

### 1.3 Benefits of competition

Competition creates incentives for market participants to achieve:

- lower costs – good management and cost control systems
- higher efficiencies – e.g. quick to embrace new technologies
- better service

### 1.4 Ease of introducing Competition:

- Depends on the physical characteristics of the industry and the ease with which entrants can be encouraged to participate and compete.
- If "sunk" costs and economies of scale are not important, competition is easy to introduce. Free entry can be allowed without regulation (example: taxi industry).
- In network industries (e.g. electricity, water, telecoms), sunk costs and economies of scale are important and this complicates the introduction of competition.

### 1.5 Competition in Network Industries:

- As network industries are opened up to the private sector and to competition, regulation is needed to control the behavior of participants. For instance:
  - It is not efficient or practical to allow two or more networks - need to ensure open access to the network.
  - The markets are dominated by only a few participants – not enough to ensure competition. Therefore there is a need to control anti-competitive behavior.
- In the power sector, how best to stimulate competition? One solution is unbundling generation, transmission, creating multiple generation entities and retail entities allowing competition between generation entities and between retail entities.
- Such solutions need a market that is large enough. In Lao PDR, unbundling would result in too few generation entities competing within each of the principal load centers. Where then can competition be encouraged in Lao PDR? We will look at this question later.

problems, the Government and ADB will agree on appropriate measures to ensure that the project objectives are met as envisaged. In addition to regular reviews, the Government, ADB and NDF will jointly undertake a detailed midterm review of the Project after two years of implementation or earlier if necessary, principally when the Project faces major difficulties that may threaten the project objectives. The midterm review will appraise the project scope, cost estimates, implementation arrangements, number of connections, compliance with loan covenants, and identify any issues to be addressed to improve project impact and sustainability. The Government, ADB and NDF will jointly decide on any changes needed in the design and implementation of the Project.

#### **G. EdL's Financial Performance**

33. The Mission reviewed the implementation status of the Financial Recovery Plan (FRP), draft 2002 financial results, and the revised financial projections. Based on this review, it appears that the FRP measures and translation of other 2002 financial transactions has resulted in a more stable financial position for EdL. This position should allow EdL operations to be profitable and sustainable for the next several years, and EdL projections estimate that it will meet its loan covenants from FY02-FY09 based on the approved 2001 investment plan. Despite this optimism, ADB remains concerned about the growing accounts receivable problem with the Government.

34. **Financial Recovery Plan.** While most of the FRP was implemented in 2001, the study on the revaluation of fixed assets was undertaken in 2002. After presentation of the draft results in a workshop in September 2002, the consultant final report of the revaluation study was submitted in November 2002. The Mission was given a copy of a letter in which MOF has officially accepted the revaluation results and approved its implementation by EdL. EdL is currently completing translation of the revalued results into the 2002 financial statements. The revaluation results were much greater than forecast by EdL or its lenders, with net revalued assets being seven times greater than historical costs. Therefore, as shown in the draft 2002 financial statements, the increase in net fixed assets and subsequent revaluation surplus has significantly increased EdL's asset and equity base and will permit EdL to meet its debt-to-equity covenant for the first time in many years. The Mission commended the Government on its diligent implementation of the FRP to date. The Government agreed to continue to implement all ongoing aspects of the FRP, specifically retail tariff increases through 2005 and further revisions of its Power Development Plan.

35. **THPC Refinancing Proceeds.** While not anticipated during the agreement on FRP, the Theun-Hinboun refinancing and subsequent proceeds (\$33 million) have also had a positive impact on EdL's financial position. Although MOF required EdL to remit the proceeds prior to a final decision being made on its use, the Mission was informed that a proposal has been made to fully retire \$33 million of outstanding EdL loans with MOF from the proceeds (to fully retire two relent IDA loans and partially retire one relent ADB loan). While the Mission pointed out that the selection of these relent loans did not follow a typical financial procedure to assure maximum financial benefit, ADB endorses the final proposal to retire the proposed \$33 million of EdL liabilities with MOF. ADB's agreement is made under the stipulation that there will be no early repayment by GOL of any loans with IDA, ADB or other lender. MOF and EdL acknowledged this endorsement and explicit condition.

36. **EdL Non-Operating Income.** The Mission also raised the issue of future THPC dividends and their treatment by EdL. ADB stressed that as long as EdL continues to be the THPC shareholder of record, then EdL's Board of Directors retains the final decision on how future

## 2. BEST PRACTICE FEATURES OF COMPETITION

### 2.1 Critical success factors for competition

Six critical factors are identified for promoting a more competitive sector:

- i Transparency of process
- ii Competitiveness of bids
- iii Appropriate management of risk
- iv Returns commensurate with risk
- v Stable policy regime
- vi Government and MLA support

Each is briefly discussed below.

### 2.2 Transparency and public accountability

Transparency and public accountability are needed to ensure that all participants in the industry are competing on level terms. Government policies and programs should encourage existing and new participants through a transparent system of awarding contracts and concessions.

### 2.3 Competitive procurement of services

Transparency and public accountability are best achieved by using competitive bidding processes to select contractors and suppliers for power sector projects. This ensures that consumers are paying competitive and reasonable prices. It is interesting to note that IPP prices obtained in Indonesia in the mid-nineties were a couple of ¢/kWh more expensive than those obtained in Thailand. The Thai prices were tendered under competitive bidding while in Indonesia they were negotiated without transparency and included a payment to a local partner, normally a friend or member of the Soeharto family.

### 2.4 Appropriate management of risk.

Risk sharing among government, utility, lenders, and private firms competing within the sector should be on the basis that *"the party best able to manage the risk should bear the risk"*. However, in difficult investment environments it is wise to remember that a "fair" risk allocation may not be reasonable, and that an "unfair" allocation might be reasonable. Examples can be found in Lao BOT agreements where a provision might seem harsh and "unfair", but can be justified as "reasonable" because lenders will not accept less and the project would not be "bankable" without it.

dividends are paid to the Government (assuming loan covenants are met). While planned tariff increases will assist EdL in completing its financial recovery, the tariffs do not fully cover the cost of electricity service. Retention of THPC dividends will allow EdL to continue to pursue the Government's electrification plans without equity injections by the Government in the future. Should the Government determine this corporate governance procedure can not be maintained, then ADB will support the Government in transferring THPC shares to a new Government-owned company where it can manage such dividends under a legally appropriate mechanism (see para. 25). The Government agrees to keep ADB informed of any further discussions on the issue of variable ITP dividend remittances.

37. **Draft 2002 Financials.** The Mission was provided with draft 2002 financial results. The expected net profit is K120 billion (\$11 million), although K111 billion is from THPC dividends. Although similar to final 2001 results, this is the first year that EdL has earned a net profit on its operations exclusive of THPC dividends. The tariff increase implemented in May 2002 has had a positive effect and will continue to do so until 2005, bringing the retail average tariff to approximately 612 Kip/kWh. The tariff increases, refinancing proceeds, THPC dividends and asset revaluation will allow EdL to meet its financial loan covenants in 2002 and in the foreseeable future based on the long-term projections. As is current ADB practice, the financial projections and covenants will be reviewed once audited 2002 financial statements are received by ADB and a revised EdL Power Development Plan is approved by the Government.

38. **Loan Covenants.** The Government agrees to the same financial loan covenants as contained in ADB Loan 1558 and agrees to maintain operational and financial performance so that these covenants are consistently met on an annual basis. Covenants will be assessed by ADB based on audited results submitted within six months after the close of EdL's fiscal year. The Government agrees to:

- (i) maintain a self-financing ratio of no less than 30% of three-year average planned capital expenditures;
- (ii) maintain net revenues of no less than 1.5 times annual projected debt service payments. (In an effort to harmonize covenants with the World Bank, this is a small increase from the Loan 1558 covenant level.);
- (iii) maintain the ratio of its long-term debt to no more than 1.5 times its equity; and
- (iv) reduce its domestic accounts receivable to no more than two months average electricity sales.

39. **Accounts Receivable.** Concerning this last covenant, the Mission expressed concern about EdL's growing accounts receivable, notably the portion of non payment by various Government ministries and offices. The receivable covenant has not been met for several years, and the Government and EdL have not implemented the solution contained in the 2001-2003 Contract Plan, which states outstanding Government receivables can be offset against EdL's financial liabilities with the Government. The Government accounts receivable has grown from K22 billion at the end of 2001 to K44 billion at the end of 2002 (almost a 100 percent increase, but partially a result of 2002 tariff increases). While the Mission is cognizant of the Government's fiscal difficulties, EdL can not function as a true commercial enterprise under the conditions of repeated non-payment without the permission to terminate electricity service. As previously communicated, the Mission reminded the Government it can not further process this loan without an agreed settlement and time-bound implementation plan of the outstanding Government

## 2.5 Returns commensurate with risk.

If competition is to flourish and attract desirable participants to the sector, competitive mechanisms should allow a reasonable return on equity as assessed in relation to the risks borne by the participants. Thus, if risks are passed to a developer or a contractor, a higher price should be expected.

