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SARI/EI

South Asia Regional Initiative for Energy Integration

Quarterly Update – October to December 2017

ACCOMPLISHMENTS FOR THE QUARTER

RELEASE OF REPORT ON HARMONIZATION OF GRID CODES, OPERATING PROCEDURES AND STANDARDS TO FACILITATE/PROMOTE CROSS-BORDER ELECTRICITY TRADE (CBET) IN THE SOUTH ASIA REGION THIMPHU, BHUTAN

The report on “Harmonization of Grid Codes, Operating Procedures and Standards to Facilitate/Promote Cross-border Electricity Trade in the South Asia Region” was released by Mr. Sonam Wangdi, Director General, Department of Hydropower & Power Systems (DHPS), Ministry of Economic Affairs (MoEA) in Thimphu, Bhutan on October 4, 2017. The study has recommended framework grid code guidelines (FGCG) which though non-binding, will provide a consistent regional framework for system planning, transmission inter-connections and operational rules and responsibilities to be followed by grid users and other stakeholders of respective South Asian countries.



Release of the report on “Harmonization of Grid Codes, Operating Procedures and Standards” in Thimphu, Bhutan

ROUNDTABLE CONSULTATION WORKSHOP ON DEVELOPING FRAMEWORK AND GUIDELINES FOR NON-DISCRIMINATORY OPEN ACCESS REGIME IN TRANSMISSION AND MODEL FRAMEWORK FOR TRADING LICENCE REGIME FOR ADVANCING/FACILITATING CROSS-BORDER ELECTRICITY TRADE IN THE SOUTH ASIAN COUNTRIES THIMPHU, BHUTAN

SARI/EI organized a roundtable stakeholder consultation workshop on “Developing Framework and Guidelines for Non-discriminatory Open Access Regime in Transmission and Model Framework for Trading License Regime for Advancing/Facilitating Cross-border Electricity Trade (CBET) in the South Asian Countries” in Thimphu, Bhutan on October 4, 2017. Over 30 participants from the Ministry of Economic Affairs (MoEA), Department of Hydropower & Power Systems (DHPS), Department of Renewable Energy, Bhutan Electricity

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Authority, Druk Green Power Corporation Limited, and Druk Holdings & Investments participated in the roundtable. Mr. Sonam P. Wangdi, Director General, DHPS, MoEA delivered the keynote address and emphasized that open access and trading license are very important for promoting CBET in the South Asia region. The key findings of the study were presented and deliberated by the participants. The participants provided suggestions to be included in the report. The final report will be completed after incorporating all the input from stakeholders.



Roundtable on Open Access and Trading License in Thimphu, Bhutan

2nd CAPACITY BUILDING PROGRAM FOR SOUTH ASIAN REGIONAL POWER EXCHANGE (SARPEX) MOCK EXERCISE NEW DELHI, INDIA

The 2nd capacity building program on SARPEX Mock Exercise was organized by SARI/EI in New Delhi, India on October 4 – 5, 2017. Eight participants, two each from Nepal and Bhutan and four from Bangladesh, attended. Subject experts from the India Energy Exchange (IEX) and the Power Systems Operations Corporation (POSOCO) presented. All the core team members unanimously voiced that engagement of policy makers and working level people for day-ahead cross border market is required.



2nd capacity building workshop on SARPEX in New Delhi, India

STAKEHOLDER CONSULTATION MEETING WITH BIMSTEC SECRETARIAT ON BIMSTEC ENERGY OUTLOOK 2030 DHAKA, BANGLADESH

On November 14, 2017, SARI/EI organized a stake-holder consultation meeting on the study on “BIMSTEC Energy Outlook 2030 at the BIMSTEC Secretariat in Dhaka, Bangladesh with the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) Secretariat. The SARI/EI team (comprising of Mr. V.K.



