



## **GREATER MEKONG SUBREGION (GMS)**

### **WG ON STRATEGIC PLANNING & OPERATION (WGPO) TERMS OF REFERENCE**

#### **RPTCC-24 MEETING**

**Nay Pyi Taw – Myanmar, 19 & 20 June 2018**

**By Michel CAUBET**

- ADB has supported RPTCC and the two working groups (WGPG and WGRI) in achieving the targets set in the TORs.
- WGPG has achieved the following:
  - Task 1 - GMS performance standards – adopted as a reference document in June 2017;
  - Task 2 - Transmission Regulations 1 to 4 – completed in December 2017;
  - Task 3 – Regional Metering Arrangements – draft was discussed in March 2018 and expected to be complete in June 2018;
  - Task 4 – GMS Grid Code. Final Draft complete by December 2018.

- Further to the assigned tasks, WGPG has undertaken the following two important additional functions with the support of ADB:
  - Updating the GMS regional master plan. It is expected to complete the draft regional master plan in June 2019;
  - Pre-feasibility studies of four regional transmission interconnection projects.
- Due to the progress of GMS Grid Code and integration of the above two new functions, the scope of WGPG's activities requires a revision of the TOR of WGPG and a change in its name.
- It is thus proposed to adopt "Working Group on Strategic Planning and Operation" (WGPO) as the new name of WGPG to better reflect the spectrum of its activities and expand the TOR with the following activities:
  - Strategic Planning to ensure that the GMS Interconnected Transmission System is planned in accordance with the regional planning standards; and
  - Operation to accompany the implementation, follow up and review of the GMS Grid Code technical requirements.

## Terms of Reference and Rules of Procedure of the WGPO:

### ▪ *Objectives:*

- a. Coordination on Planning of any proposed development or reinforcement of a national system or construction of new or modification of interconnections with external systems (outside GMS) to ensure that the reliability and security of the GMS Interconnected Transmission System is not compromised;
- b. Cooperation between the TSOs in the planning and procurement of new generation capacity at lowest overall cost, taking into account environmental considerations;
- c. Submission of sufficient information to enable a TSO to optimize the planning and development of its national system including the use of available transmission capacity on the GMS Interconnected Transmission System;
- d. Establishment of a regional grid code that set down the technical rules for coordinated planning, scheduling and operation of the regional electricity market;

- e. Enforced harmonized Grid Codes (security criteria and performance standards, and common practices, rules and procedures) for a secure and efficient operation of national and regional power systems;
- f. Development and adoption of a GMS program for operationalization of power exchanges within the GMS and completion of the Synchronous Area;

- ***Responsibilities:***

- a. The WGPO and the TSOs are responsible for the collection of information from Generators, Distributors and other Users connected to their national systems and for providing to the WGPO any required relevant information on Planning.
- b. Those TSOs with connections to external systems shall ensure that the supply of data required should be contemplated in the Interconnection Agreement with the external system seeking a new or modified interconnection.

- ***Establishment and Composition (no change):***
  - a. The RPTCC shall adopt the revised Terms of Reference and adopt the new name: WGPO.
  - b. The WGPO shall be composed of:
    - (i) One designated Representative of the national Transmission System Operators, national Power Authorities or national Power Utilities performing the functions of Transmission System Operator (TSO) with primary responsibility on **Transmission Planning** (one delegate per Country, lead and alternate);
    - (ii) One designated Representative of the national Transmission System Operators, national Power Authorities or national Power Utilities performing the functions of Transmission System Operator (TSO) with primary responsibility on **Transmission Operation and regional Grid Code** (one delegate per Country, lead and alternate);
    - (iii) One designated Representative of the Power Authorities or national Power Utilities performing the functions of Power Producer with primary responsibility on **Generation Planning and Operation** (two delegates per Country, lead and alternate); and

iv. One designated Ministry Official with primary responsibility for **Regulatory** aspects of the electricity sector or where existing one designated representative of National Regulators (two delegates per Country, lead and alternate).

