installing a standing pico-hydro turbine. He added that most people in the village have their own turbines; some people eventually come to own more than two turbines. Villagers do not want to pay a fee for electricity. Furthermore, they don't want to use the electricity just for lighting, but also for the entertainment.

Batteries charging station

The battery charging station idea was rejected as end users have sufficient electricity supply from their pico-hydro systems, for both their living needs and for charging their mobile phones.

Acting as a representative for producers from Vietnam

Turbines and its complementary products sold in Phongsaly province are imported from China and Vietnam. Indeed, most Chinese shop owners were not interested in selling Vietnamese products and vice versa. The Chinese shop owners said that there are also high Chinese quality products, but they are too expensive for the local market. If they sell these products in Laos, they are concerned about the imposition of high taxes, and also the business risk they might encounter if none of them are sold.

Moreover, when the Chinese shop owners were told about the price of Vietnamese products, most of them were surprised with the price of the recommended turbine, which was considered very expensive. Ahsing's shop commented that the only way that people can buy it is to share the cost for the whole village.

Feedback from Village Technical Advisors training

Feedback from the VTA training workshop showed that most of trainees were satisfied with the information presented by the trainer. Trainees enquired further information about the availability of and how to obtain the training video on installation techniques and also the poster. The findings from the evaluation from two districts (Phongsaly and Bounneua) revealed that trainees preferred to have a longer training duration (which should take more than one day) and real field practice should also be carried out to complement the theory. Specific participant feedback obtained from the discussions were as follows:

Village Technical Advisor acting as a broker for the shop owner

The concept of a village technical advisor as a broker for shop owners (to get paid on a commission basis) was discussed. After the trainer finished introducing this concept, the trainees said that it would be nice if the shop can provide discounts for them. A VTA who had experience providing installation and repair services, used to buy the turbines for their villagers and made profit out of it.

Making locally manufactured, prefabricated draft tube and draft channel

Village Technical Advisors were not interested in the idea. VTA from Phongsaly district mentioned that most of shops are Chinese, and that they were not interested in buying draft tubes and draft channels made from local materials. VTAs have experience buying products from the Chinese shops and they found that the Chinese shop owners are not really friendly, nor do they care about their customers. VTAs also informed the team that most of the end users in Phongsaly province use lying installation method, for which they do not need the draft tube and draft channel.



VTA training in Phongsaly district

They are just only few end users use the standing installation method, but the draft tube and draft channel are manually made by themselves from local materials.

Selling of electricity to neighbouring households

VTAs have never had experience selling electricity to a neighbor. In their village, some people are currently sharing the electricity with no fees applied. In certain locations, end users do share certain costs for buying spare parts when the pico-hydro turbines are broken, while also providing assistance to system owners in carrying out operations and maintenance duties.

Battery charging stations

This idea did not interest the VTAs. They find that many people have their own battery charger which is not expensive, and each household has one or two turbines which can produce enough electricity for general use and this specific purpose.

Training service to other villages

VTAs expressed their willingness to train people in the village or outside villagers upon their request. However, they are uncertain if they could charge for the services provided. People do not want to pay money, but they may give food and drink as compensation (i.e. paid in kind).

2.1.2 Activities in Huaphanh

For this quarter, the Team has taken two field trips to Huaphanh province. The first was training for VTAs which was carried out on 22 March 2010. The other one was a trip to conduct a workshop for shop owners and a training session for VTAs that did not attend the previous workshop.

Village Technical Advisors in March 2010

VTA training was carried out in two locations: Viengxay and Samtay Districts. Angsang village in the former district is the location of the LIRE shared pico hydro power demonstration site which offers a good opportunity to allow trainees to see an operating pico-hydro system and carry out practical examples in the field. The PTA and DTA's had also been trained in Angsang previously. Due to the long distance from Angsang, VTA's from Samtay District were trained



VTA training in HPN province

separately.

