

**GREATER MEKONG SUBREGION**  
**23<sup>rd</sup> MEETING OF THE REGIONAL POWER TRADE COORDINATION COMMITTEE**  
**(RPTCC-23)**  
**VIENTIANE, LAO PDR, 13-15 DECEMBER 2017**

**SUMMARY OF PROCEEDINGS**

**I. Introduction**

1. The Regional Power Trade Coordination Committee convened its 23<sup>rd</sup> meeting, with back-to-back meetings of the Working Group on Performance Standards and Grid Codes (WGPG) and Working Group on Regulatory Issues (WGRI), on 13-15 December 2017 in Vientiane, Lao PDR (RPTCC-23). The meetings (i) discussed the latest results of works under WGPG and WGRI, (ii) concluded the works done by WGs during the last year, and (iii) discussed future actions by WGs, and future ADB support of RPTCC and regional cross-border interconnection projects in the Greater Mekong Subregion (GMS). The agenda of the meetings is in **Attachment 1**.

2. The Ministry of Mines and Energy of Lao PDR in cooperation with the Asian Development Bank (ADB) organized RPTCC-23. Mr. Wattanapong Kurovat, Director, Power Policy Bureau, Energy Policy and Planning Office, Thailand, RPTCC Chair; Mr. Khamso Kuphokham, Deputy Director General, Department of Energy Policy and Planning, Ministry of Energy and Mines, Lao PDR; and Mr. Andrew Jeffries, Director for Energy Division, Southeast Asia Department of ADB warmly welcomed participants and expressed appreciation to Lao PDR for the excellent meeting arrangements. Members of RPTCC, WGPG, and WGRI from the GMS countries, and representatives of ADB, AFD, JICA, and the World Bank attended the meeting. **Attachment 2** provides the list of participants.

**II. Update of GMS Countries Power System Development, Cooperation, and Trade**

3. GMS countries provided update of their power system development, intra GMS cooperation, and trade, including macroeconomic indicators and policy and technological update. Country presentations are in **Attachment 3**. The presentation indicated continued growth of electricity demand across the region; increasing generation capacity, reduction in power losses, priority on developing renewable energy resources; and enhanced power cooperation with neighboring countries through memorandums of understanding (MOUs) signed among the countries with high prospect of bilateral electricity trade.

4. **Discussion.** Key points discussed following the country presentations are summarized below:

Cambodia

- On long-term policy on renewable energy (RE), particularly, solar energy, Cambodia reiterated that Electricite Du Cambodge (EDC) EDC has a strong commitment on RE and take it to around 20% of energy integrated to the system.
- EDC is set to issue policy on solar migration to be initially integrated to the grid. Further, RE prices are going down fast in Cambodia and ADB is supporting a 100 MW solar park project.

## PRC

- On the generation capacity of nuclear energy, PRC shared that two nuclear generation capacity of around 600 MW to 1,000 MW are in place.

## Lao PDR

- Lao PDR provided updates on the operation of Xekaman projects: Xekaman will be connected to Xekaman 3.
- Projects under construction are Xekaman-Sanzai and Xekaman 4 (to start construction in 2018 and 2019, respectively). COD of Xekaman 4 is tentatively planned in 2022.

## Myanmar

- Myanmar shared it already signed the MOU between Myanmar and Thailand and will proceed to establish a working group between the two countries.

## Thailand

- Thailand plans to buy renewable energy: hydro and thermal power from neighboring countries but to be validated by MOU.
- Thailand reiterated its policy on promoting of renewable energy (hydro, wind and solar). Thailand shared the top-up rate of the feed-in tariff (FIT) rate or FIT premium to be applied for very small power producers (VSPP) in the southern most provinces.
- To counter/reduce power losses, Thailand shared that the PDP assess the weaknesses of the transmission and distribution facilities and develop projects/infrastructure and technologies to address the gaps.
- The process of drafting PPA is led by EGAT – draft PPA (IPP in Lao PDR and PPP for power exchange between Lao PDR and Thailand). Further, internal approval is required before signing PPA).

## Viet Nam

- Nuclear power development in Viet Nam is postponed.
- Viet Nam shared power exchange with various countries.
  - It signed in October 2016 an MOU with Lao PDR; Lao PDR will sell electricity to Viet Nam beginning 2020 (1000 MW) which will increase in subsequent years.
  - There are on-going discussions with Cambodia and China but there are no signed MOUs yet. A contract with China is signed every five years and every year for Lao PDR.
- On tariff rate, Viet Nam's rates are stable.