- ***Establishment and Composition (no change):***
- ***Meetings and Minutes (no change)***
- ***Decision and Reporting (no change)***



▪ ***Scope of Work:***

The scope of activities to be performed by the WGPO is composed of:

- a. Work with the ADB consultants and other donor agencies administered by ADB, and gather information from Members, Staff, regulatory bodies, investors, financial institutions and legislative bodies on industry trends, forecasts and directions;
- b. Support consultants in preparing draft regional master plan, maintain an annual series of load flow and short circuit models and associated stability data bases, and maintain a data base of all transmission, generation, and supporting facilities within the GMS;
- c. Recommend practices for regional system design, planning, adequacy of interconnections in order to assure efficient and reliable power supply among the systems in the GMS Interconnected Transmission System;
- d. Recommend, for adoption by the RPTCC, criteria for Strategic Planning;
- e. Review and assess the Members' development plans and identify problems that are pertinent to the GMS Interconnected Transmission System Planning;

- f. Make use of studies available from other regions;
- g. Review and make recommendations on common performance standards for satisfactory operational security, reliability and quality of supply, for approval and adoption by the RPTCC;
- h. Establish and periodically review the GMS regional Grid Code for approval and adoption by the RPTCC;
- i. Monitor the implementation and enforcement of the performance standards, compliance and coherence between national Grid Codes and the GMS regional Grid Code;
- j. Submit position papers and make recommendations on all matters related to power system reliability and safety for discussion and approval by the RPTCC;
- k. Define any complementary technical assistance and training programs it needs to efficiently achieve its objectives;
- l. Assess the industry environment in which the Regional Power Trade will be functioning;
- m. Assess capabilities and competencies of the Regional Power Trade against the industry environment, including coordination with neighboring entities;

- m. Formulate strategies to ensure achievement of the mission statement, goals, objectives, and responsibilities of the Regional Power Trade organization, and recommend necessary modifications to the RPTCC to carry out these strategies;
  - n. Work with the other GMS Working Groups in developing related action plans, schedules and budgets;
  - o. Respond to activities as requested by the RPTCC;
  - p. Complete a self-assessment annually to determine how effectively the WGPO is meeting its responsibilities; and
  - q. Perform such other functions as the RPTCC may delegate or direct.
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- **Financing and Other Support (no change)**

## **STRATEGIC PLANNING PRINCIPLES:**

- a. The “Planning Principles” are concerned with planning of the interconnection between national systems of the GMS Subregion, connections with external systems (outside the GMS) and with those facilities within national systems, which have or could have an impact on the reliability of the GMS Interconnected Transmission System.
- b. The principles should also be applied in the planning of national systems to ensure that the approved reliability criteria can be met.
- c. However, the principles do not apply to local supply reliability and other local considerations, which are the subject of national grid codes or equivalent documents.
- d. The reliability level for the GMS Transmission System is defined by a set of minimum criteria together with the performance characteristics and requirements set out by the GMS Performance Standards (PS), which must both be met when designing developments, expansions and reinforcements of both GMS Transmission System and national systems.

## **1. Reliability Criteria**

All plants and apparatus of the GMS Transmission System shall operate within normal capacity ratings, thermal loading and voltage limits under steady-state conditions as set out in the GMS Performance Standards (PS).

The GMS Transmission System shall be able to supply all loads within the emergency limits for bus voltages, plants and apparatus loadings during the outage of any line or transformer (N-1 Criteria).

The security and reliability of the GMS Transmission System shall not be compromised by the loss of any single power system element such as generating unit, transmission circuit, section of busbar, transformer or reactive compensation equipment (N-1 Criteria).

## **2. Planning Process**

The horizon for the planning of the GMS Interconnected Transmission System extends over ten (10) years.

## The process has two components:

- ***Power Balance Statement*** – A forecast, by TSOs for each national system, of their expected demand and generation over the planning horizon. This forecast will define the requirements for generation support from the GMS Transmission System for individual national systems.

The TSOs will prepare and submit to the WGPO, their Power Balance Statements (Generation Adequacy Reports).

The WGPO shall produce a “Power Balance Statement” for the GMS Transmission System.

- ***Transmission System Capability Statement*** – An assessment, by the WGPO and the TSOs, of the capability of the GMS Transmission System to support the required energy flows across both national systems and cross-border interconnections.

Based on the transmission adequacy assessment carried out by each TSO, the WGPO will produce a “Transmission System Capability Statement” for the GMS Transmission System.

### **3. GMS Power System Modeling**

In order to produce the GMS “Transmission System Capability Statement”, it is necessary to carry out system analysis including steady-state and dynamic simulations of the GMS Transmission System.

This system analysis is required to assess the reliability of the GMS Transmission System to meet the forecast demand and determine the need for system enhancements or reinforcements.

These system studies will be carried out by both the *WGPO* and the *TSOs* and shall be performed using a common set of principles and a *common database*.

