



VTCL

Vocational Training Project

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1. REE CONTEXT

A. REE Background

B. REE Technical capacity

A. REE Background (1)

- Around 600 REEs in Cambodia (estimated by MIME and SME Cambodia),
- Up to now, only 103 REEs who got licensed by EAC and 20 are licensed as power producer (11) and as distributor (9),
- From 200-400 customers per REE (based on ITC survey),
- Average installed generating capacity per REE:
 - 100 to 150 kW (based on SME report)
 - 200 kW (based on annual report of EAC in 2004 for licensees)
- Price of electricity: 0.3 to 0.9 US\$/kWh
- 2.5 staff in average per REE of which 2 full time staff and 0.5 part time staff,

A. REE Background (2)

- Capital investment: from US\$2,500 to US\$35,000
- EAC provide 3 kinds of license to REEs:
 - Consolidated license,
 - License only for generation,
 - License only for distribution,
 - License for generation and distribution (most common for REEs),
- No official size classification for REEs, but suggested classification can be:
 - Below 100 kW, considered as small REE,
 - From 101 kW to 500 kW, considered as medium REE,
 - Above 500 kW, considered as big REE

B. REE technical capacity

- 87% of REEs have received no technical training. Only 13% have received training from classroom or manufacturer (based on SME report),
- Power losses estimated is over 20%,
- Limited duration of service: few hours a day
- Most of REEs have graduated in secondary school (71% based on ITC survey),
- They all can read/write in Khmer, and a few of them can read/write in English (according to result of the survey),

B. REE technical capacity (2)

- Most REEs used to be battery chargers. They know to do business by practicing.
- They all prefer to have on-job-training,
- 96% said training would help them improve their technical skills and business management in order to better provide customer services.

2. EXISTING TRAINING OPPORTUNITY

- C. Training institutions
- D. Accreditation schemes
- E. Energy technical training involving organizations
- F. Potential students
- G. Government process

C. Training institutions

- NUM (National University of Management): business management,
- SME Cambodia: financial management and building association,
- CKN: basic technical training (technician),
- ITC: accredited university degrees in design and engineering,
- Don Bosco: technical course for technicians
- Kosamak: technical course for both technicians and engineers,
- NTTI: technical course for both technical and engineers,
- Private universities such as Norton University, BBU (Build Bright University).

D. Accreditation schemes

- Only the government schemes
 - EDC workshop: training for their own staff,
 - ITC: short-term training for staff working in the private companies,
 - CKN: short-term training for REEs
 - NTTI: short-term training for private staff

E. Energy technical training involving organizations

- TOTAL: support REEs
- UNDP: support battery chargers and REEs
- CKN: technical training for REEs
- ITC: technical training for REEs
- Gret: capacity building for REEs
- KOSAN: technical training for REEs
- GERES: conducting socio-economic survey

E. Mechanical technical training involving organizations

- Organizations:
 - ITC : for students and private staff (eg: Comun Khmer),
 - Don Bosco: for student
 - NTTI: for Student
 - Kosamak: for student
 - CKN: for student
 - JVK (funded by Japanese) : mechanical training on motorcycle

F. Potential students

- Existing REE and battery charger staff
- Potential future staff of REE and battery chargers (usually family members of friends)
- MIME and DPIME staff
- Technical staff of factories, hotels, and commercial buildings that need to operate their own generator sets
- Technical staff of the local mobile phone companies who operate hundreds of solar+diesel hybrid systems to power their remote repeater stations
- Graduates from high school or other institutions that are interested in improving their skills for a potential new job

G. Government process

- Ministry of Labor and Vocational Training: takeovers vocational training institutes, namely:
 - Don Bosco,
 - Kosamak,
 - NIB (National Institute of Business); and
 - NTTI (national technical training institute)
- Ministry of Education: takeovers all besides above 4 vocational training institutes.
- The government requested to all institutes and universities providing engineering training to add a new training course called “*Foundation Year*” (started this year). This *foundation Year* course consists of social and basic technical science courses. The program is under control of ACC (Accreditation Committee of Cambodia), which is presently under umbrella of the Council of Ministers.

3. EXISTING PILOT REE TRAINING PROJECTS

- H. GSB-Total/UNDP Project,
 - I. Smau Khnei Project,
 - J. ILO Project
 - K. CKN Training and REE
- L. ESF Training, Model REE, and Battery Charging
- M. DEMA Project (IED/MIME/EDC/MIH)

H. GSB-Total/UNDP Project

framework

Activities

Operational structure

Framework

- Started in July 2005 and finished in December 2005,
- In 4 provinces: Kg Cham, Siem Reap, Prey Veng and Banteay Meanchey,
- Project funded by Total Cambodia (budget: US\$45,000)
- Possible extension after the evaluation of its pilot phase