## 2.6 Stable policy regime.

Participants, whether domestic or foreign, will want a stable and predictable policy regime on which to formulate their investment decisions. Policy stability should include key areas such as tax, pricing, investment, contract enforcement and currency matters.

## 2.7 Government and MLA support.

Soft loans, guarantees and credit enhancements are often critical to successful financing of large-scale power sector infrastructure in Lao PDR. This will be particularly true in the coming years as the economy makes the transition from state dominance to a more market-oriented economic system. Projects must therefore be structured and implemented to attract GOL and multilateral and bilateral agency support. The importance of multilateral support can be seen in the Lao IPP market. Both Theun Hinboun and Nam Theun 2 have the support of multilaterals. The only project that was implemented without multilateral backing was Houay Ho, and this was a commercial failure.

# 3. FEATURES OF LAO POWER SECTOR

## 3.1 Description of the Current Lao Sector

- **Structure of Sector**

EdL is a vertically Integrated state-owned utility with a monopoly in generation, transmission and retail.

- **Tariff setting Methodology**

Tariffs are set by GOL. The tariff is not set on cost recovery principles yet but regular tariff adjustments are increasing the tariff to bring it up to economic levels.

- **Power system development**

Development of the Lao power sector is:

- centrally planned
- reliant on multilateral and bilateral support

receivable and a plan to ensure timely payment of Government electricity bills in the future. The Government agrees to advise ADB of the approved settlement plan and begin implementation by 15 April 2003.

## H. Other Project-Related Matters

### 1. Implementation of Power Sector Strategy

40. In the last several years, ADB has focused its policy dialogue efforts on the implementation of financial restructuring aspects and revisions to its tariff structure, which has allowed EdL to recover from the 1997 financial crisis and move towards full loan covenant compliance. Recently, ADB has also engaged MHI and EdL on institutional and sector restructuring issues. Under an ADB TA,<sup>9</sup> a *Power Sector Strategy Study (PSSS)* was completed in September 2002, which reviewed the overall sector development and policies. Key policy recommendations from the PSSS include (i) developing a more rigorous least cost hydropower development plan and selection process and accordingly updating EdL's Power Development Plan (PDP); (ii) segregating non-core operations, such as off-grid rural electrification and independent power producer (IPP) investment functions, allowing EdL to concentrate on the power grid operation and development; (iii) reevaluating the role of the Government in the power sector as an operator, investor and regulator; and (vi) establishing a procedure for competitive tendering of future generation projects.

41. Based on the findings of the PSSS and the outcome from the PPIAF-sponsored workshop on Options for Power Sector Reform (Vientiane, November 2002), the Government drafted the Strategy for Implementing Sector Strengthening and a corresponding time-bound implementation plan ("the Plan"). MHI provided the Plan to the Mission, and the Mission agreed to provide comments by 21 March 2003. The Government committed to provide the final draft Plan by 20 April 2003 and the approved Plan before 20 May 2003.

42. EdL's mandate is to ensure domestic power supply through development and operation of domestic generation, transmission and distribution. EdL's financial performance of its core operations has been distracted by it being the Government's shareholder for IPP projects. Currently, dividends from IPP investments are used by EdL to cross-subsidize core operations and in meeting loan covenants with its lenders. Furthermore, it has unintentionally reduced the direct financial benefits that the Government receives from IPP participation. The Government's Power Sector Policy Statement as well as relevant studies supports the establishment of a Government wholly-owned IPP shareholding company to assume the ownership of shares currently held by EdL. However, the detailed implementation framework for the establishment and operation of this company need further studies and consultation among stakeholders. The Government and EdL requested ADB to provide financing for consulting services in this loan, and the Mission agreed to this proposal. Therefore, MHI and the Mission agreed to include consulting services as referenced in para. 25. MHI agreed to submit to ADB a letter with a draft TOR for this study before 15 March 2003.

### 2. Power Development Plan (2002-2011)

43. EdL provided the Mission with a draft of its Power Development Plan (2002-2011) and requested comments by 21 March 2003. Based on its brief initial review, the Mission commends EdL for conducting a more thorough analysis of electricity demand, grid expansion and future

<sup>9</sup> TA 3374 -- LAO: Power Sector Strategy Study, for \$800,000, approved on 23 December 1999.

- normally implemented through competitive procurement (ICB/LCB)

### 3.2. Competition in Present Lao System

For a small system where the potential for competition is more limited, the Lao power sector has had a reasonable track record in the past for transparency and competition. This has been achieved mainly by EdL's competitive procurement practices using multilateral Local Competitive Bidding and International Competitive Bidding procedures. Over the last 30 years contracts for generation, transmission and distribution projects have been placed and administered in a competitive manner. In generation, this has seen an orderly succession of projects from Nam Ngum in the seventies through to Nam Leuk in the nineties.

The mid-nineties has seen an abrupt change in lending patterns by the multilateral agencies, with generation projects being characterized by the multilateral agencies as "commercial" and left to the private sector to implement. In a number of countries, though, and Lao PDR is one, governments and utilities lack the investment grade credit rating to attract investor and lender interest and consequently the private sector has been slow to fill the funding void left by the withdrawal of the multilaterals.

As system reserve margins fall, the pressure for new power generation projects builds and we are now seeing governments making some unpalatable deals to keep their generation expansion plans on track. In Lao PDR, the non-competitive Build-Transfer negotiation for Nam Mang 3 is perhaps evidence of this trend.

In terms of reaping the benefits of competition, the first priority is to apply competitive pressure in the award of the largest contracts and in this context the move away from competition in generation will not serve the long term national interest. To reverse this trend, the difficult question must be answered - by what means might generation projects be competitively financed in countries perceived by lenders as risky?

## 4. WAYS TO INTRODUCE COMPETITION

There is not a great deal of competition in the present Lao power sector and, in part, this is attributable to the lack of participants and this, in turn, is attributable in part to the small size of the sector.

If competition is to be stimulated, participation in the sector should be broadened. Additional participants may come from the following:

- Private sector participation (refer Section 5)

Increase the number of competitors by removing barriers to entry and allowing private firms to participate.

investment projects in generation, transmission and distribution. The Mission also learned that the World Bank has committed funding to MHI in early to mid 2003 for further analysis on a Power System Development Plan for Lao PDR. Hopefully, this study will provide MHI and EdL with additional information to update its PDP in 2003, taking into account optimal allocation of public resources in the long term, what projects should and can be developed by the private sector, financing available from external sources and what direct financing could be required from the Government in order to try to achieve the nationwide electrification targets. ADB agrees to submit comments to EdL on its draft PDP before 31 March 2003. ADB also agreed to submit comments on the draft TOR for the Power System Development Plan Study by 21 March 2003. The Government agrees to keep ADB informed of the progress of the forthcoming World Bank sponsored study and will provide ADB with courtesy copies of draft Study report.

### 3. Loss Reduction on Distribution System

44. EdL's distribution losses were relatively high during the past five years, at around 20%. Through the implementation of a loss reduction program, a component under the ongoing PTD Project, a number of factors were identified that contribute to EdL's technical and non-technical losses in the distribution system, and recommendations were given to reduce system losses. As a result, EdL established a Loss Reduction Unit (LRU) to record and analyze the distribution losses. Staff in all main field branches are being trained regularly in loss reduction. The proposed Project will continually assist EdL to comprehensively implement recommendations for loss reduction.

45. With the implementation of several new transmission and distribution projects in recent years, new equipment was installed that reduced the total distribution losses to around 18.7% by end of December 2002. However, it has also been noted that the quality and accuracy of the existing system metering and protective relays (particularly in the main 115/22 kV transformer stations and generating plants), are in generally very poor condition. Therefore, this situation must be corrected before it further affects technical operations.

46. The Mission reviewed progress made on EdL's loss reduction program, including improvement of its billing system, upgrading MV and LV distribution conductors, calibrating and replacing inaccurate meters in substations, and installing new capacitors. EdL assured the Mission that it would use its own funds to continually implement the loss reduction program as recommended, and reduce the total domestic distribution loss<sup>9</sup> to less than 17%, 16% and 15% by the end of 2003, 2004 and 2005, respectively, and maintain those levels thereafter. EdL agreed to submit a detailed implementation plan on loss reduction program including the 2003 budget plan to ADB by end of March 2003.

47. During the Project implementation, the consultant will further assist EdL to implement the assessment on metering and protective relays. EdL will annually submit to ADB the progress report on LRU operations and management and statistics of the total system losses.

### 4. Connection Policy

48. MHI confirmed the abolishment of the policy of 30% cost sharing from villages on LV distribution costs.<sup>10</sup> Under the new policy, EdL assumes the entire cost for low voltage distribution.