During the first field trip covered in this report, 22-24th March, 3 VTA's from Samneua and 2 VTA's from Viengxay district were trained in Angsang. After this practical training session, a further workshop was held in Samtay, with 2 VTA's from Viengxay, 1 VTA from Samneua and 4 VTA's from Samtay in attendance. (Note that some of the VTA's from Viengxay had missed the practical training in Angsang so joined this workshop instead).

The workshops for shop owners in Samneua and Samtai districts and additional VTA training in May 2010

Training workshops for shop owners

Workshops for shop owners were taken places in two of the three target districts namely, Samneua and Samtai districts. The first workshop was held on 12th May 2010 for shop owners in Samtai district. The second workshop was held in Samneua district a day later on 13th May 2010 for shop owners from Samneua and Viengxay districts. The first workshop was more successful than the second one as evidenced by the full attendance of all five shop owners in Samtai district. On the other hand, only three shop owners attended the second workshop, one from Viengxai and the other two Lao shop owners from the host district (also see table 1: Summary of Trainees). Each workshop took about half a day where attendants were introduced with recommended products and presented with some ideas for discussion.

Findings from discussion and evaluation forms are summarized as follows:

Village Technical Advisor acting as a broker for the shop owner

This idea of Village TAs acting as a broker for shop owners was presented to attendants for discussion. Comments recorded during the group discussion revealed the general sentiment that pico-hydro turbines would be more expensive if the shop owners had to pay a commission fee to a broker. As a result, the profit derived from selling this product would be minimal. Shop owners further added that in the past, there was a technician who used to offer turbine installation services at the village and then charged the end user a fee. After a few years, the end users knew how to install the system by themselves and they no longer required any external assistance. Nowadays they just buy the turbines and install everything themselves.

Making locally manufactured, prefabricated draft tube and draft channel

Most participants were not particularly interested by this idea. Many shop owners claimed that it would be a cost saving if end users made these accessories themselves. However some shop owners expressed that if they had available materials, they may contract out a welding shop to produce it, but the cost of production would have to be low enough otherwise they would not be sold. One participant suggested that training people on how to make draft tubes and draft channels or provide a manual to users is a better idea than producing these accessories by the shop itself, as the latter option involves a higher cost of production. Furthermore, in the long run, draft channels and draft tubes will not be able to be sold because knowledge dissemination spreads very fast. Once proper draft tubes and channels are produced, copied versions will be made by other end users.

Selling of electricity to neighbouring households

Participants raised various concerns about this concept if they were to operate such a business. One is a lack of “appropriate” potential sites. Secondly, investment capital is another bottleneck since they would be required to invest substantial funds to run the business. However, the investment return is claimed to be less promising as local people do not want to pay monthly due to their low, irregular and unstable income. In fact, some of them will only be able to pay fees intermittently, once they sell their agricultural products which they can only generate once or twice a year. Also, compensation for an electricity fee would most likely be in kind (on a barter basis).

Nonetheless, one shop owner will try to install one system as a trial first and will then expand if the project is successful.



Shop training in HPN province

Battery charging stations

The concept of battery charging station was also discussed during the workshop. Trainees commented that investment in shared pico-hydro and selling the electricity produced to the end user would be a better idea than operating battery charging stations because people do not only want lighting, but also wish to have electricity for entertainment purposes (e.g. television, VCD player, stereo system, etc).

Acting as a representative for producers from Vietnam

When this idea was presented, all the shops were interested to do this, especially the idea of selling electronic load controllers (ELC), which is still a very new product to them. Shop owners who are able to speak Vietnamese want to try and will contact the company directly. Eventually, many shops will ask LIRE to be a coordinator for this idea. However some shops said that the price of the ELC is too high when compared to the economic status of the rural people. They argued that in order to be able to sell the goods easily the price should be cheap. A further comment on the selling of good and bad quality products was made by one shop owner who said that good quality products occasionally sold well. However, if it is not sold then the shop is forced to sell at a lower price, otherwise, it will remain in stock forever.

