

Terms of Reference of SARI/EI Task Force 2 on “Advancement of Transmission System Interconnections”

Objective of Task Force (TF-2):

The objective of the TF-2 on Advancement of Transmission Systems Interconnection activity shall be to create the enabling conditions for a sustainable market for investment and implementation of regional bilateral transmission interconnections in South Asia (SA) Region. The TF-2 will identify import-export opportunities for technically and economically feasible cross border interconnections considering generation capacity additions in the pipeline over the next 25-35 years, development of minimum intercountry coordination procedures and standards required with respect to regional power system planning, design, and system operations, consistent with the evolving legal, policy and regulatory practices to facilitate Cross Border Energy Trade (CBET), Regional Energy Market development and for stable regional/national grid integration. The TF-2 will also develop a road map to give prospective investors a comfort level on a long-term basis to setup CBET projects in SA region.

1. MEMBERS OF TASK FORCE:

Task Force has been constituted with one member from each country from their power system planning/operations/design functions.

2. TERM OF REFERENCE:

- 2.1 Review country specific energy supply and demand projections up to year 2040 and come up with Regional Cross Border Energy Trade (CBET) -2040 potential for South Asian Countries (SACs).
- 2.2 Review the generation capacity addition plan and identify the measures required to facilitate any additional corresponding infrastructure/ institutional development or augmentation required.
- 2.3 Review the extent to which estimated cross border power transfer can be accommodated over planned interconnections and technical improvements required to enhance such transfer and build additional Transmission capacities, if the same are not sufficient.
- 2.4 Conduct a comprehensive assessment and evolve an optimal Long-term South Asia Regional Electricity Generation and Transmission Master Plan up to the year 2040, taking into consideration the country specific plans, and in consultation with country planning agencies/authorities through detailed planning studies, load flow modeling with generation and transmission.
- 2.5 Technically and economically feasible CBET interconnections: Individual transmission links and their economics from estimated power flows and prioritizing the same in accordance with requirements. A broad understanding of the importance and role of different transmission links can help prioritize links for taking up for construction. Prefeasibility analysis in the form techno-economic assessment will be carried out for prioritization of investments along with funding options/modalities taking into account the international best practices.
- 2.6 Conduct modeling work that gives utilization rates of cross border transmission lines presently and over the next 5 years, based on anticipated trade, and also conduct cost-benefit analysis for

- prioritizing execution of new transmission lines, in case of congestion.
- 2.7 Financing modalities and options for developing cross border power transmission infrastructure including transit for tripartite trade.
 - 2.8 Assessing and developing/enhancing coordination between system operators for efficient and cost-effective operation of inter-connected grid and cross border market operation.
 - 2.9 Develop Operational Procedures for nondiscriminatory access to transmission network for all kinds of trade, including for collective transactions, from the perspective of CBET and Regional Energy Market.
 - 2.10 Suggest fair and transparent rules and principles required for coordinated system planning, and for integrated grid operation for safe, secure, stable and reliable integrated regional grid operations, in the context of CBET.
 - 2.11 For sustainable grid integration, provide specific technical and operational recommendations by taking in account the nature of existing electricity grid and location of each South Asian Countries.
 - 2.12 To build consensus and evolve a Framework and then build a common understanding and agreement on the sharing of transmission and wheeling charges for CBET including for trilateral trade.
 - 2.13 Conduct specific technical studies on transmission capacity and system interconnection options for trilateral and other regional cross border trading.
 - 2.14 Undertake capacity development and exchange of knowledge to improve power system operation practices in South Asia from the perspective of CBET.
 - 2.15 Institutionalization to support regional transmission planning and system operation: Focus on establishing a regional association of transmission utilities i.e. South Asian Forum for Transmission Operator (SAFTU), and of system operators i.e. South Asia Forum of System Operator (SAFSO) to facilitate the process of transmission planning and coordinated system operation for long term sustainability. The Task force along with SAFTU and SAFSO will bring the countries on a common platform and help them to sort out various technical and operational issues, arrive at consensus and develop a road map for implementation, including a coordinated transmission plan.
 - 2.16 Assess through detailed analysis and studies the potential benefits for connecting North-Eastern of India with Bangladesh. The connectivity with Myanmar and BIMSTEC region as well as broad dimensions of trade between South Asia and South East Asia may also be explored¹.
 - 2.17 Investor Guide cum Fact sheet about various cross border transmission projects and a road map that would give prospective investors a comfort level on a long-term basis to setup cross border energy infrastructure the South Asia region.
 - 2.18 Continuous interaction and exchange of ideas with the Policy makers, decision makers, technical institutions of SA countries through briefing meetings, interaction, brain storming & technical delegation and inter-regional study tours/visits to other regions where there is successful integrated

¹ Concurrence of USAID will be taken to initiative activities in South East Asia and it will be done in coordination with USAID missions in South East Asia

regional transmission planning & system operation for CBET, such as Northern America, Europe, South Africa & ASEAN.

- 2.19 Considering that different countries of South Asia are at different stages of evolution in terms of technical and operational aspects of power system, provide country specific need based technical support and assistance and preparing the strategy paper on operational aspects of CBET in the context of evolving regulatory frameworks on CBET and its associated regulations in each South Asian member countries such as India.

3. DELIVERABLES:

- 3.1. Regional supply and demand scenario up to 2040. CBET trade potential by 2040.
- 3.2. Long term South Asia Regional Electricity Generation and Transmission Master Plan up to the year 2040 including identification of transmission capacity and system interconnection options for trilateral and other regional cross border trading along with funding/investment models for cross border Transmission Infrastructure.
- 3.3. Strategy paper on operational aspects of CBET in the context of evolving regulatory frameworks on CBET and its associated regulations in each of the South Asian member countries.
- 3.4. Technically and economically feasible cross border transmission interconnections. Prefeasibility analysis in the form techno-economic assessment for prioritization of investments.
- 3.5. Operational Procedures for nondiscriminatory access to transmission network for all kinds of trade, including for collective transaction from the perspective of CBET.
- 3.6. Fair and transparent rules for coordinated grid operation for a safe, secure, stable and reliable regional grid, in the context of CBET.
- 3.7. Framework on transmission and wheeling charges for CBET including for trilateral trade.
- 3.8. Create regional institution to support transmission planning and system operation i.e. SAFTU, SASFO and implementation of various technical activities under SAFTU and SAFSO.
- 3.9. Financing modalities and investment models for developing CBET transmission. Evolve transmission charges and loss sharing Guidelines, Consolidated Technical Coordination Template/Toolkit for CBET.
- 3.10. Investor Guide cum Fact sheet about various generation and transmission projects and a road map that would give prospective investors a comfort level on a long-term basis.
- 3.11. Under the banner of SAFTU and SAFTSO, Knowledge exchange program-Annual Certification Training Course on a) “Integrated Regional Power System Operation b) “Regional Power System Planning and Analysis” c) “Renewable Energy Grid Integration” in SA/BIMSTEC Region which can enhance long-term Sustainability.
- 3.12. Any other activities/report to meet the objectives.

4. Time Schedule:

- 4.1. The taskforces shall meet periodically (twice in a year). It may meet more frequently if and as required.