

**Greater Mekong Subregion
Fourth Meeting of the Regional Power Trade Coordination Committee (RPTCC-4)
Yangon, Myanmar
21-22 September 2005**

Summary of Proceedings

Introduction

1. The Fourth Meeting of the Regional Power Trade Coordination Committee (RPTCC-4) was held in Yangon, Myanmar on 21-22 September 2005. The Meeting was co-organized by the Ministry of Electric Power (MOEP) of the Union of Myanmar and the Asian Development Bank (ADB).

2. The RPTCC-4 meeting discussed the following: (i) institutional arrangements and action plan for implementing Stage 1 of the Regional Power Trade Operating Agreement (RPTOA), including establishment of the Focal Group (FG); (ii) case studies on regional power trade, including cross-border transmission pricing; (iii) RPTCC country programs and work plan, including updates; (iv) the proposed ADB regional technical assistances; and (v) the proposed GMS power interconnection projects. Attached, as Appendix 1, is the Agenda and Program of the Meeting.

3. The participants included delegations from the Kingdom of Cambodia, the People's Republic of China (PRC), the Lao People's Democratic Republic (Lao PDR), the Union of Myanmar, the Kingdom of Thailand, and the Socialist Republic of Viet Nam and representatives from the Agence Francaise de Developement (AFD), Japan Bank for International Cooperation (JBIC), Soluziona (ADB Consultant), the World Bank and the ADB. The list of participants is attached as Appendix 2.

4. The meeting was chaired by Mr. Houmphone Bulyaphol, Director General, Department of Electricity, Ministry of Industry and Handicrafts (MIH), Lao PDR and co- vice chaired by Dr. Thein Tun, Director General, Department of Electric Power, Ministry of Electric Power (MOEP), Myanmar, and Mr. John R. Cooney, Director, Infrastructure Division, Mekong Department (MKID), ADB. U Aung Khaing, Deputy Chief Engineer, Myanmar Electric Power Enterprise (MEPE), Myanmar, moderated the opening session.

I. Opening Session

5. H. E. U Myo Myint, Deputy Minister, Ministry of Electric Power (MOEP), Myanmar, warmly welcomed the delegates to the 4th RPTCC meeting and expressed his appreciation for the honor of hosting the meeting. He cited the achievements in GMS efforts to develop regional power trade, and recalled the major discussions in previous meetings of the RPTCC, including the work plan. He cited the Second GMS Summit held in Kunming in July 2005, where the MOU on the Guidelines for Implementing Stage I of RPTOA was signed. He said this was a significant step forward to realize regional power trade among the GMS countries. He said the RPTCC-4 meeting would discuss the institutional arrangements and next steps for implementing stage 1 of power trade and update the work plan of the RPTCC. He believed the meeting would further enhance cooperation among member countries in the power sector and contribute to realization of the regional power market. He thanked the ADB for the kind support in convening the

meeting in Myanmar and concluded by wishing everyone good health and a pleasant stay in Myanmar.

6. Mr. Houmphone Bulyaphol, Chairperson of RPTCC and Director General, Department of Electricity, MIH, Lao PDR, warmly welcomed the officials of GMS countries and representatives of ADB, WB, and development partners to the meeting. He expressed gratitude to the Government of Myanmar for hosting the meeting, and to ADB and WB for continuous support to the RPTCC. He thanked Mr. Wang Jun of PRC for his earlier contributions as the first Chair of the RPTCC. He cited the progress of work in power trade, such as the signing of the MOU on the guidelines for Implementing Stage 1 of PTOA, and the preparation of GMS power transmission projects, namely the proposed PRC-LAO THA interconnection line. He noted that the RPTCC-4 meeting would discuss the important institutional arrangements needed in implementing Stage 1 of the PTOA. He stressed that the RPTCC faced challenging tasks ahead, and hoped that the discussions would yield fruitful outcomes. He emphasized the importance of continuing the climate of trust and cooperation needed to realize the goals for power trade development. He wished everyone a pleasant stay in the beautiful city of Yangon.