Stakeholder consultation meeting with BIMSTEC Secretariat in Dhaka, Bangladesh

Kharbanda, Mr. Rajiv Ratna Panda, and Mr. Tushar Sud) met with Mr. S.M. Nazmul Hasan, Director (Bangladesh), BIMSTEC and other officials of the BIMSTEC Secretariat. The SARI/EI team presented key findings of the study on “BIMSTEC Energy Outlook 2030,” which is the first of its kind in the BIMSTEC countries. The “BIMSTEC Energy

Outlook” study aims to bring cohesion about the energy/electricity cooperation initiatives among BIMSTEC member states over a long period of time. It was agreed to jointly release the BIMSTEC Energy Outlook report.

WORKSHOP ON REGIONAL COOPERATION FOR POWER TRADE: NEPAL-INDIA PERSPECTIVE KATHMANDU, NEPAL

In partnership with the Institute for Integrated Development Studies (IIDS), SARI/EI organized a national level roundtable discussion on “Regional Cooperation for Power Trade: Nepal – India Perspective” on December 1, 2017 in Kathmandu, Nepal. The roundtable was attended by over 30 high-level participants, which included policymakers, diplomats, private sector, civil society organizations, media, research institutes, banking sector, and academia. The executive summary of the report on “Economic Benefits from Nepal-India Electricity Trade,” written in the Nepali language, was released by Mr. Jeebachh Mandal, Joint Secretary, Ministry of



Release of “Economic Benefits from Nepal-India Electricity Trade” Report by Mr. Manjeev Singh Puri, Ambassador of India to Nepal & Mr. Jeebachh Mandal, Joint Secretary, Ministry of Energy, Government of Nepal at the Workshop on Regional Cooperation for Power Trade: Nepal – India Perspective in Kathmandu, Nepal

Energy, Government of Nepal and Mr. Manjeev Singh Puri, Indian Ambassador to Nepal.

EXECUTIVE EXCHANGE: AUSTRALIA'S ENERGY MARKET AND USE OF HYDROELECTRICITY TO BALANCE INTERMITTENT RENEWABLES

USEA hosted executives from Bhutan and India in an executive exchange to Sydney and Canberra, Australia to learn about Australia's energy markets, and how it is using hydroelectricity to balance intermittent renewables. The goal of this executive exchange, which took place December 11 – 15, 2017, was for the delegation to learn about the operation of a national energy market for greater renewable energy integration and energy storage and flexibility for the grid. Discussions included:

- Electricity generation bidding for dispatch
- Scheduling and forecasting techniques
- Electricity regulatory frameworks
- "Consumer-choice" electricity retail market
- Electricity market trading between states
- Combined generation and retailer "Gentailers" in the energy supply industry
- Non-synchronous solar and wind generation in a synchronous system
- Pumped hydro for energy storage and load balancing
- Ensuring supply reserve to meet reliability standards
- Load shedding and balancing supply and demand



Delegates visited the Snowy Mountains Hydro Scheme – the hydroelectricity and irrigation complex in Southeast Australia. The scheme consists of sixteen major dams; seven power stations; two pumping stations; and 225 kilometres (140 mi) of tunnels, pipelines and aqueducts. While visiting the Hydro Scheme, participants also visited the Tumut 3 pumped storage power station. It is the 7th largest pumped storage power station by capacity in the world, with 1,800 MW of capacity.



Delegates pose with Assistant Secretary for Energy Security Helen Bennett, First Assistant Secretary James Chisholm, Energy Division, James O'Toole, Assistant Secretary, Electricity Branch and Assistant Secretary Shane Gaddes, International Energy Implementation Branch, Australia