<sup>9</sup> Domestic distribution losses are defined as the difference between (a) gross energy (GWh) sent out from the 115-kV substation; and (b) electricity (GWh) billed to all consumers in Lao PDR and is expressed as a percentage of the former.

<sup>10</sup> MHI policy statement of 27 August 2002.

- ii. International trade (refer Section 6)

Allow cross-border entities to participate.

- iii. Power sector restructuring (refer Section 7)

Break up the existing entity (EdL) into a number of smaller entities and establish a framework for competition between them. This might apply to generation and retail, with transmission being a natural monopoly.

These possible models for introducing competition to the Lao power sector are examined in Sections 5, 6 and 7 and their relevance to the Lao power sector is examined.

## **5. PRIVATE SECTOR PARTICIPATION**

### **5.1 Why involve the Private Sector**

Attracting new and competing participants into the Lao power sector without wholesale restructuring might be achieved by promoting greater involvement of the private sector.

Involvement of the private sector may lead to:

- increased competition
- mobilization of capital
- off-load risk from GOL agencies
- technical and managerial expertise is mobilized
- improved incentives

Benefits that might accrue by awarding selected functions to the private sector using competitive processes include:

- lower prices
- improvement in efficiency and responsiveness of services
- transparency
- allow GOL agencies to focus on core services

### **5.2 Introduction of private participation**

Private participation is a flexible means of introducing more competition in to the power sector. It allows a cautious approach involving small steps. Advantages include:

- It is less risky than adopting wider reform involving unbundling and competitive market models or international competition;

This change of grid extension policy removes a serious hurdle for targeting rural electrification to poor villages in Lao PDR and supports the poverty classification of the proposed Project.

49. Initial costs associated with household connections pose an additional hurdle for the poor to access electricity services. To facilitate connections for poor households, EdL agrees to introduce the option for amortization of the initial costs of connection (including connection fee, cost for installation and material, administration charges and meter deposit). MITI informed the Mission that the Government approval for the amortization option was not required as this is regarded as a business practice of EdL.

50. To limit the financial burden on EdL, it was agreed that the amortization option should be limited to residential consumers with 3-ampere meter connections. To ensure consistency of business practices across EdL branches, the amortization policy will apply to all new residential consumers, and not be limited to projects supported by ADB. The amortization period can be up to 3 months duration and will be optional by the new consumers. Amortization of charges will be billed separately.

51. The EdL Board will approve the amortization schedule at least 3 months prior to connections being made under the project. The amortization program and changes to the billing system will be in place at least 2 months prior to connections. Consumer information on amortization will be provided under the consumer awareness campaign. EdL informed the Mission that consulting services support was not necessary to implement the amortization program.

## 5. Environmental Matters

52. An Initial Environmental Examination (IEE) was undertaken as part of the feasibility study. The Summary Initial Environmental Examination (SIEE) report is shown in Appendix 7 and will be attached to the ADB's Report and Recommendation of the President (RRP) to the Board. The IEE study concluded that overall environmental impacts were deemed to be minor because (i) careful consideration was given to route selection to avoid environmentally sensitive land and minimize disturbance to private or community land; and (ii) measures are readily available to mitigate potential impacts. The Science, Technology and Environmental Agency (STEA) issued the certificate approving the IEE report in August 2002.

## 6. Land Acquisition and Resettlement

53. As part of the Project's preparation under the feasibility study, a social analysis was carried out in the Project areas. Only two houses may need to be relocated 20 meters away from their present location and there will be only minor impacts due to loss of land, crops and trees. A Resettlement Framework was prepared to detail actions to be taken, legal framework and entitlements to be applied in the event that land acquisition and compensation might be required during Project implementation. A sector-like approach is being applied because of the scattered or networked sites with minor impacts, which can be identified only in connection with detailed engineering/technical design immediately before construction. The Mission acknowledged that the Resettlement Framework was approved by STEA in August 2002. The Government further confirmed that it has no objection to making the approved Resettlement Framework including the Summary Short Resettlement Plan (as shown in Appendix 8) available on ADB's website, in accordance with ADB's disclosure policy.

- Private participation models can be adapted more easily to small systems and to systems with limited resources.

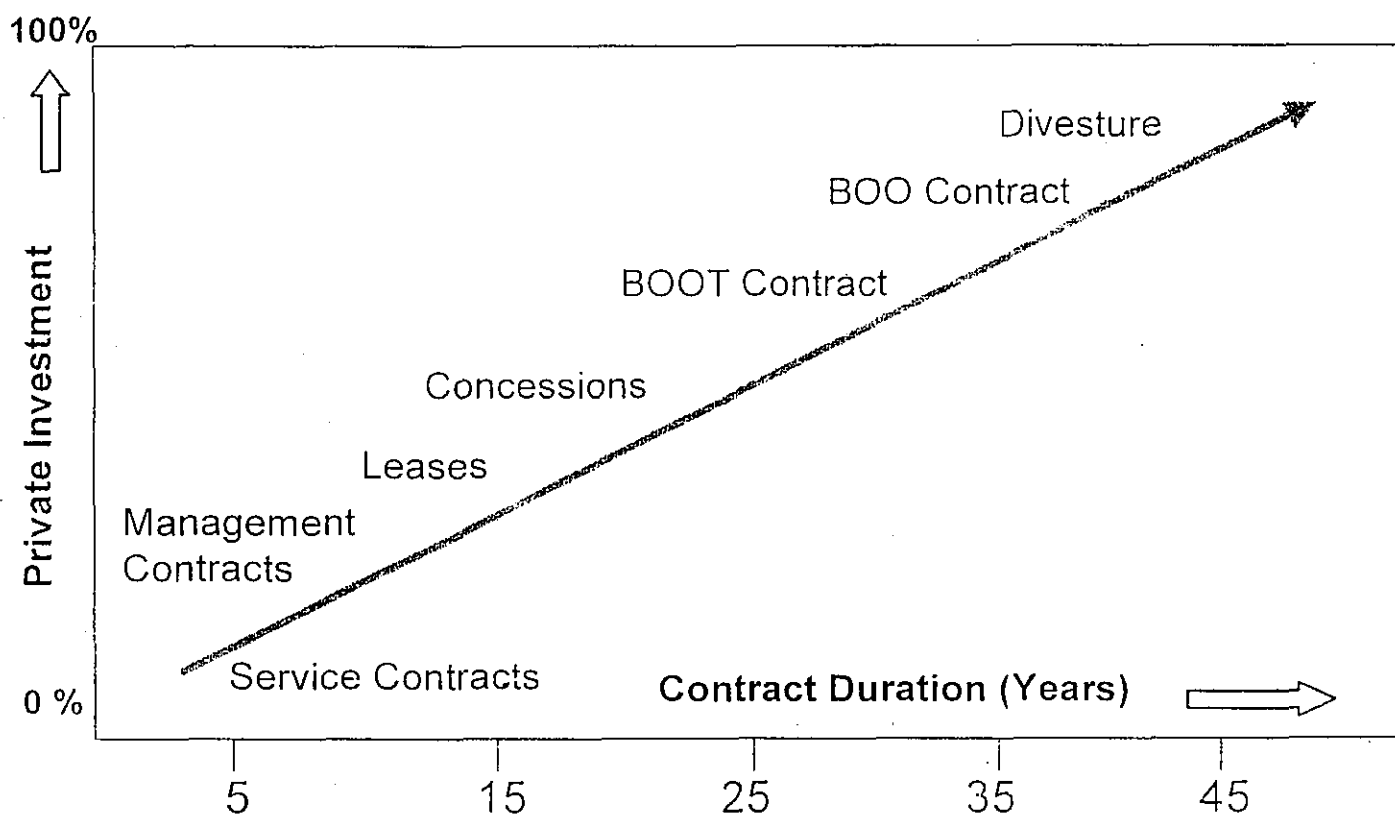
However, many private participation models will not succeed in creating competition in generation or retail.

Also, under many private participation models, the transfer of responsibility and risk and introduction of constructive incentives may involve complex contractual arrangements.

### 5.3 Private Participation Models

Private participation models take a number of forms, each designed for different roles and different markets. The various models involve different levels of commitment and different levels of investment. The greater the investment required of the private firm, the longer it will take for the firm to earn a reasonable return on that investment. The duration of a firm's concession or license to participate in the sector for the different private participation models is shown pictorially in Figure 1.

**FIGURE 1: MODELS FOR PRIVATE PARTICITPATION**



54. Following detailed design of each component, a full census and inventory of lost assets will be undertaken and EdL will prepare an updated Resettlement Plan<sup>11</sup> assisted by the consultants. EdL agreed that as soon as any affected person is identified during detail design, they would be given full information about the Project and the resettlement plan. The updated Resettlement Plan will be submitted to ADB for approval prior to beginning land acquisition activities. All compensation and resettlement activities will be satisfactorily completed and rehabilitation measures in place before the Government and ADB will approve award of contract for civil works.