7. Mr. John R. Cooney, Director, MKID, ADB, warmly welcomed the participants to the RPTCC-4 meeting and recalled the start of the GMS Program in 1992 which tapped the strong potential contribution of cooperation in the development of the subregion. He recalled being involved in the first GMS infrastructure project, the Phnom Penh- Ho Chi Minh City Highway and noted that GMS cooperation has since progressed to discussions on issues that hampered cross-border movement of goods and people that utilizes the subregional infrastructure being built. He noted that the signing of the MOU to initiate Stage 1 of the RPTOA at the Second GMS Summit in Kunming last July, sets in motion discussions on the next steps for power trade, such as agreeing on rules that would guide the development of cross-border transmission lines and the establishment of regional institutions to manage the process. He commended the RPTCC focal persons for their work to establish power trade, and welcomed the contributions of development partners, namely the World Bank, AFD, and JBIC. He said the meeting would also discuss the progress of the GMS Power Transmission line project to link PRC, Lao PDR and Thailand and the proposed TA projects on the RPTOA and the energy sector strategy study. A new energy strategy was needed in view of rapid growth in energy demand, the emergence of new technologies/ processes, and the urgency of improving efficiency and finding alternative energy sources due to the high oil prices. He hoped the meeting would result to stronger commitment by GMS members to the GMS power trade agenda.

II. Institutional Arrangements and Next Steps for Implementing RPTOA Stage 1

Presentation on Recommended Actions for the Implementation of RPTOA Stage 1

8. **Action Plan.** Mr. Enrique Patino, Consultant, Soluziona, enumerated the activities to be performed by the FG, which include internal procedures, day-to-day PTOA management, promoting the use of capacity lines of power purchase agreements (PPAs), developing best practices of PPAs, facilitating transmission line construction through third countries, establishing the Planning Working Group (PWG), and developing the TORs of the PWG's tasks, among others. He briefly explained the work involved in each of the activities in the Action Plan and showed the timetable for each activity over the first two years of FG operation.

9. **TOR for the Focal Group (FG).** Mr. Patino explained that the FG must coordinate the implementation activities of the RPTCC in each GMS country, and would be comprised of

representatives to be named by the RPTCC. He described the terms of reference (TORs) for each of the activities that the FG would perform, and provided the scope and deliverables for each item. For example, for “Internal Procedures”, the scope included selection of Chairman, setting frequency of meetings, channels of communication, etc. and the main deliverable given is the “Book of Internal Procedures”. For the item “Promote the use of capacity in lines of PPAs” the scope included verifying that PPA contracts do not restrict use of spare capacity, and implementing compensation mechanisms to line owners. One deliverable given is the standard methodology/procedure to analyze PPAs that involve cross-border trading. Mr. Patino subsequently gave the TOR, scope and deliverable for the following activities: development of best practice for PPAs; establish the Planning Working Group (PWG); develop TORs for PWG’s tasks; short term action plan for FG; short/ medium term action plan for RPTCC; planning of installation of the Technical Secretariat (TS); initiate tasks required to establish regional database and website; promote study of a leading case (separate presentation on this later); initial studies; and training program.

10. **Capacity Building Plan.** Mr. Patino noted that the training program’s scope includes review of the program proposed, establishing its stages, and defining the first year program containing contents, trainer-professionals, budget, schedule and funding. Its deliverable, he added, is the training course for the first year. He stressed the necessity to develop programs for the Regional Regulatory Board (RRB), Regional Transmission Coordinator (RTC), and the Systems and Operations Planning Working Groups (SPWG & OPWG), and added that training should be organized as institutions are established. He enumerated and explained the proposed training courses for the RRB, RTC, SPWG and OPWG. For the RRB, among courses included are principles of regulatory economics, concepts on electricity markets and project management. Courses for the RTC included principles of microeconomics, concepts on electricity markets, regulation of transmission activity and optimal operation of power systems. He proposed the same RTC courses for the SPWG and OPWG, except the last, to be replaced by models for optimal expansion of power systems.

11. **Comments.** Mr. Zhang (PRC) commended Soluziona for the excellent work and stressed the importance of setting up the FG as soon as possible. He suggested the following tasks be given priority: (i) internal procedures; (ii) developing the action plan; (iii) establishing the TS; and (iv) develop best practice for PPAs. He also stressed the need for agreeing on standards for pricing methods and the importance of capacity building for the FG and RPTCC members. He noted that PRC had more than five years experience in developing the power market, which it could share with the GMS members through co-sponsored training workshops. He proposed coordination of national power development plans and formulating a regional power development master plan.

12. Mr. Varavoot (Thailand) inquired whether entering into PPAs would need to be cleared with the FG; Mr. Patino said in the future, the FG in the country would need to be engaged in discussing the PPAs. In the course of these consultations, all efforts need to be made to ensure the use of spare capacity, if any, and if none, explore the possibility of having spare capacity for cross-border power trade. Mr. Thein Tun (Myanmar) suggested that a chart be used to show the sequence to be followed in developing institutions. H.E. Mr. Randy (Cambodia) agreed with PRC’s proposed priorities and requested additional guidance from the consultant on the priorities. Mr. Patino replied that the GMS members would eventually guide the sequence of the activities. Mr. Thang (Viet Nam) said that the FG could handle some tasks that are technical in nature and cited some tasks that need to be done first. Mr. Varavoot noted the possibility of posting power databases on the web, and asked about how to deal with confidentiality issues.