Participants

Bhutan

- Mr. Sonam P. Wangdi, Director General, Department of Hydropower & Power Systems (DHPS), Ministry of Economic Affairs (MoEA)
- Ms. Dawa Zangmo, Chief Engineer, Research & Development Division, Department of Renewable Energy, MoEA
- Mr. Kencho Gyeltshen, Chief Engineer, Chhukha Hydropower Plant, Druk Green Power Corporation Limited (DGPC)
- Mr. Karma Namgyel, Officiating Chief Engineer, DHPS, MoEA
- Mr. Karma Tshewang, Chief Engineer, Hydropower Development Division, DHPS, MoEA
- Mr. Passang, Executive Engineer, Hydropower Development Division, DHPS, MoEA

India

- Mr. Murathia Anil Kumar Phool Singh, Member Secretary, Northern Regional Power Committee (NRPC)
- Mr. Nabarun Roy, Deputy General Manager, Western Regional Load Dispatch Centre, Power System Operation Corporation Ltd (POSOCO)
- Mr. Harish Saran, Executive Director (Marketing), PTC India
- Mr. Hiranmay De, Executive Vice-President (Operations), PTC India

Australian participating organizations

- AGL Energy
- Origin Energy
- Energy Policy Institute of Australia(EPIA)
- Delta Electricity
- Australian Power and Water
- Snowy Mountain Limited
- Department of Environment and Energy, Government of Australia
- Australian Energy Market Operator (AEMO)
- TransGrid
- Clean Energy Finance Corporation (CEFC)
- Australian Energy Regulator (AER)

OUTREACH ACTIVITIES

I. SARI/EI participation in the 2nd meeting of SAARC Council of Experts of Energy Regulators – Islamabad, Pakistan

SARI/EI team Mr. V.K. Kharbanda and Mr. Rajiv Ratna Pandey participated in the second meeting of the SAARC Council of Experts of Energy Regulators on October 24 – 25, 2017 in Islamabad, Pakistan. As technical resource persons, Mr. Kharbanda presented on “Potential to Enhance Power Trade in Western Part of South Asia: Techno Economic Rational” and Mr. Pandey on “Harmonization of Grid Codes, Operating Procedures and Standards to Facilitate/Promote CBET in the South Asia Region.” They also presented the key findings of the study focused on framework grid code guidelines. Subsequently, the SAARC Council of Experts of Energy Regulators delegated responsibility of developing the model regulation for SAARC to SARI/EI.



SARI/EI technical resource persons participating in the SAARC Council of Experts of Energy Regulators in Islamabad, Pakistan

2. SARI/EI participation in the 10th South Asia Economic Summit by South Asia Watch on Trade, Economics and Environment (SAWTEE) – Kathmandu, Nepal

Mr. V.K Kharbanda, SARI/EI participated as a panelist in the “Issues in Energy Cooperation” session at the 10th SAWTEE Summit held in Kathmandu, Nepal on November 14 – 16, 2017.



SARI/EI participation in the 10th South Asia Economic Summit by SAWTEE in Kathmandu, Nepal

3. SAARC “Training Workshop on System Operation and Settlement Mechanism, Cross Border Electricity Trade/Regional Power Market in South Asia” – Dhaka, Bangladesh



SARI/EI participation in the “Workshop on System Operation and Settlement Mechanism” in Dhaka, Bangladesh

SARI/EI team comprising of Mr Rajiv Ratna Panda and Mr. Gaurav Jain participated as resource persons in

the SAARC “Training Workshop on System Operation and Settlement Mechanism, Cross Border Trade/Regional Power Market in South Asia” held in Dhaka, Bangladesh on December 10 – 11, 2017. They delivered a lecture on “Experiences and Learnings from Competitive Power Market (Power Trading & Exchange) Development in South Asia: Approach for Developing Competitive Regional Power Market in South Asia” and on “South Asian Regional Power Market Development & Learning from International Power Exchange/Pool” respectively.