55. EdL has a well-established land acquisition, compensation and resettlement procedure that is being implemented on other ADB Loans in the power sector. EdL has established an Environment Unit staffed with an experienced environmental specialist manager, three other environmental specialists and one social specialist, who is working full time on the Nam Mang Hydropower Project. The Mission noted that EdL is currently recruiting two additional social specialists from recent university graduates who will be further trained under the Project. The Mission proposed and EdL agreed to assign at least one staff at each provincial branch office by end of 2003 in responsible for social and environmental management, which would be an important step in capacity building.

### III. ASSURANCES

#### A. Specific Assurances

56. The Government, EdL, and the Mission agreed that, in addition to the standard provisions and requirements of the proposed ADB loan, the following specific assurances have been agreed and will be incorporated in the Loan documents.

##### 1. Financial

- (i) The Government will ensure or cause EdL to ensure the following:
  - (a) Continued implementation of EdL's Financial Recovery Plan and annual revisions of EdL's capital expenditure program;
  - (b) A debt service coverage ratio of at least 1.5 for FY2003 and thereafter;
  - (c) Internal cash generation of at least 30 percent of three-year average planned capital expenditures in FY2003 and thereafter;
  - (d) To maintain a debt-equity ratio of 1.5 or below;
  - (e) To reduce EdL's accounts receivable for domestic electricity sales equivalent to two (2) months average sales by FY2003 and maintain this level thereafter;
  - (f) To maintain levels of electricity tariffs for EdL to meet its financial loan covenants in FY05 and thereafter;

<sup>11</sup> A Short Resettlement Plan is required for insignificant involuntary resettlement. For significant involuntary resettlement, a Full Resettlement Plan is required. Resettlement will be "significant" where 200 or more people experience major impacts. Major impacts are defined as when the affected people are physically displaced from housing and/or more than 10 percent of their productive assets (income generating) are lost.

Of the various private participation options, the ones of likely relevance to the Lao power sector are:

- i. **Service Contracts**
- ii **concessions**
- iii **BOT / BOO**

The possible applications of each of these models in Lao PDR is considered in the following sub-sections.

## 5.4 Service Contracts

- **Description:**

Service contracts are awarded to private firms to undertake specific technical functions or tasks.

Service contracts have a short period, typically 6 months to 2 years, so that competitive forces are brought to bear regularly.

The model involves low risk. If the contractor's performance is poor or offers non-competitive prices, the contract need not be renewed.

- **Relevance to Lao Power Sector:**

Some EdL functions may be well suited to service contracts. For instance, EdL could contract out the following:

- meter reading,
- maintaining distribution system
- collecting accounts

- **For competition to be effective:**

- the market must have enough competent contractors to ensure healthy competition;
- service contracts must have as short a term as possible (2 to 3 years) and must be re-bid each time they are renewed.

- **Advantages of Service Contracts:**

- They promote competition (competitive bidding) resulting in cost-effective provision of technical functions
- They generate an incentive to perform leading to improved efficiency and better service
- Service contracts are generally simple to write and administer
- They are low risk - if the contract fails, EdL could either re-bid or revert to public provision.

- (g) To maintain the lifeline tariff block for residential consumers at no more than 50 kWh/month;
- (h) EdL will not be required to remit dividends based on corporate operating and non-operating income to the Government until EdL meets assurances set out in (b), (c), and (d) above in accordance with its Financial Recovery Plan.
- (ii) The Government shall arrange additional financing as required for EdL to meet assurances set out in (b), (c), and (d) of above (i) for FY 2003 and thereafter.
- (iii) The Government and EdL will ensure that sufficient counterpart funds are available in a timely manner to meet all local cost components of the Project.

## 2. Social, Environmental and Resettlement

The Government will ensure or cause EdL to ensure the following:

- (i) The mitigation measures identified in the IEE are implemented to the satisfaction of ADB. ADB's *Environmental Guidelines for Selected Industry and Power Development Projects* and the Government's environmental guidelines and regulations are fully complied with throughout the Project implementation period.
- (ii) Full census and inventory of lost assets for Project components that have a resettlement issue are undertaken following detailed design at the Project implementation stage and an updated Resettlement Plan is prepared and submitted to ADB for approval, prior to commencing land acquisition activities for those components.
- (iii) The updated Resettlement Plan approved by ADB is implemented to the satisfaction of ADB. Prior to the commencement of civil works for each component, all people affected by that component are satisfactorily compensated and resettled, and rehabilitation measures are in place, in accordance with the requirements of the updated Resettlement Plan, the Government's procedures and the ADB's Policy on Involuntary Resettlement.
- (iv) Contractors do not differentiate wages between men and women for work of equal type. Child labor is not allowed in the Project's construction activities and camps.
- (v) EdL will ensure that a comprehensive program for project performance monitoring and evaluation (PPME) acceptable to ADB will be carried out during the Project implementation and subsequent operation to assess the achievement of the Project's objectives. EdL will submit a detailed implementation plan of the PPME for ADB's review and concurrence within six months of loan effectiveness and annual PPME reports within one month after the end of each calendar year.
- (vi) EdL will assign at least one staff at each provincial branch office by end of 2003 in responsible for social and environmental management.

- They would allow EdL management to focus on core activities
- **Disadvantages:**
  - Responsibility for the services remains with EdL;
  - Responsibility for capital investment remains with EdL
  - Commercial risk remains with EdL
  - They are not a remedy for inefficient management or poor cost recovery.

## 5.5 Concessions

- **Description:**
  - Under a concession arrangement, a private firm would assume responsibility for utility operations in an area; e.g. it would have a monopoly franchise to supply a specified area.
  - The concessionaire would take full responsibility for management, O&M, marketing and capital investments for system improvement and expansion in the franchise area. This gives the concessionaire incentive to improve efficiency and service.
  - The concessionaire would be required to invest capital to introduce, upgrade or improve assets.
  - To allow time for the concessionaire to earn an adequate return on capital, concessions need to be awarded for a sufficiently long period, typically between 10 - 30 years depending on the nature and scale of investment.
  - Concessions are used quite widely in water supply and sanitation. They are also used for electricity supplies, particularly for smaller grids in areas beyond the reach of the main grids, e.g. islands or isolated mountainous regions..

- **Concessions in Lao Power Sector:**

Concessions might have application in an off-grid context;

- For instance, an ESCO could be awarded a concession to supply a geographic area or a cluster of villages. The concessionaire would build a mini-grid to supply the villages in the concession area in accordance with the terms of the concession.
- The concession might specify privileges and obligations; e.g. capital subsidies, tariff constraints, growth in connections, etc.

### 3. Operational Matters

The Government will ensure or cause EdL to ensure the following:

- (i) EdL's Loss Reduction Unit will operate effectively with adequate staff to record and analyze the distribution losses. EdL will use its own funds to continually carry out loss reduction program and ensure that the total domestic distribution loss will be less than 17%, 16% and 15% by the end of 2003, 2004 and 2005 respectively and maintain those levels thereafter. EdL will annually submit to ADB the progress report on I RU's operations and management and the statistics of total system losses.
- (ii) EdL will annually prepare and provide to ADB for its review and comments, a draft Power Development Plan (PDP) for all capital expenditures planned for the subsequent ten years, which include EdL's load forecast, its investment requirements for generation, transmission, and distribution, its indicative financing assumptions, and its financial projections over the same period.
- (iii) The continued implementation the MHI policy under which EdL will bear 100 percent of the LV distribution costs for villages.
- (iv) EdL's Board will approve the 12-month amortization option for residential consumers with 3-ampere meter connections, at least 3 months prior to connections being made under the Project. EdL will issue information to all branch offices and consumers at least 2 months prior to connections being made. For the purpose of consistency, the amortization option will apply to all EdL residential consumers with 3-ampere meter connections including consumers in non-ADB supported areas.
- (v) EdL will implement a consumer awareness campaign to inform consumers of safe usage of electricity, billing practices, and connection policy at least 2 months prior to connections being made.
- (vi) EdL will establish a socioeconomic cell and assign appropriate counterpart staff for the training of systematic data collection, benefit monitoring, and economic modeling.

### IV. FURTHER PROCESSING

57. The following schedule is proposed for processing the loan. However, the Mission wishes to emphasize that the issues described in the MOU should be resolved to facilitate the loan processing.

Staff Review Committee Meeting:	I April 2003
Loan Negotiations:	IV April 2003
Board Circulation:	IV May 2003
Board Consideration:	II June 2003

The concession contracts should be structured so that the concessionaire is given incentives to perform well. - the more efficient the concessionaire, the greater its profits.