Additional comments on manuals

More feedback on the manuals was obtained during the session. Some shop owners suggested that the size of the manual should be smaller, i.e. it should be half the size of an A4 page.

Additional Village Technical Advisor training

This training session was organized in Samneua district and took place on the same day as the workshop for the shop owners (13th May 2010), but was conducted separately by a different trainer. The objective of this training was to train village technical advisors who did not attend the previous training session in March. The size of the training was rather small with three trainees who were trained in person by project staff for a day.

2.1.3 Summary of trainees of LIRE-ETC Programme

Over these last 3 months, the LIRE-ETC training programme was completed. All of the target groups in the target provinces have now been trained. The table below gives an overall summary of the trainees who have been trained by the LIRE-ETC team in each province and district.

Table 1: Summary of Trainees

Province	District	PTA	DTA	VTA	Shop owner	Remark
Xiengkhoung	Phonesavanh	2	0	0	5	Xiengkhuang center, only for shop owners
	Kham		1	10	4	
	Khoun		1	9	0	No shop
Houaphanh	Samneua	3	1	5	2	
	Viengxay		1	5	1	
	Samtay		1	5	5	
Phongsaly	Phongsaly	2	1	6	5	
	Bounue		1	3	6	
	Bountai		1	4	6	
TOTAL		7	8	47	34	

2.1.4 Updating of Training Material

Prior to the training workshops conducted this quarter, the training material was reviewed and updated. Having received feedback from trainees and gained more experience ourselves, it was felt that updates needed to be made. This involved updating the technical parts of the user manual; with more details, examples and improved diagrams for the site assessment and construction of the draft channel and draft tube sections. Additionally the shop owner training presentation was updated by the addition of more general business advice, e.g. customer service, ways of improving sales and displaying products.

It was also decided to create a reduced version of the manual, 8-pages as opposed to 35, to present a summary of the key information contained. It is made available at the beginning of the full manual and aims to provide a summary of the information contained to users who may struggle or not be willing to read the whole manual.

Furthermore the training VCD to supplement and add to the user manual has been completed and will now be available for distribution. Early versions of the VCD proved popular when shown in training sessions. Copies will be distributed to the shops, PDEM, DEMO, and District Cabinet Office.

Table 2: summary table of manuals distributed

Name of Province	Name of district	Manual distributed to shops/offices	Manual distributed to end users
Xiengkhaung	Phonesavanh	57	0
	Kham	45	7
	Khoun	20	7
Houaphan	Samneua	76	0
	Viengxai	25	0
	Samtai	46	0
Phongsaly	Phongsaly	49	0
	Bouneua	51	0
	Bountai	56	5
TOTAL		425	19

Manuals were distributed to PDEMs, DEMOs, district Administration Offices and shops in the target provinces and districts. So far, 425 manuals were given to these offices to subsequently provide to villages and end users. There is not much of progress made due to timing after the provision which results in only few were distributed by shops. Many end users are still not aware of the availability and existence of these documents.

2.1.5 Development of Poster and Leaflet

A poster and leaflet were also developed during this quarter. The poster and leaflet are intended to be marketing materials for the LIRE-ETC programme and to create awareness of the manual and training VCD.



Leaflet for LIRE-ETC pico-hydro programme

2.2 Recommended action and activities for the forthcoming months

Most of the main activities in the pico hydropower innovation and capacity building programme have been completed, but there are few activities which are required to accomplish as follows:

- Conduct a road campaign for the services of technical advisors and the availability of manuals and training VCD by putting posters which have been developed for dissemination purpose in prominent places such as market places, village development group offices, notice boards, shops, etc. Horn speakers in populated villages is also of assistance and can spread news very quickly.
- Train VTAs in Bounneua and Bountai districts as well as new government coordinated staff (PTA and DTAs), Phongsaly province, who did not attend the training during the previous visit.
- Hold meetings with VTAs and shop owners to find out any barriers and bottlenecks in their activities and for coaching purposes
- Monitor the progress of the projects as well as the distribution of the manual and other materials through phone calls and field visits