

# Capacity building programme for power industry of Cambodia, Laos, Vietnam and Thailand (CLVT) countries – Special newsletter No.2



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## 1. General information

In framework of continuing support by [ACE-EAEF](#) for regional capacity building in power sector and in the context of the **Initiative for ASEAN Integration (IAI)** objectives to foster ASEAN Power cooperation, two project have been selected for the financing support from EU: “Capacity building programme for power industry of Cambodia, Laos, Vietnam and Thailand (CLVT) countries” and “Capacity Building Programme for Power Transmission System Personnel of Electricité du Cambodge (EDC)”. After the kick off meeting and management seminar in Bangkok (see the special newsletter N°1), several training courses have been conducted by the project’s partners EDC, EGAT, and Innovation Energie Développement (IED, France).

## 2. Need for capacity building and training in GMS

The need for capacity building and training grows along with development of national power networks and further interconnections between the CLVT nations. Cross border power trade and exchange operations are expected to grow which require enhancement of personnel power skill.

At the same time, there is obviously an existing gap of knowledge, skill and experiences among the power sector personnel in the GMS. This gap has made regional integration of power system move slowly. The skill of personnel in the power sector need to be improved and

experiences to be exchanged and shared in order that CLVT power industry personnel can work together in developing and implementing the integrated GMS power system.

In CLVT countries, power utilities serve as backbone of economic growth. Thus to stir and sustain the economic activity in the region, the power utilities must be efficient and reliable to support such economic activities and development. The power utilities can only be efficient and reliable with a competent and highly motivated personnel.

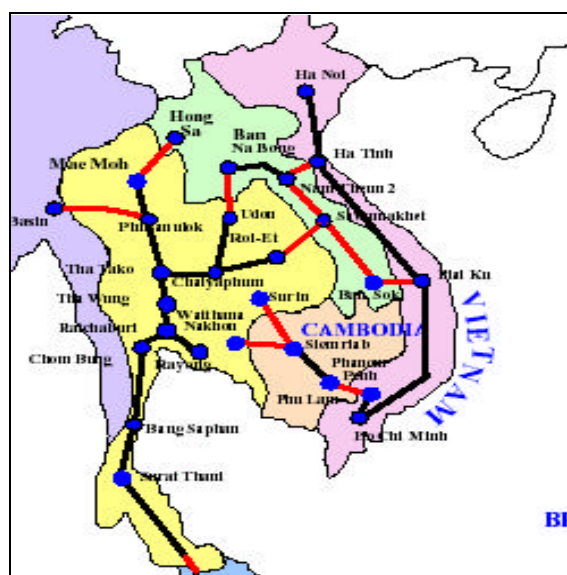


Figure 1 : GMS interconnection master plan

Therefore, 8 themes of the training courses were identified and implemented with the objectives to i) increase the technical exchange between the European Union and CLVT countries and within the CLVT countries in terms of technical expertise; ii) facilitate the implementation of the ASEAN plan of action for energy

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cooperation, specially in support to programme area 1: ASEAN power Grid.

## **3. Training courses contents**

It is evident that these training courses are urgently needed. Their contents are well designed to meet GMS specific needs, particularly on O&M activities, customer services and hydropower.

### **a) Power System Planning, environment impact assessment, socio economic impact assessment and clean energy technology :**

*The objective of this training course is to improve and increase know-how on power system planning and operation, load forecasting, EIA on energy projects, incorporate socio-economic impacts assessment and consider use of clean energy technologies.*

### **b) Power Wheeling and centralized dispatch of power system**

*The courses focus on the theories and implementation of existing power markets, procedures of production control, constraints in power system operations, concepts of centralized dispatch and power wheeling.*

### **c) Substation operation and maintenance**

*The objective is to transfer the know-how on the main equipment of sub-station, the bus arrangement scheme, relay scheme, type and functions of relay scheme, bus protection, line protection, transformer protection and grounding scheme.*