- **Advantages:**

- Concessions may provide a way to supply remote communities without overextending the resources of GOL or EdL. The concessionaire would be responsible for management, investment, operation and market risk.
- If the concession contract is well drafted, the profit motive will encourage the concessionaire to provide an efficient and reliable service.
- Concessions may be attractive to financial institutions if risks are limited and returns are adequate.

- **Disadvantages:**

- Concessions provide the concessionaire with a long term monopoly. Therefore, there is competition only at entry and only then if competitive tendering used to award concessions.
- Formation of concession contracts and administration of concessions can be complex.
- Open to exploitation if transparent safeguards and proper regulation are not in place.

## 5.6 BOT / BOO

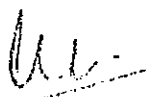
- **Description:**

- Lao PDR is no stranger to Build- Operate-Transfer (BOT). A BOT concession gives a private developer (usually a consortium) the mandate to:
  - finance and build a power station
  - operate the project for an agreed period (about 25 years)
  - transfer it to government at the end of the term.
- A Build-Own-Operate (BOO) concession is the same as BOT but imposes no transfer obligation. It is usually used for thermal projects with an economic life not much longer than the term.
- Another project finance modality is Build-Transfer (BT). BOT has advantages over the BT model in that the party building the project is the party that will be relying on the operation of the

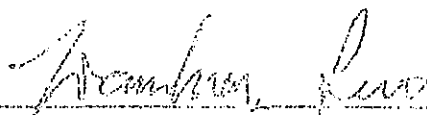
**V. ACKNOWLEDGEMENT**

58. The Mission would like to express its sincere appreciation to the management and staff of EdL and other Government officials for their kind assistance offered during its stay in Lao PDR.

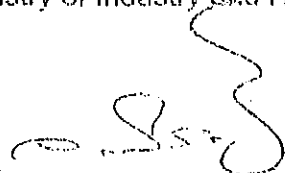
Signed in Vientiane, 6 March 2003



Hounphone Bulyaphol, Director General  
Department of Electricity  
Ministry of Industry and Handicraft



Tienhua Luo, Mission Leader  
Asian Development Bank



Viraphonh Viravong, General Manager  
Electricité du Laos

project for its profit and debt service payments. This means that the interests of the developer and government in the quality and reliability of the project are closely aligned. With BT, they are in conflict.

- **Relevance to Lao Power Sector:**

- BOT provides a way of mobilizing capital for export projects.
- Already Theun Hinboun, Houay Ho, Nam Theun 2. (Also the bridge over Nam Ngum was initially developed as a BOT project).
- The prospect of other export BOT projects depends on, amongst others, tariffs in neighboring countries.
- Could there be a future role for BOT projects selling to EdL? To test the market, a project could be identified and packaged for the private sector having the following characteristics:
  - small project (under 40 MW) with manageable capital requirements and short construction period;
  - good system fit – for instance, in the southern grid dry season generation is needed;
  - low risk profile (low hydrological, geological and environmental risk) and with good infrastructure in place;
  - Some form of security is provided to cover payment obligations of EdL;
  - manageable currency risks by financing in regional currencies (Baht, Dong, etc.) and using regional contractors and plant suppliers.

- **Advantages of BOT:**

- The private developer mobilizes finance and technical expertise to build the project;
- The private developer takes responsibility for completion risks;
- GOL earns taxes and royalties; EdL may earn dividends if it holds equity and the project is profitable.

- **Disadvantages of BOT:**

- Export BOT power projects stifle competition in the market into which the off-take is sold. Tariffs for Lao BOT power projects are shielded from the market by long term take-or-pay tariffs.

### LIST OF OFFICIALS MET BY THE MISSION

#### **Committee for Planning and Cooperation (CPC)**

H.E. Khempheng Pholsena Vice-President

#### **Ministry of Industry and Handicrafts (M/H)**

Mr. Somboune Manolom Director General

Mr. Houmphone Dulyaphol Director General, Department of Electricity

Mr. Chantho Milattanapheng Chief of Division, Department of Electricity

#### **Ministry of Finance (MOF)**

Ms. Thipphakone Chanthavongsa Deputy Director General, External Financial Relations Department

Ms. Douangmaly Sengchansoulya External Financial Relations Department

#### **Electricité du Laos (EdL)**

Mr. Viraphonh Viravong General Manager

Mr. Hatsady Sysoulath Deputy General Manager

Mr. Savath Phoumlavanh Deputy General Manager, Distribution

Mr. Vilaysone Souigna Project Manager

Mr. Daovong Phonekeo Manager, System Planning Office

Mr. Boungnong Boultavong Deputy Manager, System Planning Office

Mr. Khamphone Myxayphonh Engineer, System Planning Office

Mr. Thongphet Douangngeune Manager, Environment Office

Mr. Vilaphorn Visounnarath Deputy Manager, Environment Office

Mr. Boumma Manivong Manager, Corporate Planning Department

Mr. Khamboung Luangsay Manager, Computer Department

Mr. Agapito De Leon Resident Financial Management Advisor

#### **The World Bank**

Mr. Enrique Crousillat Country Director

#### **Fichtner / GOLENCO (Consultant)**

Mr. Georg Peter Koller Team Leader

Mr. Hugo Kretz Senior Engineer

However, such tariffs are reasonable because, without them, lenders would not support the projects.

- GOL must assume country risks or obtain guarantees to overcome financing obstacles (i.e. GOL must accept significant contingent liabilities to counter lender / investor perceptions of sovereign risk.
- BOT contracts are complex and expensive to form. They are long-term agreements and the commercial and contractual arrangements must be able to survive macroeconomic shocks (e.g. Indonesia), force majeure events and other surprises.
- There is a risk that the BOT contracts are unfair, particularly if the negotiating strengths of the parties are not evenly balanced.
- **Competition with BOT Projects:**
  - Competition can be injected into BOT project implementation at different levels:
    - **Market competition** - "Merchant" projects sell into a competitive market are exposed to market competition. Market forces determine tariff and financing is on the basis of expected market performance. (This model is not applicable in Lao PDR for the foreseeable future, but the emergence of a Thai power pool may present options for the sector.)
    - **Competitive bidding of IPP concession** - The right of an IPP to build a project is put out to competitive tender and awarded to the bidder offering the lowest tariff (e.g. 1994 IPP solicitation in Thailand). However, bidding of hydropower projects can be difficult;
    - **Competitive bidding of construction contracts** - Competitive bidding of the EPC contracts will provide a competitive and transparent determination of the capital cost of the project.

## PROJECT FRAMEWORK

Design Summary	Performance Indicators/Targets	Monitoring Mechanisms	Assumptions and Risks
<p><b>Goals</b></p> <ul style="list-style-type: none"> <li>• Extend electricity to rural areas with higher poverty incidence and potential socio-economic development that needs to be supported, thus improve the living standards and economic conditions for rural population;</li> <li>• Strengthen Electricite du Lao's (EdL) institutional capacity and improve its operation efficiency on a commercial basis.</li> </ul>	<ul style="list-style-type: none"> <li>• Improve quality of electricity supply in rural areas.</li> <li>• Improve quality of life and reduce the expenditure on energy consumption for rural population.</li> <li>• Improve EdL's financial performance, operation efficiency and project implementation capability.</li> </ul>	<ul style="list-style-type: none"> <li>• Socioeconomic surveys at Project inception and completion stages.</li> <li>• EdL annual reports.</li> <li>• Benefit monitoring and evaluation program.</li> <li>• Project Progress Report (PPR) and Project Completion Report (PCR)</li> </ul>	<ul style="list-style-type: none"> <li>• Macroeconomic environment and political stability are satisfactory.</li> <li>• Government's commitment and implementation of favorable policies on poverty alleviation.</li> <li>• Government will implement other committed infrastructure projects or cross-sector interventions in the northern region.</li> <li>• EdL's Financial Recovery Plan (FRP) including the increase of retail tariffs will be implemented as envisaged.</li> </ul>
<p><b>Purpose</b></p> <ul style="list-style-type: none"> <li>• To strengthen and expand the power grid and supply electricity to the selected northern rural areas.</li> <li>• EdL improves the technical and financial performance of its electricity business.</li> </ul>	<ul style="list-style-type: none"> <li>• Extend the power grid to Xieng Khouang, Sayaburi, Oudomxai, Luang Namtha provinces and Xaisomboun Special Region.</li> <li>• Increase electrification ratio by households in the northern region from the current level of 17% to 30% by the Project completion.</li> <li>• EdL comply with technical and financial targets as set in the loan covenants.</li> </ul>	<ul style="list-style-type: none"> <li>• ADB Review Mission</li> <li>• EdL's annual reports</li> <li>• Project completion report</li> <li>• EdL financial statements</li> <li>• Project accounts and records for electricity supply and operation</li> </ul>	<ul style="list-style-type: none"> <li>• Consumer's ability to pay for new connections and energy consumption.</li> <li>• Government reversal of decision to abolish cost-sharing of low voltage distribution costs</li> <li>• Amortization for consumers with 3-ampere meter connections</li> </ul>