Mr. Patino said that each country would decide on which data is confidential, depending on their situation. Mr. Jude (ADB) followed up on nominations to the FG from Lao PDR, Thailand and Viet Nam in order to hold the first meeting of the FG and to discuss the prioritization of the work plan.

III. Study on Regional Power Trade Operating Agreement (RPTOA)

Case Studies: Practice and Experience on Regional Power Trade in Latin America

13. Mr. Karacsonyi introduced the outline of his presentation consisting of the goal for stage 1, international experiences, and conclusions. He provided the goals for stage 1, during which the PTOA would be concerned with bilateral power transactions, bilateral agreements on tariffs for cross-border transmission facilities, regional/ operational transmission planning, and putting in place regional institutions (FG, PWG, TS). He discussed the trading possibilities for stage 1, during which only country to country transactions may be possible, and proceeded with the international experiences for stage 1, showing the existing main electricity connections in South America. He listed the characteristics of regional cross-border trading in terms of transmission tariffs, congestion management, dispatch transactions, ancillary services and type of transactions.

14. Mr. Karacsonyi then described the characteristics of the Argentina-Brazil interconnection, which includes the PPA between producer and buyer, two-part tariff, buyer's rights/obligations, buyer options, relationship between PPA parties and Systems Operator (SO), coordination by SOs in the use of interconnection, and the drawbacks (transactional toll for third parties use and asymmetric benefits allocation). Given the description of the Argentina-Uruguay-Brazil-Paraguay bilateral trading arrangement, monthly power exports and imports between the trading partners were shown. Similarly the project characteristics for the Colombia-Ecuador interconnection and the general agreements and principles for cross-border trading were given, as well as the benefits and drawbacks from the Colombia-Ecuador trade. He concluded that there exist international experiences similar in general concept to that proposed for stage 1 in the GMS, and that the one designed for the GMS eliminates the drawbacks identified.

15. **Comments.** Mr. Cooney asked whether the spare capacity of the transmission lines were included in the original design of the lines. Mr. Karacsonyi explained that in some cases the spare capacity was included in the design. U Aung Khaing (Myanmar) requested further clarification on capacity charges that are provided for in the agreement to trade power; Mr. Karacsonyi cited cases on the application of such charges in the Argentina-Brazil trade.

16. Mr. Sanghi (WB) asked why experiences in other parts of the world were not presented; he also asked whether transmission lines with excess capacity could be identified for the GMS. Mr. Karacsonyi replied that the Latin American cases were relevant for illustrating the use of lines originally designed for PPAs, which could be a cost-efficient way of commencing trade within the GMS. He said transmission lines in the GMS have potential for spare capacity especially since hydropower exports depend on seasonal variations in water levels. Replying to a query from PRC on needed regional entities, Mr. Karacsonyi noted that regional entities would be needed only when starting stage 2. Mr. Bonnel (AFD) asked about entities involved in brokering the power trade agreements in Latin America. Mr. Karacsonyi said that in the case of the Argentina- Brazil trade, the agreement was between the two countries' power utilities, but

the regulator in these countries requested/ insisted that the agreement adopt open access principles.

IV. RPTCC Work Plan

Country Presentations: RPTCC Country Work Plan Activities

17. Last September 2, 2005, ADB circulated a template on the RPTCC Work Plan that guided the GMS representatives in preparing their respective country presentations. As shown below, each presentation consisted of: (i) general information; (ii) regulation; and (iii) cross-border trading (CBT). The first item consisted of demand forecasts, generation and transmission facilities, and a discussion of planned expansion of generation and transmission. Regulation dealt with the present organization of the power sector and main utilities, and the present regulatory framework and planned changes to regulation and organization. Cross-border trading (CBT) discussed the PPAs planned for CBT, criteria for operation, parties to PPAs, and transmission facilities planned and appropriate for CBT.

18. **Cambodia.** Mr. Yim Nolson, Deputy DG, EDC, presented Cambodia's power sector development plan and its system demand (broken down by category), generation capacity by source (hydro, gas, coal, etc.), planned expansion of generation for short term (2004-2010) and long term (2011-2022), and planned transmission linkages (2004-2020 and 2011-2020). On the regulatory framework, he presented a chart showing the relationships among regulatory agencies and power entities, and described the principles used for pricing generation and for end user tariffs. He presented the methods for expansion of generation and transmission facilities. He discussed the level of private participation in generation and transmission, and presented generation and transmission projects for cross-border trading and the general characteristics of PPAs under bilateral agreements.