### **d) Transmission line operation and maintenance :**

*To improve and increase participant know-how on personnel safety and high voltage safety equipment, transmission line operation, inspection and routine maintenance, and on-the-job demonstration on how to replace suspension insulators.*

### **e) Hydropower plant operation and maintenance, control and protection system**

*The objective is to train on hydropower plant control and protection system, on the operation of electrical relay protection system.*

### **f) Hydropower plant engineering and construction**

*This training equips the participants with the competence and know-how on preparation of pre-feasibility and feasibility study for hydropower projects, selection of dam location, calculation of hydro output, evaluation of environmental impacts of hydropower projects, procedure of community resettlement.*

### **g) Power system engineering and construction**

*The training courses improve and increase the participants know-how on power system technical criteria, power system simulation programs, system modelling; short circuit calculation, dynamic simulation, automatic contingency analysis and project cost calculations.*

### **h) LV and MV Distribution System Operations and Maintenance**

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*The participants learn the steps and different factors that should be considered in planning and designing the distribution system, learn the methods in operating the distribution system, testing and maintaining electrical equipment.*

### **i) Customer Service Metering and Billing.**

*The objective of this training course is to teach the methods of designing tariff, principles of calculating tariff for specific customer categories and learn how to manage the customer's information system.*

### **4. Activities during the training courses**

All training courses took place during January 2004 – May 2004 in EGAT training centres and at EDC training centre. Total of more than 100 participants from EDC, EDL, EVN, EGAT from different departments of these utilities : planning, dispatching, transmission and distribution, operation and maintenance, customer services, technical... have got certificates for training course.



**Photo1. Technical visit to EGAT dispatching centre**

During these training sections, other technical and cultural activities have been organised for trainees which allow the participants to have person to person contact, to exchange professional experiences and as well as to learn much from Thai hospitality and its multicultural aspects : technical visits to the Bang Pakong gas power station 3620 MW – the biggest one in Thailand, visit and working session with Bang Pakong thermal power plant simulator with its full size replica simulator, visit national dispatching center...

As it has been agreed at the manager seminar and workshop (see special newsletter 1), the outcomes of these training courses have been compiled, documented and published under "Training material packages". These packages are important tools in order to replicate in the participant's respective countries so that more persons can benefit out of these training courses.

One point to be underlined is that these training courses, unlike other courses, pay more attention to the on-the-job trainings; In particularly the training courses on operation and maintenances of hydro power, of substations and transmission, on customer services have been organized in the way that the trainees learnt at the same time the theoretical lectures and practical skill by participating in real exercises of O&M. Thanks to skilled staff and modern equipment provided by EGAT and its European partners, the participants have got the best knowledge and experience about the theme they come to learn. They

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fill more confidence in performing their jobs effectively and efficiently when they come back home.



**Photo 2. Practical session on PC, EDC Training centre**

### **5. Recommendations and conclusions**

The need for training in the power sector personnel of CLVT countries was based on the status as analysis by EGAT over the last 3 years. However, this kind of analysis would be more effective if it were discussed closely during the preparation stage with EDC, EVN and EDL. The need changed over time and the concerns and the priority of each utility are widely different.

Effectively during the kick-off meeting and management seminar, there are some managers put the questions concerning the criteria for participant selection. These criteria should be elaborated in precise terms and based on training contents. Yet, the final selection of trainees is a question of sovereignty of each utility that the applicant and its partners could not impose.

There is obviously that within the time and budget allocation, these projects have been conducted very successfully thanks to great efforts provided to the project by EGAT and project partners in terms of human resources, logistic and coordination, location and equipment.

In terms of objective fulfilment from participants point of view, at the end of each training course, a questionnaire has been distributed to the participants and then analysed by the project team in order to draw immediate lessons and to improve further actions. Globally, the participants appreciated very much the contents and the trainer's competences. They also indicated to the very friend and warm organisation from EGAT and EDC. Some participants wished to have longer courses, taking into account the complexity of the proposed themes and on-the-job aspect of the training.

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