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Energy Facility



Summary of VTCL project status & achievements

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VTCL final meeting in Phnom Penh, 16 Oct. 2006

Objectives of the final workshop

- ❑ Review project's activities and its achievements
- ❑ Finalise development methodology and curriculum,
- ❑ Present the project's results, lessons learned, its impacts
- ❑ Discuss perspectives for further development & cooperation

Project's fact book

Project title: Vocational Technical Training for Cambodia and Laos Rural Electrification SME (VTCL)

Duration : October 2005 – October 2006

Partners:

- ❑ **IED** (Innovation Energie Développement – France), www.ied-sa.fr
- ❑ **ETC / TTP** – Technical Training Programme within ETC Energy unit of the ETC Foundations, Netherlands. www.etc-energy.org
- ❑ **ITC** (Institut de Technologie du Cambodge) – www.itc.edu.kh
- ❑ **NUOL** (National University of Laos)– www.nuol.edu.la

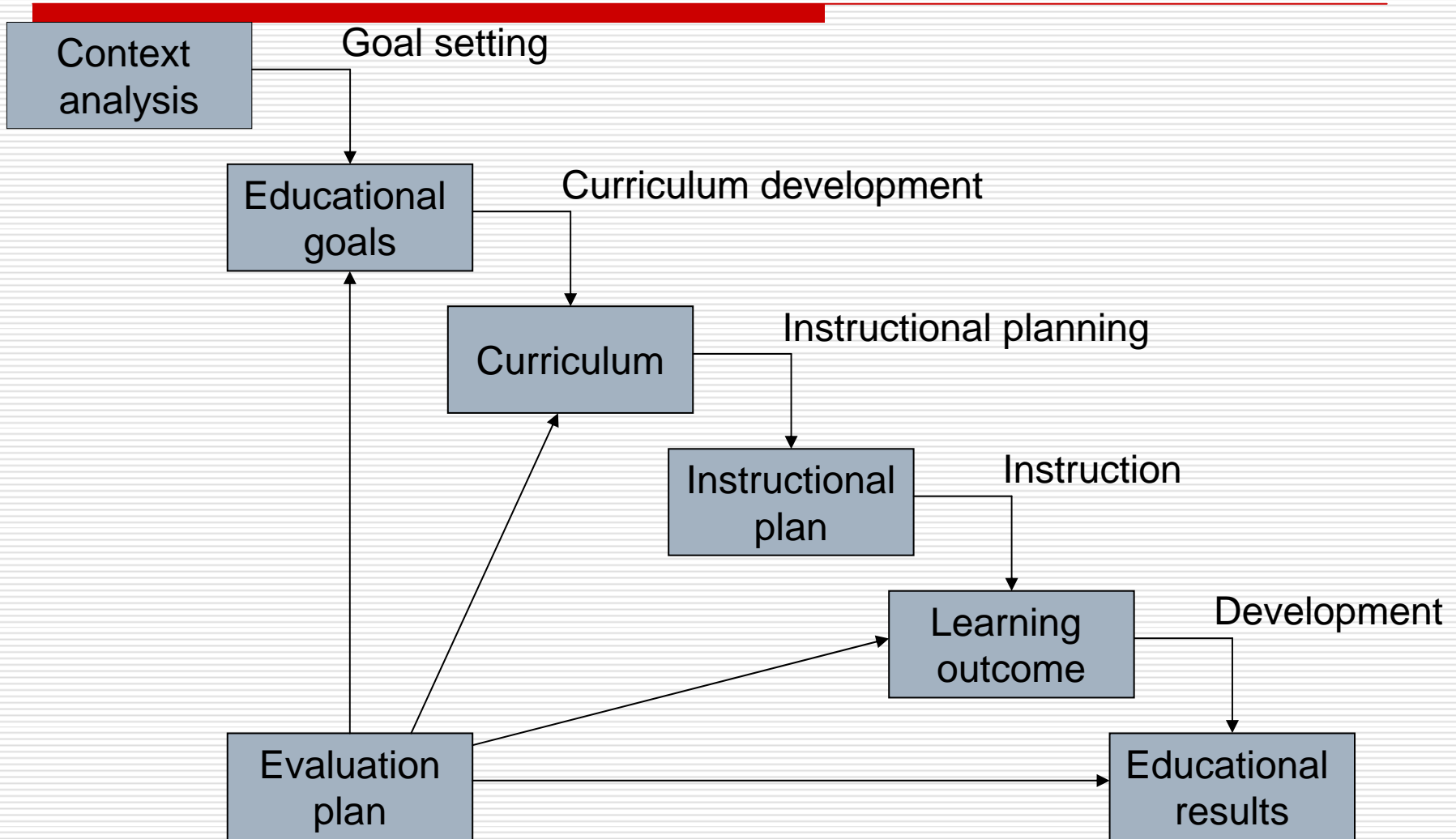
Project Objectives

- Establish high quality vocational training courses specially designed for the rural electricity operators in Laos and Cambodia
 - Business management
 - Generator types and fuel sources
 - Energy efficiency, technical standards and licensing requirements
 - Diesel generator sizing, O&M
 - Design of distribution network
 - Practical skills and techniques for O&M and Safety

Main Activities

1. Review and context study
2. Survey of training needs
3. Design curriculum guidelines and organise related review WS