19. **Comments.** Participants sought clarifications concerning studies/ projects planned for priority generation plants and transmission lines. Mr. Nolson explained Cambodia's recent actions concerning these studies/ projects, and added that oil-substitution would be carried out due to high cost of oil.

20. **PRC.** Dr. Bai Jianhua, SPERC, PRC, provided general information on CSG in terms of demand (load and peak, 2004- 2020), generation mix (2004-2015), planned generation expansion (2005-2015), and transmission status. On the regulatory aspects, he discussed the organization of the electricity sector in areas covered by CSG, the principles for pricing generation, principles for end-user tariffs, methods for expansion of generation and transmission, level of private participation in each activity (some private role in generation), and plans for deregulation. On cross-border trading, he briefed on the progress of PRC- Thailand cooperation and gave the findings of the 6th Joint WG meeting, and the progress of PRC-Viet Nam cooperation, PRC-Lao PDR cooperation (with CSG investing in some Lao hydropower plants) and progress of PRC- Myanmar cooperation. He gave proposals for promoting GMS power trade in the following areas: establishment of a body responsible for electricity supply industry development in the GMS; coordination/ unification of power system planning; exchange of information/ data; and conduct of workshop on GMS power industries. He discussed the result of the training for GMS rural electrification.

21. **Comments.** Mr. Thein Tun stressed the importance of forming the FG in relation to PRC's proposed body to coordinate power trade and agreed that workshops on power trade

would be useful. Mr. Zhang said the TS/ FG would be sufficient for coordinating initial work to promote power trade. Mr. Bai clarified the target participants for the training in response to Mr. Cooney's query.

22. **Lao PDR.** Mr. Somboune Manolom, General Manager, Lao Holding State Enterprise (LHSE), presented Lao PDR's demand forecast and provided information on generation and transmission expansion. He cited the list of committed projects and provided the projected generation mix from 2004-2015. He explained the planned expansion of generation (IPPs) and the timing of each project, with some for export to Thailand and Viet Nam. He discussed the Government's rural electrification plan to cover 90% of the country by 2020. On regulatory aspects, he discussed the relationship between the Ministry of Industry and Handicraft (MIH), EdL, and LHSE, and explained the plan for unbundling, IPP promotion, and consideration of single buyer and wholesale competition, among others. He noted the commitment under the new Electricity Law in terms of private participation in power exports. On cross border trading, he detailed the IPP projects for power sale to Thailand and Viet Nam. He presented maps showing project locations and discussed the characteristics of concluded PPAs, and the potential for use of transmission facilities by PPAs. He quickly went over the GMS RPTCC work plan, and said the Lao PDR's work plan objective is to go beyond bilateral trade.

23. **Comments.** Mr. Luo (ADB) asked about which government agency would be tasked to handle cross-border transmission projects. Mr. Somboune replied that this would depend on the future of IPP projects, and the future development of a national grid company. Mr. Viraphone added that each project has dedicated lines and it would be useful for government to ensure that future development would consider optimizing the use of lines with excess capacity.

24. **Myanmar.** Mr. Tun Naing, Deputy Director, DEP, MOEP, presented the organization chart for the Ministry of Electric Power (MOEP) and showed the installed capacity of its system as of May 2005. He gave the breakdown of power units sold and generated for 2004-05. He showed the projected demand and generation capacity up to 2015, broken down by type of power sources. He described the transmission system and the MOEP national grid system, detailing the power plants by type (hydro, gas turbine and steam turbine). He then explained the generation and transmission expansion plans from 2005-06 to 2015-16. He discussed the prospects of cross-border trading for hydropower projects in Thanlwin and Tanintharyi river basins and Tasang HPP and showed a map of the future plan for the national grid system.

25. **Comments.** Mr. Varavoot pointed to the rapid growth in demand beyond 2012 and Mr. Tun Naing replied that the sharp growth was caused by taking into account export demand. On Mr. Jude's query about the role of natural gas in power generation in the future, Mr. Thein Tun said that since Myanmar has abundant hydropower resources for power generation, thus gas would be set aside for certain priority industries and for export. Mr. Somboune asked about the source of funding for the export-oriented projects, and Mr. Tun Naing replied that this would come partly from private equity and partly from bank loans. Replying to Mr. Luo's query, he said commissioning of the first generating unit of the Tasang hydropower (7,100 MW) would be in 2013.