### **III. Working Group on Performance Standards and Grid Code (WGPG): Transmission Regulations and Draft Grid Code**

5. The WGPG has made a remarkable progress and achieved three out of four assigned tasks. Key results achieved in the meeting are (i) reviewed operational practices of each country that are relevant to regional operation; (ii) completed Task 2 which is Transmission Regulations for regional power trade by finalizing following 4 policies: (i) policy on Scheduling & Accounting, (ii) policy on Coordinated Operational Planning, (iii) policy on Communication Infrastructure, (iv) Policy on Data Exchanges; (iii) commenced work on standard metering arrangements which is

Task 3; (iv) reviewed Governance Code and Connection Code of GMS Grid code which is part of Task 4.

6. For next steps, WGPG will prepare a revised version of the code to include all comments received. The next codes to be produced are (i) code on capacity allocation and congestion management, (ii) code on forward capacity allocation and (iii) code on electricity balancing.

### **Discussion**

- Given the importance of RPCC's role in adopting common GMS performance standards and Grid Code, it was suggested that RPTCC should decide on the hosting of the center. ADB clarified that the matter has been elevated to the Ministers. In the meantime, the interim arrangements and steps to be taken by RPTCC will be discussed.
- The Code allows three possibilities in dealing with non-compliance of standards: (i) requires to fix situation immediately, (ii) allows sufficient time to be compliant with code (about 3 years), and (iii) permanent exemption in fixing non-compliance.
- Adopting the GMS Grid Code will facilitate a national system; but countries should be in the same level and this will be possible if there is a strong guideline.
- ADB stated that the performance standards' gaps shall be assessed, and consultants' tasks include gaps assessment and recommendations to fill the gaps.
- In view of the different levels of systems in countries, Thailand suggested to accelerate upgrading of systems in countries requiring upgrade and requested to explore funds to upgrade systems to avoid bigger problems in the long-term.

## **IV. WGPG: Regional Master Plan, Preliminary Results, Data Gaps, and Work Plan**

### **7. Discussion**

- ADB appointed consultants to prepare a GMS regional master plan. The consultants presented the strategy that a high-level model GMS Transmission Network will be prepared for system studies which will provide a whole picture that will show the potential of cross-border power trade in all countries.
- Consultants has completed a high-level model for Thailand network.
- One of the issues is reluctance of providing data by some countries and requirements were discussed

## **V. WGPG: Roundtable discussion to confirm priority projects for pre-feasibility studies**

8. ADB confirmed addition of \$1.5 million making the ongoing technical assistance total \$3 million. ADB is in the process of engaging a consultancy firm to conduct pre-feasibility studies of priority regional power projects up to 2025 and presented following seven projects proposed by the GMS countries so far and requested the countries to confirm the interconnection projects that need future assistance to perform the pre-feasibility studies.

No.	Country		Technical Information			Status
	Feeding	Receiving	Voltage(kV)	Length	Peak capacity	
1	Lao PDR (Luang Namtha)	Myanmar (Shan State and extend)	230 kV or 500 kV	TBC	TBC	MOU between the 2 countries ongoing
2	Lao -Ban Ton Pheng	Thailand - Mea Chan	115 kV	60 km	300 MW	
3	Lao PDR (Ban Lak25)	Thailand (Ubon Ratchathan)		150 km	1,400 MW	Lao request support for building Ban Lak25 SS, Thailand does not need support
4	Lao (several power plants), Hatxan (Ban-Sok)	Viet Nam, Pleiku	500 kV			ADB did the feasibility studies few years back and now WB in discussion with Lao. ADB can support
5	Lao (BanHatsan)	Cambodia (Stung Treng)	500 kV	170 -200 km		Both parties confirmed the support is needed
6	Lao PDR (Pak Beng or Pak Nguyen)	Thailand (Tha Wang Pha)	500 kV	120 km	800 MW	Mekong River run off river power plants, need rapid environmental assessment
7	Lao PDR (Nam Mo 1 and Nam Mo 2)	Viet Nam, Ban Ve	220 kV	70 km		Project developer will build the line

9. Project 1: It was agreed to include this project. Lao PDR and Myanmar both confirmed on the ongoing MOU on energy cooperation to be signed in January 2018. Project 2: it was proposed to exclude this project because it is a small project at 115 kV level. Thailand suggested to consider projects of 230 kV or 500 kV to have a greater impact. Project 3: This needs further discussions. Lao PDR indicated the need of funds for construction of Ban Lak 25 substation. Project 4: This needs further discussions. Lao PDR requested World Bank and ADB to discuss more on this. Project 5: This is a good project to include in the study. Cambodia indicated that this project is in their Master Plan; EDC and EDL have been discussing pricing. If both parties agree, the project pre-feasibility shall be studied. The project will connect Ban Hat substation to Stung Treng substation; at 230 kV with provision to upgrade to 500 kV after 25 years. Project 6: This project needs further discussions. Project 7: This project needs further discussions. ADB plans a meeting with Viet Nam on the proposed projects by March 2018.