4. Design a business case for ITC and NUoL
5. Produce curriculum kits, translate the kits
6. Training of trainers
7. Pilot training
8. Final WS

Project process



1. Review and context study

- Conducted between Aug–Nov 05
- Output : Comprehensive reports on
 - Contexts and regulations, plan on Ru.E.
 - References and activities in Ru.E
 - Background info. on REE & PESCO
 - Existing training opportunities

1. Review and context study (2)

- 4 Supply areas, few isolate, off-grids
- 33% has access to electricity
- Main actors : MEM, EDL, LNCE, Donors
- Few big activities (off-grid) → Strong commitment to Ru.EI
- PV, hydro, high grid-extension
- WB, ADB, JICA, GTZ

- Many isolated diesel-generation
- 13% has access to electricity
- Main actors : MIME, EAC, REE, EDC
- Many activities, projects → Strong commitments to Ru.EI
- Diesels, low grid extension, mini-grid
- WB, ADB, JICA

1. Review and context study (3)

- ❑ 6 PESCOs (state companies) → 10-15 in next few year
- ❑ 0,1-0,3\$/kWh
- ❑ Widely use PV kits
- ❑ Mostly SHS, some village hydro & genset

- ❑ 600-800 REEs (most are licensed, but some do not)
- ❑ 0,5\$-1,2\$/kWh
- ❑ Widely use battery
- ❑ Only diesel but potential for PV, mini-hydro

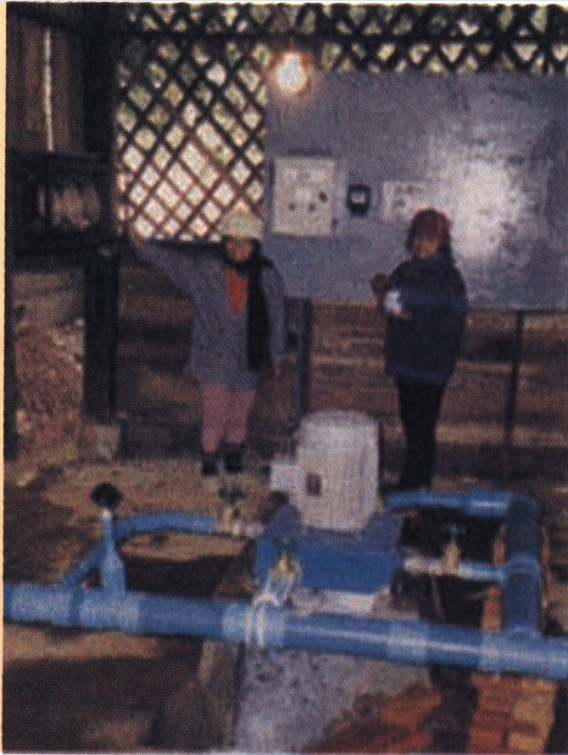
Contexts by facts

Village hydro

The turbine-generator was fabricated from locally available materials in Laos.

The voltage regulator and runner were imported.

The station is maintained by the Village Electricity Manager (VEM). It supplies over 50 houses and runs reliably after four years.