26. **Thailand.** Mr. Varavoot Sirivoot, Assistant General Manager, System Planning, EGAT Plc., presented the status of EGAT as of April 2005 and showed charts on installed capacity, energy generation, power demand/ energy requirement and capacity requirement in relation to the Power Development Plan (PDP). He discussed the current electricity supply industry (ESI) structure and the key characteristics of the Enhanced Single Buyer (ESB) model, and the

transformation to a publicly listed company by end of 2005. He then described the cross-border trade with neighboring countries and the various MOUs for power purchase from neighboring countries. He detailed the power purchases from Lao PDR, present and future from both EdL and private sector. He also discussed the Thailand- Cambodia and Thailand- Myanmar power cooperation, the latter involving hydropower development along the Thanlwin and Tanintharyi rivers. Thailand-PRC cooperation involves conduct of the FS for the PRC-LAO-THA transmission line discussed by the joint WG yesterday. He noted the Thailand- Malaysia cooperation in upgrading their interconnection and optimizing their PDPs. Lastly he presented the cross- border tariff concept and explained the avoided cost concept and procedure for its calculation.

27. **Viet Nam.** Mr. Pham Manh Thang, Deputy Director General, Energy and Petroleum Department, Ministry of Industry (MOI), provided updated information on generation and consumption (generation, sales, installed capacity, peak load, growth rates and customer volume). He gave the breakdown (by type of energy) for installed capacity and electricity generation. He gave the status of transmission and distribution system, and showed the rural electrification coverage to provinces, districts, communes and households. On the power system development plan, he explained the updated plan up to 2020 and gave the planned generation and planned capacity by type. He also mentioned that Viet Nam would have nuclear power plants in 2017. On power exchange and interconnection, he discussed the potential to import electricity from GMS countries (Lao PDR, Cambodia and Yunnan, PRC) and enumerated the potential projects for collaboration with these countries. He discussed the updated legal framework for Viet Nam's electricity sector, including the adoption of the Electricity Law in July 2005 and approval of the road map for power market development.

28. **Comments.** Mr. Varavoot inquired about site selection for the nuclear plant (4,000 MW total) and whether the views of neighboring countries had been sought. Mr. Thang discussed its prospective location in the Southeast region, including the planned transmission line (T/L) to connect to the double circuit 500 kV T/L. Neighboring countries will be consulted and Viet Nam will sign an agreement with IAEA. Mr. Jude asked about the rationale for tapping nuclear power, considering the existing potential for hydro and gas. Mr. Thang said that by 2017, Viet Nam would have exploited its hydro and gas resources and therefore the need for nuclear power generation to meet the demand growth. Mr. Cooney asked about the relatively flat projection on coal use, and Mr. Thang replied that coal resources are limited. The resource that is available is of high quality used for metallurgical process and is for export. Only poor quality is left for power generation and requires expensive emission central equipments to be installed.

V. Proposed ADB RETAs

Energy Sector Strategy Study

29. Mr. Anthony Jude, Principal Project Specialist, MKID, ADB, briefly gave a background to the proposed study. He invited the participants to provide comments on the proposed approach, activities, and arrangements for the study, and requested for a time frame within which comments would be submitted to ADB. Mr. Cooney confirmed that most country delegations received the draft TA paper earlier. Mr. Jude would shortly provide the list of key issues to heads of delegations, to guide in their review of the proposed TA.

GMS Regional Power Trade Coordination and Development

30. Mr. Tianhua Luo, Energy Sector Specialist, MKID, ADB, explained the background of the proposed RETA, which is aimed at promoting/ facilitating the development of regional power trading, to be pursued along two tracks: (i) developing the institutional framework; and (ii) developing the infrastructure. He enumerated the priority RPTCC work plan activities which included finalizing the RPTOA/signing of MOU, institutional set-up, establishment of information platform, and developing good practice guidelines for bilateral trade, among others. He discussed the three main purposes/ outputs of the TA, which were used to divide the TA into sub-projects, namely: (i) to facilitate institutions set-up and initial operation; (ii) capacity building and human resource development; and (iii) developing platform for information exchange. He listed key activities for each sub-project. For institutional set-up, activities included follow-up activities of the FG, and design organization structure, functions and operations for the PWG and RRB. For capacity building, activities included conduct of training on power trade policy and planning, operation agreement, etc. and formulating action plan on HRD. For information system development, activities included assessing the current situation on IT, developing programs and action plans on IT system development, and collecting basic information and establishing database. He showed the relationships between different entities in the implementation of the TA, such as ADB (executing agency), AFD, international consultant, and experts and subcontractors. He detailed the cost and financing items and explained the next steps for the TA from consultations with GMS members (September 2005) to obtain TA approval by December 2005 and to commence the study in the first quarter of 2006.