**TABLE : PRIVATE PARTICIPATION IN POWER SECTOR – SUMMARY**

<b>Option</b>	<b>Asset Ownership</b>	<b>Competition</b>	<b>Capital Investment</b>	<b>Commercial Risk</b>	<b>Duration</b>
<b>Service Contract</b>	Public	Competitive	Public	Public	1-2 years
<b>Management Contract</b>	Public	Competitive	Public	Public	3-5 years
<b>Lease</b>	Public	Limited competition	Public	Shared	8-15 years
<b>Concession</b>	Public	Non-competitive	Private	Private	25-30 years
<b>BOT/BOO</b>	Private & Public	Non-competitive	Private	Private	20-30 years
<b>Divestiture</b>	Private or Private & Public	Competitive or non-competitive	Private	Private	Indefinite

## **6. INTERNATIONAL TRADE**

At some point in the future cross border competition may be mobilized to improve the competitiveness of the sector. Cross border competition may take various forms. For instance, it could be based on either:

- i. **Competition between Thai and Lao generators and retailers**
- ii. **Competition through a regional power market**

### **6.1 Competition between Thai and Lao Entities**

- At the moment there is trade between EdL and EGAT but not competition.
- Direct competition between EdL and EGAT could be promoted in specified market sectors and grids. Competition might involve:
  - Direct sales by EGAT to Lao consumers
  - Direct sales by EdL to Thai consumers
- Trade could be limited to specified grids and customer categories or it could be completely open. If Thailand and Lao PDR unbundle, generating companies from the two countries could compete in each other's market.

Design Summary	Performance Indicators/Targets	Monitoring Mechanisms	Assumptions and Risks
<b>Outputs</b> <ul style="list-style-type: none"> <li>• Extension of 115 kilovolt (kV) transmission lines and construction of 115 kV substations.</li> <li>• Erection of medium and low voltage (LV) distribution facilities and household connections.</li> <li>• Unexploded Ordnance (UXO) clearances, miscellaneous works and consulting services</li> </ul>	<ul style="list-style-type: none"> <li>• 303 kilometer (km) of 115 kV lines and 3 units of 115 kV substations</li> <li>• 796 km of 34.5 kV and 22 kV distribution lines and 237 sets distribution transformers</li> <li>• 603 km of 380 V distribution lines</li> <li>• Electrification of 33,800 households in 342 villages</li> </ul>	<ul style="list-style-type: none"> <li>• Quarterly Project progress reports</li> <li>• Project Review Missions</li> <li>• Project accounts and records for electricity supply and operation</li> </ul>	<ul style="list-style-type: none"> <li>• Counterpart funds will be available timely.</li> <li>• Unexploded ordnance adequately cleared.</li> </ul>
<b>Activities</b> <ul style="list-style-type: none"> <li>• Engage consultants</li> <li>• Detailed project design and survey</li> <li>• Procurement of equipment and materials</li> <li>• Physical construction</li> <li>• Testing and commissioning</li> <li>• Project performance monitoring and evaluation (PPME) including baseline survey and second impact survey</li> <li>• Capacity building for socioeconomic assessment</li> <li>• Consumer awareness program</li> </ul>	<ul style="list-style-type: none"> <li>• Start from: September 2003;</li> <li>• Completed by September 2007;</li> <li>• Responsibility: Project Management Unit, EdL</li> </ul>	<ul style="list-style-type: none"> <li>• Quarterly Project progress reports</li> <li>• Review Missions</li> <li>• Project completion report.</li> </ul>	<ul style="list-style-type: none"> <li>• Consultants and contractors are competent.</li> <li>• No delays in appointment of consultants and contractors.</li> <li>• Effective construction supervision and quality control.</li> </ul>
<b>Inputs</b> <ul style="list-style-type: none"> <li>• Civil works</li> <li>• Equipment and materials</li> <li>• Land acquisition, resettlement, and benefit monitoring program</li> <li>• Consulting services</li> </ul>	<ul style="list-style-type: none"> <li>• \$23.0 million</li> <li>• \$10.8 million</li> <li>• \$0.3 million</li> <li>• \$3.5 million</li> </ul>	<ul style="list-style-type: none"> <li>• Quarterly Project progress reports</li> <li>• Review Missions</li> <li>• Project accounts and records for electricity supply and operation.</li> <li>• Project completion report.</li> </ul>	<ul style="list-style-type: none"> <li>• Good performance of consultants and contractors.</li> <li>• Effective construction supervision and quality control.</li> <li>• Commitment and allocation of Government counterpart resources and other donor's contribution.</li> </ul>

- With the establishment of a Thai power pool, Lao generators could sell into the pool and Lao retailers could buy from it. Participation might full or partial:
  - Partial participation might involve EdL buying and selling part of its power through the pool while maintaining its mandate as national utility.
  - Full integration of Lao and Thai systems - this might involve power being bought and sold through the pool by Lao generation and retail companies.
- Lao interests would need to be protected, for instance:
  - Self-sufficiency objectives of both the Thai and Lao governments may impose constraints
  - The Thai power Pool would be controlled by Thailand and rules may be needed to protect Lao interests

## 6.2 Competition through a Regional Power Market

### Integration of the power systems of GMS countries:

- In the future, greater integration of the GMS power systems will give Lao planners other options.
- International trade is currently on a bilateral basis between buyers (e.g. EGAT, EdL, EdC) and sellers (e.g. IPPs, EdL, EGAT).
- Planners look to the day when power trading will be conducted through regional wholesale power markets
- As part of a larger market, Lao PDR could participate in a GMS competitive market

### Conditions for a competitive GMS power market:

- Greater technical, institutional and regulatory maturity in the power systems of GMS member countries:
- Construction of a HV transmission grid to interconnect GMS countries:
  - Originally, the 500 kV links were to be financed on the promise of wheeling revenues associated with intensive IPP project development;

## DETAILED COST ESTIMATE

(\$'000)

Item	Unit	Foreign Exchange	Local Currency	Total Cost
<b>A. 115 kV Transmission Lines</b>				
1. Louang Prabang to Oudomxai	173.3 km	6,586.0	1,046.5	8,232.5
2. Oudomxai to Namo	35.7 km	1,104.9	273.2	1,381.1
3. Namo to Louang Namtha	43.1 km	1,335.6	333.9	1,669.5
4. Hin Heup to Vang Vieng	46.4 km	1,437.5	369.4	1,768.9
5. Nam Ngum to Thalat	0.5 km	155.1	38.8	193.8
<b>Subtotal (A)</b>	<b>303.5 km</b>	<b>10,619.1</b>	<b>2,064.8</b>	<b>13,273.8</b>
<b>B. 115 kV Substations</b>				
1. Luang Prabang Extension S/S <sup>a</sup>	2x12.5 MVA	843.6	93.7	937.3
2. Udomxai S/S	1x12.5 MVA	1,254.0	139.3	1,393.3
3. Louang Namtha S/S	1x12.5 MVA	1,032.3	114.7	1,147.0
4. Extension of Vang Vieng S/S		144.9	16.1	161.1
5. Nam Ngum Switchyard		1,420.2	14.3	1,434.5
6. "T" Tap at Hin Heup		298.3	33.1	331.5
7. "Interface" at Phonsavan		120.5	13.4	133.9
8. "Interface" at Xaignaburi		120.5	13.4	133.9
<b>Subtotal (B)</b>		<b>5,234.3</b>	<b>438.1</b>	<b>5,672.5</b>
<b>C. Medium Voltage (34.5/22 kV) Distribution System</b>				
1. Xaignabouli Feeders	231.2 km	1,802.0	933.0	2,735.0
2. Xieng Khoung Feeders	167.4 km	1,302.6	672.3	1,975.0
3. Oudomxai Feeders	199.9 km	1,768.9	833.2	2,602.2
4. Louang Namtha Feeders	69.5 km	573.0	286.8	859.8
5. Xaisomboun Feeders	128.0 km	907.1	500.4	1,407.5
<b>Subtotal (C)</b>	<b>796 km</b>	<b>6,353.7</b>	<b>3,225.7</b>	<b>9,579.5</b>
<b>D. Low Voltage (LV) (400 V) Distribution System and Household Connections</b>				
1. Xaignabouli Feeders	138.0 km	467.4	397.8	865.2
2. Xieng Khoung Feeders	78.0 km	168.9	143.8	312.6
3. Oudomxai Feeders	248.0 km	507.0	431.6	938.6
4. Louang Namtha Feeders	100.0 km	249.6	212.5	462.1
5. Xaisomboun Feeders	44.0 km	57.9	49.3	107.2
<b>Subtotal (D)</b>	<b>608 km</b>	<b>1,330.8</b>	<b>1,204.0</b>	<b>2,593.9</b>

- With the slowdown in IPP development, an alternative financing strategy is needed.
- Acceptance of a regional power market by investors and capital markets.
- Timing of any integration? With the Asian Financial Crisis, the Californian power shortage, Enron collapse and September 11th, there is a loss of momentum in sector reform in some countries.