2. Survey and training needs

- ❑ Implemented between Nov. –Dec 05
 - ❑ Survey of randomly chosen 135 REEs & 35 PESCOs
 - ❑ 48 questions in 5 groups :
 1. General information
 2. Education background
 3. Technical & professional background
 4. Training needs
 5. Specific questions
 - ❑ Outputs : Survey **analysis** and **reports**
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2. Survey and training needs (2)

- ❑ Provided clear and detailed background info on REEs & PESCOs :

- ❑ All licensed, 1-2 staff
- ❑ <100 customers
- ❑ <100 kVA, one tariff
- ❑ Graduate from school, various exper.
- ❑ Basic skill, no PC
- ❑ Lack of :
 - Experiences
 - Technical knowledge
 - Human resources

- ❑ 2-4 staff
- ❑ 100-400 customers
- ❑ 75-200 kVA, one tariff
- ❑ Secondary education, various jobs & exper.
- ❑ Basic skills; no PC
- ❑ Lack of:
 - tech. standards,
 - technical knowledge,
 - financial & manag.

2. Survey and training needs (3)

□ Identified training needs & opportunities

- Most of them prefer 1-2 week courses
- Balance between theory & practices
- Business manag., EE, standards, network
- Few institutions for training : Tech. college, RED, Dept. of tech. & vocational edu., NUoL, EDL-TC, Sunlabob.

- Prefer 1-2 week course not in harvest
- More practices (on-the-job training)
- O&M of genset, O&M of network, safety
- More opportunities for training : MIME, EAC, ITC, EDC-TC, Manag. University, SME, Don Bosco, CKN, others

Survey by facts



3. Curriculum guidelines & review WS

- ❑ Developed between Dec.-Mars. 06 and review WS in Laos 13 March 06
- ❑ To run ESCO → large no. of tasks has been identified.
- ❑ Assigned tasks to essentials identified functions;
- ❑ Outputs : Curriculum outlines & reviews proceedings

3. Curriculum guidelines & review WS (2)

- ❑ Select ILO (Intended Learning Outcome) using SMART criteria
- ❑ Modular structure following ILO
→ broader target group
- ❑ Course outline presented in a format:
 - How much time needed
 - Training modes: class room, exercise on paper, practical demo, field work
 - Choice of options for NUOL & ITC

3. Curriculum outline

Course title	Vocational Training Course for Small and Medium Enterprises for Rural Electrification in Cambodia and Laos.
Course duration	<p>Total of 12 days of which :</p> <ul style="list-style-type: none"> • 10.5 days in class room and workshop. Or equivalent to 73 hours of class time (including assessment for each unit) • 1.5 days on field trip to showcase rural electrification enterprises
Course format	The course is of a modular structure. For this course 3 modules A1, B1 and B2 have been combined into one vocational training course program.
Implementation format	<p>The course will initially be offered as:</p> <ul style="list-style-type: none"> • Intensive short course : 12 days 97 hours/day) in a period of 2 weeks (offered during vacation time) <p>Alternatively for offering the course to students:</p> <ul style="list-style-type: none"> • Standard term : 6 hours /week over 12 weeks (including 10 hours field trip)
Modules	<p>3 Modules:</p> <p style="padding-left: 40px;">A1 Business management and business development</p> <p style="padding-left: 40px;">B1 Electricity production with a midsize generator</p> <p style="padding-left: 40px;">B2 Electricity distribution in a small network (low voltage only)</p> <p>and FV Field Visit</p>

4. Business cases

- Implemented between Jan. – April 06
- Business cases :
 - posing a set of important questions, when a training institute intends either to start a new course
 - business-oriented considerations : focus lies on training marketing, course implementation, organisational & management conditions and financial planning,
- Outputs : **Business plans** were established for both institutions ITC & NUoL, but not very satisfactory