31. Mr. Jude requested the country delegations to provide their views on the proposed activities of the RPTOA TA. All six GMS member countries supported the proposed TA and appreciated the support from AFD and ADB. All parties agreed on the proposed scope of work and implementation arrangements. It was agreed that six GMS countries would provide their comments to ADB by end September 2005. Mr. Zhang suggested that ADB ensure that the consultants to be engaged would have knowledge of local conditions. Mr. Jude reiterated the need for the countries to complete their nominations to the FG by the end of the month.

GMS Power Interconnection: Current Status (Session with Lao PDR, Thailand and Viet Nam Delegations)

32. Mr. Jude provided the status of Phase 1 (Ha Tinh- Roi Et through NT2) and Phase 2 (Pleiku- Roi Et through Savannakhet) of the project, and pointed to the need to revise the scope of the PPTA for Phase I due to Roi Et- NT2 line being unavailable. He proposed to investigate the Phase 2 alternative, and the possibility of exporting power to Viet Nam. He cited the six (6) hydropower IPPs planned in Southern Lao PDR and asked for confirmation from Lao PDR on the status and export plans from these IPPs. He explained the two-stage preparation, with the rationale for the immediate action needed for the Lao PDR- Viet Nam interconnection (Bansok-Pleiku). He gave the outline of the TOR for the consultant for the Phase 2 PPTA, which involves power system analysis, pre-feasibility study of the selected transmission alternatives, and preparation of the TOR for the feasibility study.

33. Mr. Viraphonh noted that the need for the line depends on the presence of IPP developers in the area. Mr. Jude agreed on this point and in fact stressed the need for at least 1 firm IPP to be connected to the interconnection backbone to initiate the PPTA. Mr. Varavoot expressed reservations about the need for interconnection for power exchange between Southern Viet Nam and Thailand. Mr. Jude explained that the study would explore the possibility of transmitting power to Thailand, but there was no obligation on Thailand to interconnect. The T/L would be in trade between Lao PDR and Viet Nam and possible in the longer term to

interconnect with Thailand, assuming the demand is there and the availability of surplus power in Viet Nam. Mr. Thang suggested the study be carried out in phases. Mr. Somboune suggested that the current PPTA be used to update the demand forecast for Lao PDR, Thailand and Viet Nam. Mr. Jude asked for the countries' comments within two weeks, to be used as basis to revise the TOR of the consultant.

Dinner hosted by Government of Myanmar

DAY 2

VI. Proposed PRC- Lao PDR- Thailand GMS Transmission Line Project

Presentation on Progress and Next Steps

34. Mr. Houmphone provided a brief background of the activities undertaken by the WG that was formed to advance the progress of the project. Mr. Varavoot (EGAT) presented the results of the financial/ economic study of the project, which consisted of: technical/ FS (CSG); economic/ financial (EGAT); and ownership model/ benefit sharing (WB consultant). He presented maps showing the coverage of alternative 3, and combination 3 & 5. He explained the study concept of comparing LRMC (PRC) + transmission charge and the avoided cost (Thailand). He briefed on the results of the analysis undertaken by CSG on the long-term average incremental cost and transmission charge, and provided the main assumptions comprising cost components, economic/ financial parameters, technical parameters, export patterns and study scenarios. He presented the resulting cost estimates, which ranged from 3.9 to 4.5 US cents per kWh. He proceeded with the avoided cost study of Thailand, and explained the avoided cost concept and procedures and main assumptions (natural gas price, power purchases from PRC, power development plans) for cost calculation. He summarized EGAT's avoided cost estimates, which ranged from 4.96 to 5.17 US cents per kWh. Transmission charge was based on project cost estimates, financial assumptions, and resulting wheeling charge given varying IRRs; the resulting EGAT transmission charge ranged from .98 to 1.21 US cents per kWh. Finally, he showed a table comparing the results in calculation of (i) the LRMC + transmission charge, and (ii) EGAT's avoided cost, with (ii) generally lower than (i).

Discussions

35. Mr. Bai Jianhua provided additional LRMC results for various scenarios according to the study of CSG. Mr. Jude clarified that the WB study on benefit sharing will look at reconciling the Thai and CSG figures as agreed in the 6th WG meeting. He noted that eventually, the figures would have to be agreed between the contracting parties. Mr. Somboune requested clarification on the feasible scenarios shown, in view of the possible connection of the Lao grid to the T/L. He also observed that taxes assumed in the CSG study were much higher than taxes imposed by Lao PDR on foreign investments. He also said that the resulting wheeling charges were too low to attract financing for the Lao portion of the T/L. Mr. Mehta (WB) inquired about the level of generation cost in PRC, and if this was low, whether the benefits accrue to the entire system, in which case cross-subsidy takes place. Mr. Sanghi briefed on the plan for the benefit sharing study as it relates to the pricing issues that were raised. Mr. Cooney noted that the issues raised could be more appropriately dealt with by CSG and EGAT in their study.