Activities

- Business training:
 - Basic financial concept (basic accounting,...)
 - Use developed software to record data and business management
- Technical training:
 - Design the electricity system including wiring and genset
 - Support for rehabilitation and operation
- Financial support:
 - Help REEs to access to long term credit with low interest rate, possibly 7%/year for at least 5 years of credit (according to Total, it still does not work because the Bank does not want to provide such kind of credit)

I. Smau Khnei Project

framework
Activities

Framework

- 1 year project (August 2004-August 2005)
- Location: Smau Khnei village, Trapeang sab commune, Takeo province where:
 - Existence of an existing mini-grid (280 HH already connected),
 - 220 poor or remote families not yet connected,
 - Industrial activities: Welding system, battery chargers, Photo shop, small restaurants.
- Funded and implemented by Gret and Energy Assistance (EA),
- Overall budget was about US\$40,000 in which US\$10,000 used to subsidize the connection for poor people
- Other 2 years REE training project proposal has been submitted to EA.

Activities

- Institutional Support
 - Creation of the commune electrification committee,
 - Facilitation of contracts between commune and private entrepreneur.
 - Facilitation of EAC licensing
- Financial Support
 - Subsidies (220 poor or remote HH x 45 US\$/HH),
 - Long term credit (14%/year, 3 to 5 years).
- Technical Support
 - Design of the electricity system including the production, distribution and service connection,
 - Support for construction and operation.

J. ILO Project

ILO Project

- 1 year training project (already finished in 1996),
- Location: for REEs in Battambang,
- Provided free training on genset,
- SME Cambodia provided business and capacity building for those REEs,
- Directly funded by ILO with total budget of 25 000 US\$,
- Existing training information is not accurate
- May be extended in 2006.

K. CKN Training and REE

CKN Training and REE (1)

- CKN is a local electrical vocational training centre that was established in 1998,
- **Activities:**
 - Since its creation, CKN mainly have provided short term electrical training for students coming from rural area,
 - From 2004-2005, CKN provide the following activities:
 - in collaboration with AAFK, training 15 young women to be as trainers for CKN,
 - in collaboration with ESF/EDF, developing a model of REE near Siem Reap province by providing a facility training,
 - basic electrical training to 4 selected REEs in the framework of GSB-Total/UNDP project,

CKN Training and REE (2)

- From Oct, 2005-March 2006, CKN will receive a financial support from UNESCO to develop their vocational training program for rural students,
- in 2006, CKN will be involved in the ESMAP program prepared by EAC,
- **CKN as an REE:**
 - in 2004, CKN set up a small mini grid in Kien Svay, Kandal province with:
 - 50 HHs are already connected,
 - 2500 R/kWh (0,59 US\$/kWh)
 - operated during the evening time from (6pm to 10 pm),
 - Total investment: around 1200 US\$,
 - Constructed by ex-student of CKN

L. ESF Training, Model REE + Battery Charging Devices

ESF Training, Model REE + Battery Charging Devices

- Electricians Sans Frontiers (ESF)
 - is a French NGO starting their activities through CKN in Cambodia since 1996
 - funds from EDF
- Projects include:
 - establishing rural electrical training for REEs near Siem Reap, through CKN,
 - establishing a model REE near Siem Reap that includes a training facility
 - developing two simple devices to optimise battery charging and use, that have been tested and are in early stages of commercialisation

M. DEMA Project (IED / MIME / EDC / MIH)

DEMT Project

- “Distributed Energy Management Tools in Cambodia and Laos”
- Funded by the European Union through EAEF (same as VTCL project)
- Aims to develop management software tool plus training for REEs in Cambodia and for “PESCOs” in Laos (*Provincial Energy Service Company*)
- Project duration May 2005 to November 2006

4. FUTURE PROJECTS

N. REF

O. CKN Proposal

P. CEEP

N. REF (Rural Electrification Fund)

- Program supported by WB through MIME, but long delays and start date still not known
- Subsidy: is provided according to the number of connected customers on the extension lines based on OBA model (Output Based Aid),
- Subsidy amount: US\$45 per new connected HH
- Technical support:
 - Co-financing of the feasibility study,
 - Marketing assistance
- REF Budget only for REE support: 4-5 millions US dollars,
- No detail of program activities are ready (to be prepared by selected TA).

O. REE Training Proposal submitted to ESMAP (World Bank)

- Supported by WB through EAC,
- Technical and financial training only for licensed REEs,
- 2 training places: one in Banteay Meanchey and another in P.Penh,
- Licensed REEs located in the provinces surrounding these two training places will be invited,
- CKN will be in charge of training place in Banteay Meanchey and EAC for that in P.Penh
- Budget proposal has been submitted to the World Bank

P. CEEP (Cambodian Energy Efficiency Program, UNDP)

- Program has been proposed for funding by GEF, not yet approved
- Support to battery chargers and REEs in terms of energy saving improvement,
- Details of the program activities is being prepared by Consultant,

Thank you

Questions?

Ky Chanthan

(IED Cambodia)

Tel: (855) 12 801 966

Email: kychanthan@iegcambodia.com