4. SARI/EI participation in the “Training Workshop on Power Market in India” organized by the India Energy Exchange (IEX) in association with the SAARC Energy Centre (SEC) – New Delhi, India



SARI/EI participation in IEX/SAARC Energy Centre Training in New Delhi, India

Mr. S.K.Ray of IRADe represented SARI/EI as a resource person in the “Training on Simulated Power Trading Market System Power Exchange” organized by IEX in association with the SAARC Energy Centre on December 21 – 22, 2017 in New Delhi, India. He presented “A case for South Asian Regional Power Exchange” in the session on “Investment for South Asia: Cross Border Electricity Trade in South Asia.”

STATUS OF DEMAND DRIVEN STUDIES

Task Force 1 Studies:

- **Study on Regional Investment Framework and Policy Guidelines for Promoting Investment in South Asian Countries and in Cross-border Power Projects in South Asian Region**
The consultation process has been completed. The study will provide a regional investment framework and policy guidelines for promoting investment in South Asian countries and particularly in CBET projects. The final report is under copy-editing and design.
- **Building Consensus and Developing a Whitepaper on South Asian Forum of Electricity Regulators (SAFER)**
The white paper has been completed and is under design and printing.

Task Force 2 Studies:

- **Assessment of the Trading Potential – CO₂ Emission Reduction and Economic Benefits**
The report on additional scope of work on CO₂ emission reduction and economic benefits has been completed. The process of combining the report on Assessment of Trading Potential covering the economic benefits and CO₂ emission reduction is under process.
- **Harmonization of Grid Codes, Operating Procedures and Standards to Facilitate/Promote CBET in South Asia**
The report has been completed and has been published jointly with SAARC Secretariat in Kathmandu, Nepal.

Task Force 3 Studies:

- **Study reports on Commercial Terms and conditions; Model PPA and TSA & Model for Power Exchange**
The study has been completed and will be released in January 2018.
- **Pilot Market/Mock Exercise of SARPEX (South Asian Regional Power Exchange)**
The main objective of this exercise is to explore the feasibility of a regional power exchange in South Asia; develop the draft market rules and design for the regional market; and build the capacity of the participating nations in working on an exchange platform. The draft design and market rules has been discussed and finalized with Task Force members and the Market Advisory Committee (MAC). Workshops in Bangladesh, Nepal and Bhutan have been conducted to present the initial findings along with sensitizing them with the concept.

Implementation of SARI/EI Task Force recommendations and Article of SAARC Framework Agreement on Energy Cooperation:

- **Developing the framework and guidelines for a non-discriminatory open access regime in transmission and grant of open access to initiate power trading and facilitate CBET in the South Asian countries**
The consultation process has been completed and the draft final report has been submitted by the consultant and is under copy-editing.

- **Developing a model framework for trading license regime and guidelines for grant of trading license to initiate/advance power trading in South Asian countries and facilitate CBET in the South Asian countries**
The consultation process has been completed and the draft final report has been submitted by the consultant and is under copy-editing.
- **Study on building consensus and developing and creation of regional technical institutional mechanism for coordination of transmission & system /operation planning South Asia**
Based on discussions with Power Grid Corporation of India Limited, the draft terms of reference has been prepared and shared with USAID for comments and suggestions.
- **Formulation of model set of electricity regulations for implementation of the SAARC Framework Agreement for Energy (Electricity) Cooperation (SFAEC)**
Bids are due February 2, 2018.
- **Developing BIMSTEC energy outlook**
The study is focused on developing an energy outlook for the BIMSTEC region and analyzing it for future scenario. The report has been completed and is under design and printing.

SARI/EI Analytical Studies:

- **Economic Benefits from Bangladesh-India CBET**
The executive summary and report on “Economic Benefits of Bangladesh - India Power Trade” for India and Bangladesh has been finalized. The report will be released in New Delhi, India on January 11, 2018 by Mr. Rajiv Kumar, Vice Chairman, NITI Aayog, who will also inaugurate the workshop.
- **Analyzing Regional (Bangladesh-Bhutan-India-Nepal) Electricity Trade**
The analytical study on “Analysing Regional (Bangladesh-Bhutan-India-Nepal) Electricity Trade” commenced in this quarter. Three TIMES models of Bangladesh, India and Nepal were integrated to assess the impacts of regional trade on each country.