VII. Cross- Border Transmission Pricing/ Leading Case Study for PTOA Stage 1

Leading Case Study for PTOA Stage 1

36. As background, Mr. Patino (Soluziona) noted that a set of trading rules was developed for stage 1 and stage 2 of PTOA, and that the recently signed MOU contains the basic frame to guide bilateral trading between two countries. He said that among objectives of developing the “leading case” were to test the standard form (MOU) developed into a real world case, to show actual benefits, to develop improvements if required, and use this as example for future agreements among countries. The scope included identification of existing interconnections where the leading case could be developed, and assessment of effective possibilities of opportunity trading, among others. He added that tailoring of the standard agreement would be done if trading was possible and potential benefits positive; tailoring would involve, but not limited to such issues as: (i) definition of methodology to agree to trading; (ii) identification of existing facilities involved in trading; (iii) communication channels; (iv) drafting of different required procedures; etc. In implementation, he clarified that there would be a “shadow period” once the tailored agreement is developed, when transactions would be simulated but no physical flows occur. After evaluation, he said parties could either decide to go ahead with physical trade or to quit.

37. **Comments.** Mr. Thein Tun inquired about the project to be covered by the study; Mr. Patino stressed the importance of selecting the right project to better test the benefits of possible opportunity trading. Mr. Tun Naing noted the importance of properly considering generation and transmission costs in the case study. Mr. Somboune suggested selection of an IPP project for the case study, although there was a concern on confidentiality of certain information. Mr. Patino said that in the study, detailed quantitative information may not be required, and qualitative information may suffice for the study. Mr. Zhang said that coming up with the methodology would be a more important outcome of the study.

VIII. Presentation by Development Partners

38. **World Bank.** Mr. Apurva Sanghi, Senior Economist, Infrastructure Unit, East Asia and Pacific Region, WB, commenced with the WB GMS power trade program, which is a part of its overall GMS assistance program that includes water resources development, trade and transport facilitation and labor migration. He gave the context behind the power trade strategy, considering the factors conducive to power trade, and the benefits and constraints to trade. He said the goal is to move from current bilateral trade to long-term regional power market. He enumerated the recent key developments that have taken place in GMS power cooperation. He outlined the concrete next steps over the next five years to realize the IGA vision, which includes: (i) integrated planning at regional level; (ii) synthesis of recent and ongoing analytical work; and based on (i) and (ii), (iii) preparation of 5-year integrated plan. He gave the scope and benefits of this plan, which could be coordinated with the ADB RETAs under preparation. In addition to the immediate benefits, he also emphasized that the plan would give the right signals to the private sector and governments, and would help in enhancing political support for the GMS power trade program. He discussed the institutional support being provided by the WB, which includes formulating good practice guidelines for bilateral agreements and conducting the study on ownership and benefit sharing of cross border lines. He gave a quick update of the infrastructure components in Cambodia, and Lao PDR, and explained the future Phase 2 support in Cambodia, Lao PDR, Viet Nam, Thailand and PRC.

39. Mr. Zhang noted the importance of WB support particularly on good practice guidelines for bilateral agreements. Mr. Zhi Liu (WB) noted the increasing momentum of WB's GMS work, which includes dealing with high profile water resource and environment issues. He noted the usefulness of the water utilization model to simulate impacts of power development. Mr. Somboune noted the constraints posed by lack of financing in realizing the high demand for T/L projects by Lao PDR and Cambodia. On NGO concerns, he said environmental conservation should be pursued alongside development efforts. Mr. Zhang reiterated the importance of considering social/ environmental impacts in making project decisions.

