Dear Qimiao

1. As per the SMO dated May 5, 2017 a technical mission visited Bangladesh from May 15 -19, 2017 in the framework of the implementation of the Bangladesh Power System Reliability and Efficiency Improvement Project (P 159807). The project is recently approved.  The mission was comprising Md. Iqbal (Senior Energy Specialist   and Task Team Leader), Issa Diaw (Senior Energy Specialist and Co-Task Leader), Franklin Koffi Gbedey (Senior Energy Specialist, GEE07), Arafat Istiaque (Procurement Specialist), Md. Bazlul Kadir (Procurement Consultant), P. K. Roy (Consultant) and Md. Tafazzal Hossain (Program Assistant).
2. The objectives of the mission were the following:

* Develop a consultants’ terms of reference on study of the reliability and efficiency of Bangladesh power system in dispatching the power plants; preparation of bid documents to upgrade and automate the system; supervision of supply-installation works; and training.
* Discuss PGCB’s progress in frequency control trials and training and processing of project DPP; and
* Discuss terms of references of an MOU between Grid Stability Committee and BPDB/other generators to ensure an agile implementation of frequency control activities.

1. The mission team met with the management of PGCB, BPDB, APSCL, EGCB and BERC and paid a field site visit to five power plants.
2. **Main findings of the mission:**
3. PGCB updated the mission about progress in frequency control trials and training. The International consultants, DigSilent, Australia (appointed by PGCB) has concluded the training and trials in the first week of May and submitted their final report (copy attached). A number of engineers of NLDC, PGCB, multiple power plants of BPDB and generating companies participated in the primary frequency control (free governor mode of operation, FGMO) trials and related trainings. DigSilent accompanied by PGCB’s engineers, also visited a few power plants to identify their suitability to participate in the FGMO on a long term basis.
4. PGCB informed the mission that the project DPP has been sent to the Planning Commission with some revisions for ECNEC approval. The approval is expected at end of June. Upon approval, ERD will sign the financing agreement of the project with the World Bank.
5. Following discussions with the stakeholders (PGCB/NLDC, BPDB, APSCL, EGCB and BERC) the mission prepared the terms of references (TOR) for the *System Studies and Technical* Assistance which was reviewed with PGCB and comments were sought from PGCB, BPDB and BERC.The objective of the TOR is to provide to PGCB the necessary technical assistance and consultant’s services to carry out the reliability and efficiency studies, prepare specifications and bidding documents to upgrade/automate the system, and provide necessary supervision and training plans. (Copy of the TOR is attached).
6. The mission visited selected power plants (both BPDB and Generating Companies) to assess their technical compatibility and readiness to participate in the free governor mode operation (FGMO/primary frequency control). The plants visited are : i) Haripur 412 MW CCPP, ii) Ashuganj Power Complex, iii) Syhlet 150 MW CCPP, iv) Fenchuganj 180 CCPP and v) Shahjibazar 330 MW CCPP. The mission noticed adequate motivation of most of the power plant engineers and managers to practice and participate in the FGMO. They were already investigating about the FGMO in their power plants. They have asked the respective EPC contractor to check with OEMs and confirm whether the power plants have FGMO feature and how this can be activated. However, a minimum investment would be needed in most of the power plants to make necessary changes to activate the FGMO and the issue of compensation for spinning reserves (frequency control ancillary services, FCAS cost) needs to be settled. This was flagged by the power plant managements. The mission requested BPDB to follow up on the issue with EPCs/OEMs to ensure the plants can operate in FGMO. A brief report on the power plant visit is attached. It provides reference data of those power plants and the steps that BPDB will have to take up.
7. The mission informed the utilities that the BERC will set a cost for the spinning reserve and formalize this through an official regulation. The project will provide necessary technical assistance and guidance to achieve this. The mission met with Member, BERC and updated him about the project scope including regulations on frequency control ancillary services (FCAS) and sought his active role in the implementation.
8. A discussion on project procurement took place with PGCB and a number of steps agreed to start the procurement.

1. **TORs of the System Studies and Technical Assistance to PGCB to improve System Reliability and Efficiency**

The TORs cover two phases of activities. The first phase concerns the *Studies, Assistance and Training for system reliability improvement* and the second phase is the technical assistance provided to PGCB/BPDB and other Generating Companies participating in Frequency Control Operation during the supply and installation of the upgrade of the SCADA system, the control equipment in the power plants, the control equipment in the transmission network and the protection relays necessary for the FGMO. The consultant will also address the institutional issues related to the market operation, the operation manual and the grid code. A special attention will be paid to the training aspect to ensure that PGCB, BPDB, other Generating Companies and the Grid Stability Committee staff are continuously trained in world class utilities to address effectively the challenge of the FGMO. The mission handed over a copy of the draft TOR to PGCB, BPDB and BERC for comments.

1. **Next Steps**

 At end of the mission, the team updated PGCB management on its findings and following actions were agreed.

1. The consultants TORs will be finalized by June 7, 2017. PGCB will then initiate the procurement (publication of REOI and preparation of RFP).
2. NLDC informed the mission that they are taking up a complete study on the upgradation of SCADA/EMS system. This may conflict with project’s Sub-Component 2.2-Upgrading/modernization of NLDC SCADA/EMS Software. Under the circumstances, PGCB requested the Bank to include the whole assessment and upgradation of the SCADA/EMS within the project scope which may cost a bit higher than the present estimate of the Sub Component 2.2. The mission agreed to consider this.
3. PGCB has taken initiative to publish the GPN in STEP. They will upload the Procurement Plan (reflecting Consulting and Reconductoring) in the STEP. PGCB will also start an REOI for the consulting assignment and send to the Bank for review/comment by June 20. The REOI will be published by July 7, 2017. The shortlist of the consultants is planned to be available by the end of  August 2017 and the RFP expected to be sent out no later than end of September 2017. The bid documents of reconductoring will be prepared by PGCB by July 30 and tender floated by August 30.
4. PGCB has pointed out and BPDB agreed that the implementation of the Project would require BPDB’s active participation/support specially on the Governor upgrading and connectivity with NLDC. BPDB will assign an Engineer to closely work with PGCB’s Project team during the project implementation.
5. BPDB further agreed to communicate with the EPCs and OEMs of the power plants to confirm presence of FGMO and ways to activate them.
6. On recruitment of two Specialists for the Environment and Social Unit (ESU), PGCB confirmed that the notice has been advertised and deadline for submission has not yet expired.
7. BERC agreed to extend due cooperation to the implementation of the project. They will assign one of their officials to participate in the Grid Stability Committee meetings and FGMO trial runs.

With regards

Iqbal

**Attachments:**

1. Consultants Terms of Reference
2. DigSilent’s final report on Frequency Control Trial and Training
3. Report on Power Plant visit