5. Manuals

- ❑ Developed between April – August 06
 - ❑ Three modules, consisting of 10 units (600 pages)
 - Based on survey, studies, feedback
 - Address practical problems & concerns
 - Highly involvement of all partners
 - Theory + practical exercises
 - ❑ Translated into Khmer & Laos
 - ❑ Widely available to all stakeholders (CD-ROM, paper, internet)
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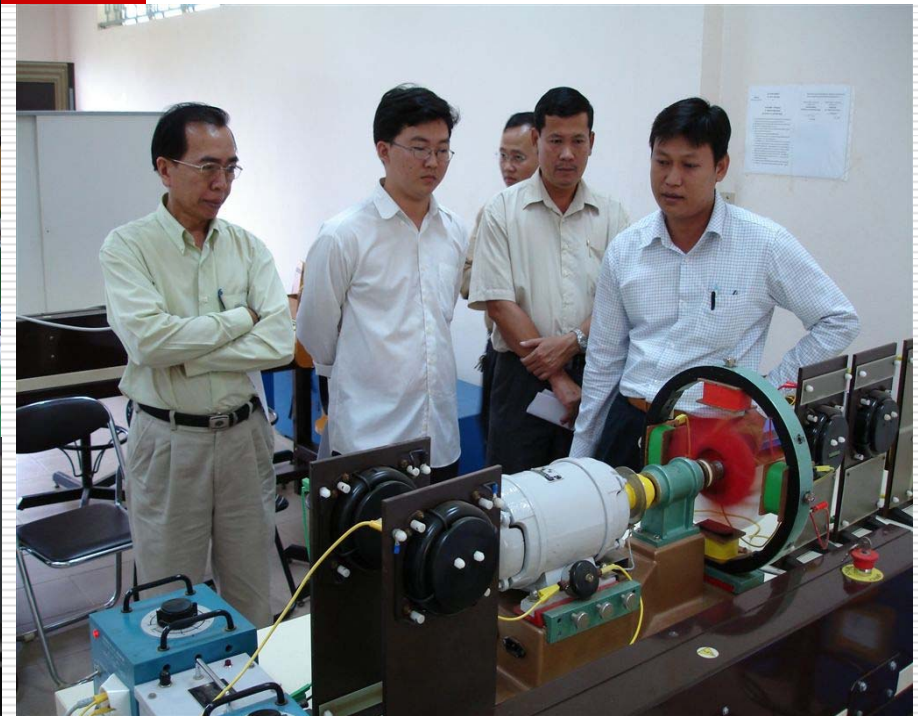
5. Ten units of the manual

- A1.1 – Business Manag. for ESCO
- A1.2 – Generation option & Ren. sources
- A1.3 – EE, Elec. Standards & licensing
- B1.1 – Basic elect. fundamentals
- B1.2 – Operation of genset
- B1.3 – Regular Maintenance of genset
- B2.1 – Making network connection, earthing, meter installation
- B2.2 – Building low voltage single and three-phase networks
- B2.3 – Safety & environment
- B2.4 – Battery charging

6. Training of Trainers (ToT)

- Carried out in September 2006
- Discussion and exchange on :
 - How the training should be?
 - What are the best methods to deliver
 - Equipment & choice of practical exercises
 - Preparation for the pilot training
- Excellent implemented in ITC, less extent in NUoL
- 5 ITC trainers & 5 NUOL trainers
- Outputs : final manuals in English, Laos & Khmer

6. ToT



Activities during the ToT :
Rehearsal & Practical
demonstration in Laos (EDL TC)
& Cambodia (EDC TC)

7. Pilot training

- ❑ 2-week pilot trainings were implemented in Laos & Cambodia, Sept-Oct 2006
- ❑ Preceded by a advertisement campaign
- ❑ 20 trainees for Cambodia & 11 for Laos
- ❑ External observation & monitoring were arranged → See NUOL & ITC next presentations

7. Pilot training (2)

- Pilot training reports – assessments on:
 - Participants
 - Training program
 - Appropriateness of the topics
 - Teaching
 - Learning
 - Management & Logistic arrangement
 - Recommendations
- It served very good indications for further development of the course and its delivery

7. Pilot training by facts



Prof. Soumek Inthala (NUOL)
during the pilot training



Prof. Bun Seang (ITC) during
the pilot training

VTCL global assessment

- All deliverables
- Attained objectives – global & specific
- Implementation on time
- Expected results achieved
- Multiplier effects to target groups
- Good coordination, management & reporting

Issues

- ❑ Capacity building needs to improve?
- ❑ Work on “Business cases” (plans) should be on continuous basis?
- ❑ Update manuals and add more modules (units) following the needs
- ❑ More specific adaptation for
 - Laos & Cambodia
 - Target groups
- ❑ Cooperation between national institutions
- ❑ Sustainability?

Thank you for your attention