40. **AFD.** Mr. Alexis Bonnel, Head, Infrastructure Division, AFD, expressed AFD's intention to strengthen its involvement in GMS power cooperation, and summarized AFD's proposed assistance to RPTCC and its next steps. He quickly briefed on the AFD group, its presence in over 80 countries, resources committed in 2005 (1.6 billion Euro, of which 15-20% goes to the GMS), project financing (PPTA and loan) and specific support to regional coordination (advisory TA). He outlined the assistance provided to the RPTCC (1 million Euro in 2005), which was set up in cooperation with the ADB, and emphasized the need to prioritize the RPTCC work plan activities. He noted AFD's plan to contribute to the development of the regional database, which is seen as a strategic tool to promote power trade and attract investments. He noted also the need to tackle the issue of confidentiality in relation to database development. He outlined the proposed next steps in AFD's assistance through the RPTCC RETA. He explained the need for regulation in the context of administering tariffs, attracting investments, ensuring long-term predictability, and ensuring fairness and credibility, among others. He gave the features of GMS countries that justify stepped up cooperation in regulation, including building a credible regulatory system. He concluded by stressing that the goal is not the regulation procedure itself but realizing sustainable and efficient investments in the GMS power sector.

41. Mr. Bonnel, in response to Mr. Nolson's query, said that AFD would be willing to finance country studies related to regulation. Mr. Luo noted that the RPTCC RETA cluster could cover regulation issues and asked the country delegates to provide their comments on the TA paper as soon as possible. Mr. Somboune noted that it would be useful to be informed of AFD loan terms/ covenants and Mr. Bonnel said that he would provide this shortly.

42. **JBIC.** Mr. Hideyuki Satsuma, Representative, Bangkok Office of JBIC, presented on JBIC's current strategy for GMS power sector development assistance. He briefed JBIC's assistance for GMS power sector and explained the progress of the Greater Mekong Power Network Development project to develop the 115 kV line from Pakxan to Pakbo. He also provided the information concerning IPP projects in Thailand, for which JBIC considers to provide limited recourse finance (LRF).

43. Mr. Cooney inquired about JBIC's general condition for the capital composition of the project companies in the case, which JBIC provides LRF to IPP projects. Mr. Satsuma replied that Japanese companies' capital participation would be mandatory but that it would not be required that Japanese companies take the majority in the capital composition.

44. Mr. Tun Naing inquired about the completion dates of the Thailand IPP projects, and what would be the source of the gas. Mr. Satsuma replied that commissioning dates would be 2007-08. Mr. Vinit clarified that the gas would come from the Gulf of Thailand.

45. Mr. Jude informed that funding from SIDA would be available to undertake cumulative environment impact assessment and social safeguards related to Mekong power development.

IX. Closing Session

Synthesis of Reports/ Main Points

46. Mr. Houmphone requested the views of the country delegates on the World Bank proposal for the formulation of an integrated plan that would include updating of the interconnection master plan, study of 500 kV systems and consolidating findings of existing studies. The GMS country delegates all agreed to the proposal.

47. Mr. Cooney thanked the Government of Myanmar for the excellent arrangements for the meeting. He observed that the meeting focused on the key issues and the country presentations were well done. He summed up the key outcomes of the meeting. On the RPTCC work plan, he said there was clear agreement among the GMS countries on the need to finalize membership of the FG. He noted the substantive discussions on the proposed ADB technical assistances, the energy sector strategy study and RPTOA cluster TA, and reiterated ADB's request for comments by end of September 2005 to finalize the TA papers. He noted the discussions on the GMS Power Transmission Line project (PRC-Lao PDR-Thailand) and the follow-up work to reach a consensus on the project's economic viability and to consider eventual findings of the WB study on benefit sharing. On the GMS Power Interconnection project Phase I (Thailand-Lao PDR-Viet Nam) he noted the agreement to examine the possibility of Lao export to Viet Nam (via Southern Lao PDR) and possible future interconnection with Thailand. He suggested moving the Energy Sector Forum meeting back-to-back with the RPTCC-5 meeting (originally scheduled in December 2005), to April-May 2006, to be able to cover initial findings of the energy sector strategy study and the update of the regional master plan study. All the country delegations agreed to the proposal. The venue, it was agreed, would still be Cambodia.

Consideration and Adoption of Proceedings

48. Mr. Cooney announced the distribution of the draft summary of proceedings for review by the body. The RPTCC members reviewed the draft summary of proceedings and after incorporation of suggested changes, the body therefore approved the minutes of the RPTCC- 4 meeting.

Closing Remarks

49. Mr. Houmphone Bulyaphol extended his appreciation to the participants for contributing their valuable insights for the success of the meeting. He noted the fruitful discussions and exchange of views, particularly on important issues concerning institutional arrangements, the RPTCC work plan, and the proposed GMS power interconnection projects. He thanked the ADB Secretariat for the efficient work and commended the Myanmar Government, particularly the MEPE for the excellent logistics support. He wished the delegates a good return voyage and looked forward to the next meeting in Cambodia.

50. Mr. Thein Tun announced the arrangements for the site visit in the afternoon.

Lunch Hosted by ADB