10. ADB requested countries to further review each master plan and propose regional projects for ADB study. ADB expects to engage the consultants by April 2018.

## **VI. WGPG: Pathway**

11. ADB discussed the need for ownership of ongoing work and proposed to expand the scope for WGPG and change its name to Working Group for Planning and Operation (WGPO). The group will continue to work on regional Grid Code, Gaps assessments, Regional Master Plan and will address the operational procedures. All countries recognized that WGPG has completed 3 tasks and the group needs to be expanded focusing on the operational phase. The new scope will be agreed in June 2018 with additional designated member (Grid Code specialist) to the group from each country. The expanded scope will be prepared by ADB consultants by March 2018.

## **VII. Summary of Results of WGRI Meeting and Future Activities**

12. During 2016 – 2017 WGRI has achieved significant development in: (i) analyzing institutional structure of GMS countries, identifying possible institutional barriers and proposing reform agenda country by country; (ii) promoting open access and proposing specific rules and principles for open access; developing overall methodology for wheeling charge calculations; and (iii) proposing short-term trading rules and balancing mechanism.

13. Considering the future WGRI deliberated that it is necessary to apply the above results in practical interconnection projects. Discussion about future WGRI works started at the WGRI meeting in October 2017, further discussed at the WGRI meeting here in Vientiane. Based on these discussions, the WGRI has grouped the issues to be dealt with in the future into two perspectives: (i) issues that can be tackled in short/immediate future; and (ii) issues to be addressed in longer-future.

14. The WGRI concluded that of all the issues discussed, institutional structure, legal framework, and implications of tax policies on regional power trade, are of the long-term future, whereas practical application of rules and principles for open access, application of wheeling charges in the new transmission interconnections as well as short-term trading rules are of short-term future.

15. On the other hand, the results of WGRI works are useful for the cross-border trade, especially grid – to – grid power trade. The list of existing interconnection projects and the list of committed projects show that there are some real grid – grid connections as well as semi grid – grid connections.

16. WGRI members have identified the following tasks to be undertaken in 2018 – 2019:

- a. Complete work on the GMS Knowledge Document, documenting the last two years' work – target completion March 2018.
- b. Develop practical examples of wheeling charge calculations for the GMS countries. Myanmar is interested in estimating transmission charge for its transmission network. The meeting agreed with Myanmar delegation to work with WGRI members and consultant to estimate transmission charges. In addition, Thailand is interested in applying the MW-km flow based method for internal trades and is considering applying this methodology.
- c. China agreed to review inter-provincial trading in China and identify lessons for the GMS avoiding clashes between national and regional charging principles and trading rules.

- d. Lao PDR proposed two areas for cooperation in WGRI: (i) exploring models for BOT transmission development in Laos and the associated wheeling charges, especially the integration of these with national transmission tariffs; and (ii) identifying the potential learning for the wider GMS community for the future development of transmission infrastructure.
- e. Identify 2 or 3 existing international interconnectors which have surplus capacity and propose the practical steps needed for short-term trading to take place and imbalances to be settled.
- f. Carry out a detailed study of national electricity subsidies and taxation regimes that apply to power imports and exports.
- g. Prepare a survey of national transmission charging methods, to assess possible issues in applying the regional Methodology for Wheeling Charges.
- h. Identify a first possible Grid to Grid interconnection to use as a case study for two-way trading rules and principles.

#### **VIII. TA9003-REG: Integrating Strategic Environmental Assessment into Power Development Planning in Viet Nam**

17. ADB Energy Economist Hyunjung Lee provided a brief update on the TA 9003. She presented key findings from two workshops which were organized on integrated resource planning (IRP) and strategic environmental assessment (SEA): one regional workshop in Bangkok in July 2017 and Lao country workshop in Vientiane in December 2017. The regional workshop presented a detailed overview of the characteristics and origins of both IRP and SEA; reviewed current practices in PDP processes in the six GMS countries; and discussed the issue of economic valuation of externalities and their inclusion in generation cost calculations. It was also found that Cambodia is in the need for developing the SEA implementation system and strengthening energy efficiency (EE) and renewable energy (RE) in the power development plan (PDP); China's experience in RE development and EE promotion can provide lessons for other GMS countries; for Lao PDR, a key first step to strengthen the PDP system would be integrating EE measures and scenarios into demand forecasting; Myanmar identified the need to identify the methodological steps to integrate SEA into the PDP system and also to enhance EE and RE in the PDP; Thailand already includes many aspects of environmental impact assessment in the PDP but needs to integrate these into a formal SEA process that reflect national guidelines; and Vietnam seeks to build on existing progress to move the PDP process towards a more comprehensive IRP approach. From Lao country workshop, issues associated with Integrating issues of sustainable hydropower, non-hydro Renewable Energy, Energy Efficiency /Demand Side Management, cross-border electricity trade and internalizing of externalities into IRP with SEA were discussed. The steps to develop IRP and SEA in Lao PDR among concerned agencies were discussed in terms of designated responsibilities, skills and tools. In addition, she updated the status of the knowledge product (KP). The draft KP on Vietnam SEA experiences is prepared for country review and the development of two other KPs on (i) IRP and SEA and (ii) country guideline and briefing notes are in process. In addition, ADB TA 9003 consultant presented draft knowledge product on Vietnam SEA experiences.