ONGOING AND UPCOMING ACTIVITIES

- *5th Meeting of Task Force-3 and Workshop on SARPEX and Release of Task Force 3 Report on PPA/TSA*
Colombo, Sri Lanka, January 16 – 17, 2018
- *BIMSTEC Energy Outlook – 2030 and release of report jointly with BIMSTEC Secretariat*
Dhaka, Bangladesh, February 20, 2018
- *Release of report on India-Bangladesh Analytical Study*
Dhaka, Bangladesh, February 21, 2018
- *Think Tank Forum (TTF) Workshop*
Dhaka, Bangladesh, February 22, 2018
- *SARI/EI Project Steering Committee Meeting (PSC)*

Thimphu, Bhutan, March 8 – 9, 2018

- *SARI/EI to partner with SAARC Chamber of Commerce for the Energy Session in the 6th SAARC Business Leaders Conclave
Kathmandu, Nepal, March 16 – 18, 2018*
- *SARPEX Workshop
New Delhi, India, March/April 2018*
- *Dessimation meetings for SARPEX Mock Exercise
Dhaka, Bangladesh, March/April 2018*
- *Training on the Design, Management and Operation of a Power Trading Entity for Pakistan
Bangkok, Thailand, April 16 – 20, 2018*

ABOUT SARI/EI

The SARI/EI program, funded by the United States Agency for International Development (USAID), promotes integration of energy systems and enhances cross-border energy trade (CBET) among the South Asian countries by focusing on the following three development outcomes for overall socio-economic development of the region:

Harmonize Policy, Legal and Regulatory Issues

The key result of the Harmonization of Policy, Legal and Regulatory Issues component is to create the enabling systemic conditions for a sustainable market for investment and implementation of cross-border energy trade.

Advance Transmission System Interconnections

The key result of the Advancement of Transmission System Interconnections component is to create the enabling, systemic conditions for a sustainable market for investment and implementation of subregional bilateral transmission interconnections beginning with the eastern subregion of South Asia.

Establishment of South Asian Regional Electricity Markets

The key result of this component on Establishment of South Asian Regional Energy Market is to create the enabling and systemic conditions for a sustainable market for energy trading and exchange among the South Asian countries.

The overarching objective of the SARI/EI program is to develop a common template for technical and commercial aspects of power exchange among the South Asian countries. It intends to create the right enabling environment to support the establishment of a South Asian electricity market, gain consensus and support from the key decision makers and stakeholders in the South Asian region.

SARI/EI WEB PAGE

For current information on SARI/EI, please visit the web page: www.sari-energy.org.

BACKGROUND

Over the last two decades, South Asia has been one of the fastest growing regions in the world, with an average annual growth rate of 6% as measured by GDP per capita. Yet despite this impressive macroeconomic growth, the energy sector in the region has not been able to keep pace, and continues to experience chronic problems of supply shortage and poor quality of service. South Asia's energy security dilemma is one of the single energy development challenges of the 21st century critical to the economic future of almost 1.5 billion people. Given this dilemma, the only long-term solution is the sustained increase in regional energy cooperation among the South Asian countries.



USAID's South Asia Regional Initiative for Energy's (SARI/E) role over the past decade in advocating energy cooperation in South Asia has transitioned to the next phase of advancing regional energy integration and cross-border energy trade (CBET) in eight South Asian countries (Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka).

This new phase titled South Asia Regional Initiative for Energy Integration (SARI/EI) is designed to build upon USAID SARI/Energy's successful implementation in the past decade to move South Asian countries towards increased regional energy security. The program will address policy, legal, and regulatory issues related to energy in the region; promote transmission interconnections; and work towards establishing a regional market exchange for electricity.

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Bangladesh
Bhutan
India
Maldives
Nepal
Pakistan
Sri Lanka

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