## **7. POWER SECTOR RESTRUCTURING**

### **7.1 Restructuring Sequence**

- In other countries, competition has been introduced to the power sector by restructuring power sector. This is usually done in stages:
  1. Vertically integrated state-owned utility
  2. Vertical unbundling of utility into generation, transmission and retail elements
  3. Break generation and retail into several entities that will compete against each other within a state-ownership framework
  4. Divest generation and retail entities to the private sector and develop a framework for them to compete.
- Regulation is introduced to oversee competition between the generation and/or retail entities. Regulation is also required to ensure open access to the transmission and distribution systems and to control pricing of these natural monopoly elements.

The restructuring process is described pictorially in the following figures.

**E. UXO<sup>b</sup> Clearance**

1. for 115 kV transmission lines	1,107.4	474.6	1,582.0
2. for 34.5/22 kV distribution lines	581.8	249.3	831.2
3. for 380V distribution lines	152.9	65.5	218.4

<b>Subtotal (E)</b>	<b>1,842.1</b>	<b>789.5</b>	<b>2,631.5</b>
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**F. Other Costs**

1. Land acquisition	0.0	250.0	250.0
2. Benefit monitoring program	0.0	10.0	10.0
3. Consulting services for project implementation	2,790.0	310.0	3,100.0
4. Other consulting services	350.0	40.0	400.0

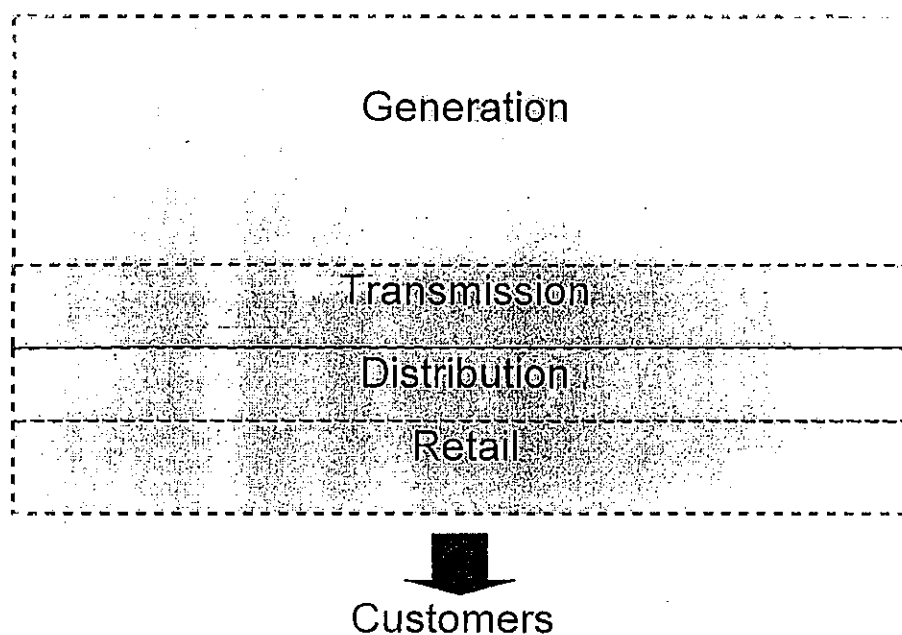
<b>Subtotal (F)</b>	<b>3,150.0</b>	<b>610.0</b>	<b>3,760.0</b>
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<b>Total Base Costs</b>	<b>28,650.0</b>	<b>8,953.0</b>	<b>37,603.0</b>
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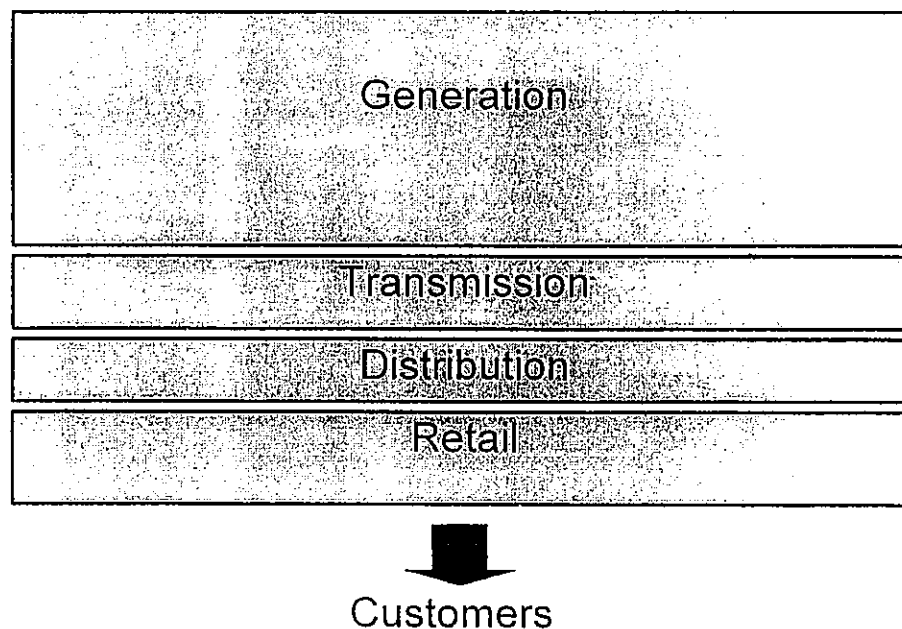
a S/S -- Substation

b UXO -- Unexploded ordnance

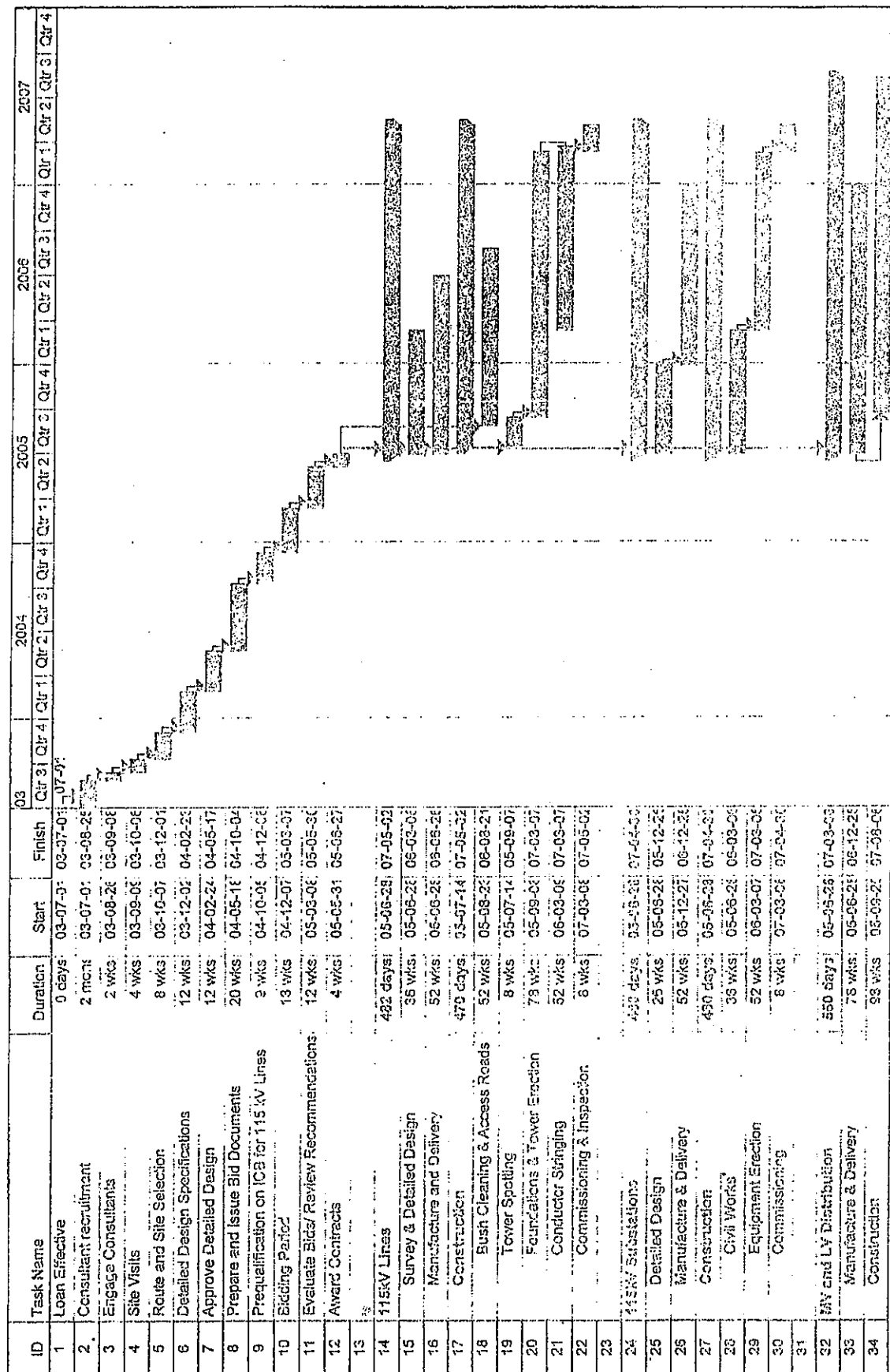
**Stage 1: Before Restructuring:** Vertically integrated monopoly



