

POWERING SOUTH ASIA ECONOMIC COOPERATION

POWER SUMMIT 2019

HELD AT

KATHMANDU ON 21 – 22 NOVEMBER, 2019

NEPAL (IPPAN)

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IMPORTANT INITIATIVES DURING LAST 15 YEARS

- ❑ **Tala (Bhutan) – Delhi Transmission System.**
- ❑ **India – Bhutan Agreement to develop 10,000 MW Hydro Projects in Bhutan.**
- ❑ **India – Bangladesh Agreement for supply of 250 MW, subsequently enhanced to 500 MW from India.**
- ❑ **Agreement to develop 500 MW Back-to-Back HVDC Interconnection between Behramara (BD) and Behrampur (India).**
- ❑ **Bangladesh – India Agreement to develop a Power Plant in Joint Venture 1320 MW in Bangladesh (BPDB-NTPC JV).**

IMPORTANT INITIATIVES DURING LAST 15 YEARS

- ❑ Bangladesh – India agreeing to constitute Power Secretary level. Bi-Partite Mechanism for cooperation and development - Joint Steering Committee/Joint Working Group , and for monitoring and resolution of power issues.**
- ❑ Bangladesh – India agreeing for further expansion of 500 MW HVDC System at Bheramara to 1000 MW and for supply for additional 500 MW.**
- ❑ India – Bangladesh agreement to supply additional 150 MW in Radial A.C. Mode from Tripura (India).**
- ❑ India agreeing to Bangladesh accessing Indian Power Market to purchase power on Competitive Bidding and using Indian Transmission System to carry power to Bangladesh.**

IMPORTANT INITIATIVES DURING LAST 15 YEARS

- ❑ **Investment Board of Nepal signing Power Development Agreements for two large Export Oriented Hydro Projects – Arun-3 and Upper Karnali (900 MW each).**
- ❑ **Power Trade Agreement between India and Nepal with provisions for mechanism of Joint Steering Committee, Joint Working Group and Joint Technical Team (on similar line as in case of Bangladesh).**
- ❑ **Cooperation Agreement on Energy signed in Kathmandu, in SAARC Summit, in November, 2014 (Only Agreement out of many which had been planned).**

IMPORTANT INITIATIVES DURING LAST 15 YEARS

- ❑ **Bangladesh – India decide in principle for synchronous operation of Grid.**
- ❑ **Commissioning of 400 KV Double Circuit Transmission System between India and Nepal (Dhalkebar – Muzaffarpur).**
- ❑ **Strengthening and upgradation of a number of existing 132 KV Interconnections between India and Nepal.**
- ❑ **Decision of Govt. of India to allow a dedicated 1600 MW Power Project to be set up in the State of Jharkhand with dedicated Transmission System for supply of power to Bangladesh and signing of PPA by BPDB.**

IMPORTANT INITIATIVES DURING LAST 15 YEARS

- ❑ **Comprehensive Guidelines for Cross Border Power Trade issued by Govt. of India, in 2016. GOI amended these Guidelines in 2018 to address the concerns raised by neighbouring countries. These would enable power from one country to another through Indian Grid. Power trade through Exchange also provided in the Guidelines.**
- ❑ **Establishment of Transmission Interconnection between India and Myanmar, also putting in place the Joint Steering Committee system.**
- ❑ **Sri Lanka and India also sign Agreement on Joint Steering Committee mechanism to further enhance cooperation in the power sector.**

IMPORTANT INITIATIVES DURING LAST 15 YEARS

- ❑ **Champion Process with Membership of Distinguished individuals- World Bank Initiative.**
- ❑ **Institutionalising the South Asia Power Secretaries Round Table - World Bank Initiative.**
- ❑ **Bangladesh and India are working on procedures and other details of implementing Synchronous Operations of the Grid.**
- ❑ **The Joint Technical Team (JTT) is working on a large Transmission Infrastructure covering North Eastern States of India, Bangladesh and Eastern Grid of India. This will open up opportunity for upscaling power trade.**

OUTCOMES OF VARIOUS INITIATIVES

India – Bhutan

- ❑ Tala – Delhi Transmission System already operational; with Tala Project (1020 MW) commissioned in 2006-07.
- ❑ Dagacchu Project 126 MW J.V. with Tata Power Commissioned in March 15, 2015.
- ❑ Mangdechhu Project of 720 MW has been commissioned. PPA with India has been finalized.
- ❑ Punatsangchhu I of 1200 MW and Punatsangchhu II of 1020 MW are at advanced stage of construction due to be operational by December, 2022 and Punatsangchhu II by December, 2019.