## **IX. RETA 9003 – Progress, Next Steps**

### **18. Discussion**

- As Vietnam's SEA in PDP is almost completed, Viet Nam requested to share the results for their review. ADB pointed out that the report would be presented and shared with the government of Viet Nam as well as other countries.
- Viet Nam requested to be involved in the review of the outputs of the TA, particularly the experience of Thailand and PRC.
- ADB will conduct twinning programs with potential hosting countries. Consultation process will commence in 2018. ADB will share the program details with countries. The program is open to all interested participants.

### **X. Transmission Business Case Studies for Myanmar**

19. The Consultant undertaking the World Bank Technical Assistance project entitled: "GMS Power Market Development" presented their findings for 3 cross-border projects involving Myanmar as follows: (1) Myanmar and PPRC, (2) Myanmar and Northern Laos, and (3) Myanmar and Thailand. The technical/economic modelling results were based on the results of a commercial least cost planning software tool that jointly optimizes transmission and generation based on a detailed representation of the power systems of the Greater Mekong sub region (GMS) (i.e. a generation planning). A case is run without the cross-border project, and a case is run with the cross-border project, and the differences in generation and transmission costs evaluated to determine the benefits.

20. The consultant discussed the advantages and disadvantages of the projects, with the main conclusions being: (1) reinforcement to Myanmar's national grid would be required to maximize the benefits of the three cross-border projects discussed, (2) China's HVDC project feeding directly to Yangon as opposed to Mandalay, delivers greater short-term benefits for Myanmar and defers (but does not avoid) the urgency of North to South transmission augmentations, (3) around 500 to 1000 MW of power imports from Northern Laos would deliver benefits to Myanmar beyond this, benefits are diminished, and (4) a connection between Myanmar and Thailand can deliver short-term supply to Myanmar, while in the longer-term opens the option of Myanmar exporting to Thailand.

21. The Consultant's next steps are to develop an overall sequencing of the 10 business cases that have been studied, with a view to outlining a prioritized set of cross-border trade projects backed by economic/technical analysis.

### **XI. GMS Strategic Framework and Project Pipeline for Regional Investment Framework 2022**

22. ADB presented on updates from the broader GMS Cooperation Program and then discussed the Regional Investment Framework (RIF) 2022 with the RPTCC members. The GMS Leaders' Summit will be held in Viet Nam on 31 March 2018. The Leaders will endorse the Ha Noi Action Plan (HAP), which refines sector strategies for the next five years of GMS cooperation. For the energy sector, the HAP recommends continued focus on grid-to-grid power

trade between any two countries and later thru transmission lines of third countries (Stage 2). The Leaders will also adopt a refined GMS RIF 2022 as the medium term priority project list of the GMS. The refined GMS RIF 2022 recommends focusing only on projects, which are intended to commence by 2022 (and drop projects which are beyond this time scope). The GMS Secretariat would continue to receive project details and refinements until 21 December 2017. The revised GMS Power Interconnection Map was also shared with the RPTCC.

## **XII. Other Businesses**

23. The meeting agreed that:

- The technical group meetings will be organized to review the progress of activities, particularly, inception of pre-feasibility studies. The next technical group meeting will be held in Cambodia.
- Next RPTCC meeting: Myanmar has agreed to host RPTCC-24 in Nay Pyi Taw, date to be determined.
- RPTCC Chairmanship is rotated every year; Viet Nam agreed to chair two RPTCCs in 2018. Formal advice on chairmanship will be sought from the Government of Viet Nam.

## **XIII. Closing Session**

24. The Chairs appreciated the work accomplished during the past few days and thanked all participants for their valuable contributions to the meeting. ADB also expressed appreciation to all GMS countries; development partners, namely, AFD, World Bank, and JICA; and consultants for valuable inputs.

25. Outgoing Chair Thailand stressed that the meeting presented opportunities to discuss practical ways to strengthen the implementation on domestic power development, security and sustainability. He also noted that importance of sharing of experience, developing best practice to help countries and pursue cooperation to strengthen the power industry – in terms of power generation and transmission, enhancing cooperation in regional power grid interconnection to empower power system with reliability and sustainability among the countries. The constant cooperation could be a significant mechanism to enhance power cooperation in the region for energy security and sustainability in the coming years and enjoined all countries to continue productive and beneficial collaboration for common interest and prosperity of the region.