To achieve this, the *WGPO* shall establish a set of common objectives for the development and submission of system data for GMS power system modeling.

The data shall include sufficient detail to ensure that system contingencies, steady-state, transient and dynamic analysis can be simulated.

The data required for system studies is set out in the GMS Grid Code (Data Exchange).

#### **4. *Responsibilities***

The WGPO in conjunction with the TSOs shall identify the scope and specify the data required for reliability analysis and the procedures for data reporting.

These requirements and procedures shall be periodically reviewed, documented and published for the GMS Transmission System at least every five (5) years.

Each TSO shall provide accurate and appropriate equipment characteristics and power system data for modeling and simulation purposes as required by the WGPO.

#### **5. *Planning Data Confidentiality***

System planning data shall be treated as non-confidential when the WGPO and TSOs use such data:

- a. in the preparation of forecasts, “Power Balance Statements” and “Transmission System Capability Statements”;
- b. for the planning of the GMS Transmission System;
- c. to consider a connection application or provide advice to a user; and
- d. under the terms of an Interconnection Agreement with an external system.



**MOU-2 Milestone:** Complete and implement the GMS Grid Code (Organization – Operational Processes and Procedures).

Proposed Activities	Schedule
Review, complete and consider for adoption by the RPTCC and implementation the proposed GMS Grid Codes.	2019 – 2025
Identification of solutions for regulatory enforcement of the GMS Grid Code	Jan to Jun 2019
Review and make recommendations on common performance standards for satisfactory operational security, reliability and quality of supply in the GMS, for approval and adoption by the RPTCC	2019 – 2021
Establish and monitor gap assessment of performance standards and road map for compliance with an associated financial estimation	Jan to Jun 2019
Establish and monitor compliance assessment of the GMS Grid Code with National Codes, and a road map for compliance & Grid Code implementation with an associated financial estimation	Jan to Dec 2019
Complete and consider for adoption and implementation by the RPTCC the standard regional metering arrangements and communications system in grid-to-grid interconnection (EH).	2019 – 2021

Proposed Activities	Schedule
<p>Analyse, develop and consider for adoption by the RPTCC and implementation the proposed technical co-ordination architecture, organized on the basis of the three hierarchical levels: Coordination Centre, Control Blocks and Control Areas for the GMS Synchronous Area, including the necessary operational agreements, methodologies and processes.</p>	<p>2019 – 2021</p>
<p>Implement the GMS Grid Code requirements and consider for adoption by the RPTCC the findings of the study, which includes: Coordination procedures between System Operators to schedule and control cross border flows; management of deviations, Metering and communications; Sharing of power reserves and support during emergencies.</p>	<p>2019 – 2021</p>
<p>Establish and periodically review the GMS regional Grid Code for approval and adoption by the RPTCC</p>	<p>2019 – 2025</p>

**MOU-2 Milestone:** Study, review and complete the indicative power interconnection master plan and select priority new interconnection projects for undertaking feasibility studies to facilitate and secure regional power trade in the GMS.

Proposed Activities	Schedule
<p>Work with the consultants engaged by ADB (and other donor agencies administered by ADB) and gather information from Members, Staff, regulatory bodies, investors, financial institutions and legislative bodies on industry trends, forecasts and directions for the development of the interconnection transmission infrastructures.</p>	<p>2019 – 2020</p>
<p>Support consultants in preparing draft regional master plan, and once the draft plan is prepared, maintain an annual series of load flow and short circuit models and associated stability data bases representing the current and planned electric network of the region, and maintain a data base of all transmission, generation, and supporting facilities within the GMS.</p>	<p>2019 – 2025</p>
<p>Recommend practices for regional system design, planning, adequacy of interconnections in order to assure efficient and reliable power supply among the systems in the GMS Interconnected Transmission System, and consider for adoption by RPTCC</p>	<p>2019 – 2020</p>

Proposed Activities	Schedule
Recommend and consider for adoption by the RPTCC, criteria for strategic planning.	2019
Develop and monitor GMS system Modelling (common Model) and start undertaking system studies and economic assessments.	2019 – 2020
Review and assess the Members' development plans and identify problems that are pertinent to the GMS Transmission System planning.	2019 – 2025
Review and undertake feasibility studies of priority interconnection projects to facilitate and secure regional power trade in the GMS.	2019 – 2025

**THANK YOU VERY MUCH FOR  
YOUR ATTENTION**