OUTCOMES OF VARIOUS INITIATIVES

India – Bhutan

- ❑ **Kholongchhu Project 600 MW, J.V. with SJVNL (Govt. of India Undertaking) is under construction.**
- ❑ **Punakha Project (180 MW) J.V. with SJVNL, Wangchu Project (570 MW), J.V. with SJVNL and Chamkharchhu-I Project (770 MW) J.V. with NHPC are at various stages of development.**
- ❑ **Govt. of India has agreed to the implementation of Storage Project Sankosh (2585 MW) under Inter-Governmental Model (IG Model).**

OUTCOMES OF VARIOUS INITIATIVES

India – Bangladesh

- ❑ **First 500 MW HVDC at Bheramara (Bangladesh) with interconnection at Behrampur in India was commissioned in October 2013, in a record time of less than three years from concept level to commissioning.**
- ❑ **Second 500 MW HVDC at Bheramara was commissioned in 2016. Synchronous Operation at 132 KV between Surajmaninagar, Tripura (India) and Comila (Bangladesh) in 2016, with over 150 MW of supply.**
- ❑ **Bangladesh – India Friendship Power Company (NTPC-BPDB) J.V. is setting up 1320 MW Power Project at Rampal (Khulna), Bangladesh, commissioning in June, 2021.**

OUTCOMES OF VARIOUS INITIATIVES

India – Bangladesh

- ❑ **Adani Group is setting up 1600 MW Project in Jharkhand with dedicated Transmission System to Bangladesh. Commissioning expected in December, 2021 (may be earlier).**
- ❑ **Bangladesh has finalized Draft Agreement on PPA with Upper Karnali Project in Nepal for supply of 500 MW (First case of implementation of the India's revised Guidelines on Power Trade).**
- ❑ **About 1200 MW of power supply from India to Bangladesh is happening, will rise to over 2500 MW by December, 2021.**

OUTCOMES OF VARIOUS INITIATIVES

India – Nepal

- ❑ **400 KV Double Circuit Dhalkebar (Nepal) - Muzaffarpur (India) Transmission Interconnection has facilitated enhancing power supply to Nepal from India to about 700 MW. By the end of 2019, this may increase to 900 MW including 200MW through other interconnections. When fully operational and completion of several transmission and sub transmission projects the 400 KV Interconnection will have potential to transfer 1000 MW.**
- ❑ **In a recent bilateral Joint Steering Committee meeting it has been agreed by both the countries to move forward on yet another Cross Border Transmission Interconnection Bhutawal (Nepal) - Gorakhpur (India), Indian portion to be implemented by JV of NEA and Power Grid of India.**

OUTCOMES OF VARIOUS INITIATIVES

India – Nepal

- ❑ **Nepal and Bangladesh have set up bi lateral JSC and JWG co chaired by Power Secretaries on similar line as with India for cooperation in power sector. A few meetings have already happened and areas of cooperation have been identified.**
- ❑ **The two projects Arun 3 and Upper Karnali, which were awarded to the developers on the basis of International Competitive Bidding, have started construction. In next about five years these will enhance cross border trade by about 1500 MW.**

OUTCOMES OF VARIOUS INITIATIVES

India – Sri Lanka

- ❑ In a recent meeting of JSC/ JWG, Sri Lanka has shown deep interest for Cross Border Transmission Interconnection. Accordingly, Joint Technical Team has been assigned the role of evaluating various options and preparing Project Report. It is expected that the Project Report would be finalized by the end of November, 2019. This interconnection would pave the way for power trade not only between India and Sri Lanka, but also, taking advantage of the amended Cross Border Power Trade Guidelines, trading of power from Nepal, and Bhutan to Sri Lanka through India.

OUTCOMES OF VARIOUS INITIATIVES

India – Myanmar

- ❑ **A small Cross Border Interconnection between India and Myanmar has been established between Moreh (Manipur), India to Tamu (Myanmar), and about 3 MW is being supplied.**
- ❑ **Joint Technical Team of the Joint Steering Committee is studying the future requirements of Cross Border Interconnections.**

OUTCOMES OF VARIOUS INITIATIVES

India – Pakistan

- ❑ **Government of India, while answering a question in the Parliament, confirmed about a 500 MW power supply through an interconnection between Amritsar (India) and Lahore (Pakistan). Thus, an in-principle acceptance exists, but it is waiting for further finalization between the two countries.**