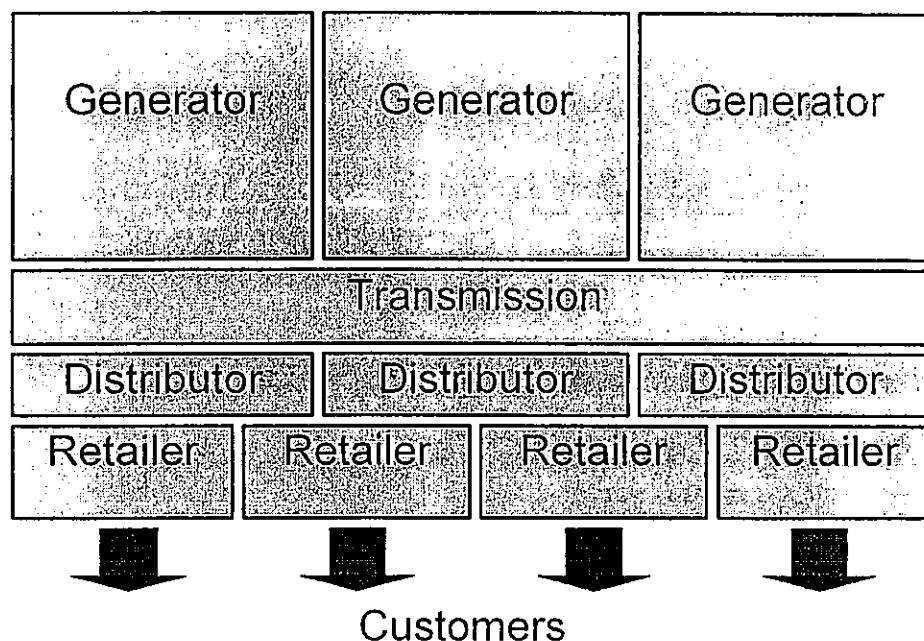
**Stage 2: Vertical Unbundling:** Separate business centers



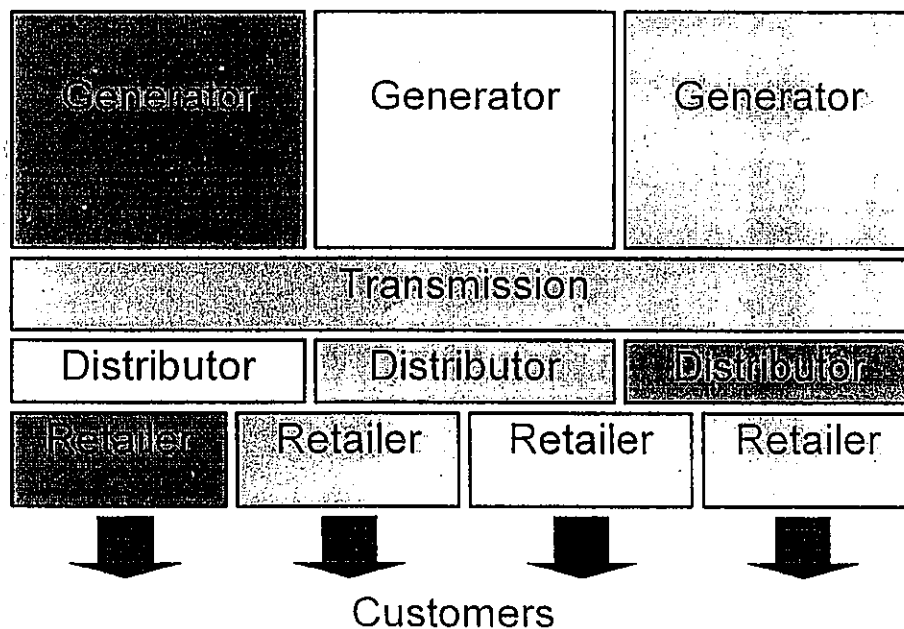
## IMPLEMENTATION SCHEDULE



**Stage 3: Horizontal unbundling:** Competition between state-owned but separate companies



**Stage 4: Divestiture - sell to private sector:** Competition between privately owned companies



## INDICATIVE PROCUREMENT PACKAGES

VI. PACKAGE	Type of Contract	Number of Contract	Mode of Procurement	Financing Source	Cost Estimate (\$million)		
					Foreign Cost	Local Cost	Total Cost
1. 115 kV Transmission Lines including Shield-wire Installation <sup>a</sup>					11.7	3.2	14.9
1.1 Lot A – Louang Prabang – Oudomxai	Turnkey	1	ICB	ADB/EdL	6.6	1.6	8.2
1.2 Lot B – Oudomxai – Namo – Louang Namtha	Turnkey	1	ICB	ADB/EdL	2.4	0.7	3.1
1.3 Lot C – Hin Heup – Vang Vieng, Nam Ngum – Thalat	Turnkey	1	ICB	ADB/EdL	1.6	0.4	2.0
1.4 UXO Clearance	Turnkey	1	ICB	ADB/EdL	1.1	0.4	1.5
2. 115 kV Substations and Substation Extensions <sup>a</sup>	Turnkey	1	NCB	NDF	5.2	0.4	5.6
3. Supply of MV and LV Distribution Material and Equipment					7.9	2.9	10.8
3.1 Procurement of MV and LV conductors	Goods Supply	1	ICB	ADB/EdL	3.0	0.0	3.0
3.2 Procurement of Line Materials	Goods Supply	1	ICB	ADB/EdL	2.4	0.1	2.5
3.3 Procurement of Distribution Transformers	Goods Supply	1	ICB	ADB/EdL	1.2	0.0	1.2
3.4 Procurement of Poles and Cross-arms	Goods Supply	1	ICB	ADB/EdL	0.9	2.8	3.1
3.5 Procurement of Meters	Goods Supply	1	IS	ADB/EdL	0.3	0.0	0.3
3.5 Procurement of Construction Equipment and Tools	Goods Supply	1	ICB	ADB/EdL	0.7	0.0	0.7
4. MV and LV Distribution					0.7	1.8	2.5
4.1 Installation	Construction	1	LCB	EdL	0	1.5	1.5
4.1 UXO Clearance	Turnkey	1	ICB	ADB/EdL	0.7	0.3	1.0
5. Consulting Services for Project Implementation	Consultancy	1	NCB	NDF	2.6	0.3	3.1
6. Other consulting services <sup>a</sup>	Consultancy	1	ICB	ADB/EdL	0.4	0.0	0.4

<sup>a</sup> Contract for this package include UXO clearance.

UXO – unexploded ordnance, ADB – Asian Development Bank, EdL – Electricity du Laos, ICB – International competitive bidding, IS – International shopping, LCB – Local competitive bidding, LV – low voltage, MV – medium voltage, NCB – Nordic Competitive Bidding, NDF – Nordic Development Fund.

## 7.2 Competition within a Restructured Sector

- **Type of competition between generators?**
  - Bid based (power pool) – this may be too sophisticated for a market of the size of Lao PDR.
  - Bilateral contracting
- **How effective would restructuring be in promoting competition:**

Restructuring may be effective in other regards but it may not be promote competition because:

  - The size of the sector is small
  - The main load centers are dominated by several generators
  - The transmission system is not interconnected
- **Would restructuring achieve its objectives?**
  - A national competitive power market in Lao PDR is not realistic for the present.
  - Need to look at the objectives of an unbundling exercise and evaluate which ones are achievable in the Lao sector.
  - Closer cooperation and integration with Thailand provides options

## 8. TRANSITION TO A COMPETITIVE SECTOR

In summary, in planning a transition for the Lao power sector into a more competitive sector, the following should be considered:

- Choose approach that optimizes the benefits and costs associated with different strategies for introducing competition. Need to also consider the risks of each option.
- Approach to reform depends to some extent on developments in Thailand and the wider GMS region. Until reforms have been implemented there, a number of options are not available to Lao planners.
- In the meantime, strategies available to the sector planners include mobilizing competitive forces by tendering services, tendering procurement, competitive award of off-grid concessions (franchises), and, where possible, IPP concessions.