JOINT STUDY ON FUTURE TRANSMISSION INTERCONNECTIONS

Cross-border power transfer

all data in MW

Interconnected Nations	Under Operation	Under Construction	Under Planning	Perspective Plan	Total
India-Bangladesh	1200	340 ²	1000 ²	-	2500 ²
India-Bhutan	1350	2900 ²	-	23500	23500
India-Nepal	600	400 ²	5000 ²	25000	25000
India-Sri Lanka	-	-	1000 ²	-	1000
India-Myanmar	2-3	-	-	-	2-3
India-Pakistan	-	-	-	500	500
Total	~3150	3640	7000	49000	~52500

<p>1: 3000MW HVDC Back-to-Back at Comilla. Additionally, M/s Adani is establishing a 3600MW generation plant in Indian port Bedla, Jharkhand for dedicated supply to Bangladesh (in radial mode).</p>	<p>4: Kishor (India) – Parbatipur (Bangladesh) – Barmer (India) 765 kV D/c line</p>
<p>2: Pambongchhu (2200MW), Pambongchhu-II (3000MW) & Mangdechhu (7200MW) HEPs through: - Pambongchhu (Bhutan) – Alipurduar (India) 400kV D/c (Quad Mode) line - Jigmeeling (Bhutan) – Alipurduar (India) 400kV D/c (Quad Mode) line</p>	<p>3: - New Subal (Nepal) – Gorakhpur New (India) 400kV D/c (Quad Mode) line - 2nd Musaffarpur (India) – Dhankabari (Nepal) 400kV D/c (Quad Mode) line - Lumki (Nepal) – Barilly (India) 400kV D/c (Quad Mode) line - New Dulebi (Nepal) – New Ramgarh (India) 400kV D/c (Quad Mode) line</p>
<p>3: 400kV operation of Musaffarpur-Dhankabari (presently operated at 220kV)</p>	<p>5: New Madurai – New Habarana 3000MW HVDC or HVAC line</p>

² Once synchronous system is agreed there may be many more interconnections of much higher capacity.

HOW DO WE ACCELERATE THE PACE OF REGIONAL POWER MARKET?

- ❑ **Focus on BBINM (Bangladesh, Bhutan, India, Nepal, Myanmar) and Sri Lanka may help to move the process faster as has been the experience in last few years. Taking advantage of the Institutional Framework, viz. Joint Steering Committee Mechanism, we could plan to upscale the level of Cross Border Trade.**
- ❑ **CASA Project is in progress. Once India – Pakistan issue of interconnection is resolved, CASA and BBINMS could emerge as one integrated grid.**
- ❑ **Technically synchronous operations exist among India, Bhutan, and Nepal. In case of Bangladesh also this has been agreed in principle. The Technical Teams could finalize the details and move forward. Synchronous operations among these countries would by itself raise the level of power exchange.**

HOW DO WE ACCELERATE THE PACE OF REGIONAL POWER MARKET?

- ❑ **Strengthening of transmission infrastructure to keep pace with the level of transactions, to match with 50,000 MW of Cross Border transfer of power in the long run.**
- ❑ **Sri Lanka – India Transmission Interconnection could be taken up on priority.**
- ❑ **Similarly, the 765 KV Transmission System in the North Eastern States of India, crossing Bangladesh to connect Eastern Grid of India should preferably be taken up on priority.**
- ❑ **Developments of Hydro Projects in Bhutan and Nepal could be a good back up for massive expansion of Solar Power capacity in India. All these countries could benefit from each other.**

HOW DO WE ACCELERATE THE PACE OF REGIONAL POWER MARKET?

- ❑ While Nepal could consider streamlining various procedures for clearances, decision making, and facilitation for project development, Bhutan could consider different institutional and financing models rather than excessive emphasis on Inter-Governmental Model.
- ❑ With price of Solar Power and Wind Power becoming highly competitive, high expectation on tariff from hydro projects appear misplaced. The approach needs to change to long term lending, back loading of tariff, and doing away with the practice of free power to the Government. Unless these change marketing for hydro power would be a challenge.
- ❑ Multilateral Agencies could consider collaborating with each other to finance hydro projects and cross border transmission infrastructure, with long term lending, and with such set of terms that the projects become commercially viable.

HOW DO WE ACCELERATE THE PACE OF REGIONAL POWER MARKET?

- ❑ **Intra-Country Transmission System and Distribution Infrastructure should keep getting strengthened, so as to derive the benefit of power trade and maximize access to electricity for people at large and for business and industry to grow.**
- ❑ **Regulatory Framework and Grid Management have to be aligned on a regional basis. A beginning has been made through the Power Secretaries Round Table, facilitated by the World Bank in which Regulatory Commissions are being invited for facilitating interactions and collaborations among them to achieve at the required alignments of the Regulatory codes, processes and procedures.**

THANK YOU