

ELECTRICITY MARKET FOR CBET

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Presentation Outline

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 - *Demand*
 - *Cross Border Interconnections*
 - *Cross Border Electricity Trade*
- Legal and Policy Framework
- Reform in Power Sector
- SAREM and Opportunities
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Present Status...

Electricity Generation (as of 2023/07/15)

**IPPs (Hydro)
1477 MW**

**IPP (Solar – 4 nos.) – 61.9 MW
IPP (Sugar Mill) – 6 MW
Total – 67.9 MW**

**Total Installed
Capacity
2,684 MW**

**NEA SUBSIDIARY
478 MW**

NEA
Hydro - 583 MW
Solar - 25 MW
Thermal - 53 MW

...Present Status...

System Highlights (As of 2023/07/15)

S. No.	Particulars	Power/Energy
1	Total Installed Capacity	2684 MW
2	Annual Energy Generation	12642 GWh
1	Annual Peak Demand (1 st June 2023)	1986 MW
2	Annual Energy Demand	11547 GWh
3	Total Import in the year	1854 GWh
4	Total Export in the year	1333 GWh

Since 2023/07/16, 200 MW capacity added in the System

...Present Status...

Cross Border Electricity Trade

According to Cross Border Guideline, 2018 of India Cross Border Power Trading has been happening:

- **Day Ahead Market of IEX:** NEA has been **importing power since May 1, 2021.**

After getting approval from DA, NEA started to export power from **Hydro Projects (39 MW) since November 03, 2021. This export volume has been reached to 532 MW in October 2023.**

- **Mid Term Agreement:** **NEA has also started to export 110 MW of power recently.**
- **NEA has also started to participate in real time market of India with the export of 44 MW of power from 1st October 2023.**
- **Tripartite Agreement:** A tripartite agreement between NEA (Nepal), NVVN (India) and BPDP (Bangladesh) for sell of 40 MW power from Nepal to Bangladesh via Indian Territory has been prepared and it is at final stage of implementation. It will be an important move towards regional power integration in South Asia when Nepal starts export power to Bangladesh.

...Present Status...

Existing Nepal-India Cross Border Interconnections (132 kV and above)

S. No.	Transmission Interconnection	Voltage (kV)	Transmission Capacity (MW)
1	Kataiya-Kusaha	132	140
2	Ramnagar-Gandak	132	40
3	Tanakpur-Mahendranagar	132	70
4	Kataiya-Kusaha II	132	160
5	Raxaul-Parwanipur	132	80
6	Dhalkebar-Mujaffarpur	400	1000
	Total		1490

...Present Status...

Proposed Nepal – India Cross Border Interconnection

S. No.	Transmission Interconnection	Voltage Level (kV)	Time Frame	Transmission Capacity (MW)
1	Kohalpur - Nanpara	132 (D/C)	Commissioned	NEA-
2	Mainhiya – New Nautanwa	132 (D/C)	Commissioned	NEA-
4	Dhalkebar – Sitamarhi by SAPDC for Arun-3	400 (D/CQuad)	2023	2500
5	New Butwal – Gorakhpur by JV of NEA and PGCIL, India	400 (D/C Quad)	2025/26	2500
6	Inaruwa – Purnea (New)	400 (D/C Quad)	2026/27	2500
7	Lumki (Dododhara) - Bareilly	400 (D/C Quad)	2027/28	2500
8	Kohalpur - Lucknow	400 (D/C Quad)	2029/30	Nepal-India Integrated Master Plan
9	Attaria - Bareilly	400 (D/C Quad)		

Legal and Policy Framework

Legislation	Main Provision	Remarks
NEA Act, 1984	Clause-20. (d): NEA allowed to sell electricity to the foreign countries or to purchase electricity from the foreign countries.	2020/02/28: MoEWRI appointed NEA as the authority to coordinate with DA, India on – issues for planning, grid operations and electricity transactions. 2020/07/20: NEA was given prior approval on all kind of power trading with India and Bangladesh.

Legal and Policy Framework

Legislation	Main Provision
Electricity Act, 1992	Clause-22: (1) The licensee desiring to export electricity generated on its own to the foreign country may do so by entering into an agreement into an agreement with Government of Nepal on such matter.
Electricity Regulatory Commission Act, 2017	There is no provision related to cross border electricity trade in the Act. However, the Act foresees Wholesale Electricity Market . For this, through the provision in clause. 13.1.(b), it has entrusted the Electricity Regulatory Commission to determine rate of sale and purchase of electricity and required procedures .

Legal and Policy Framework

Legislation	Main Provision
Electricity Bill, 2023 (Clause 34)	<p>Electricity Trade: Trading and export/import of electricity is allowed by a trading-licensee. Following provisions are made for electricity trade:</p> <ul style="list-style-type: none">• Trading-licensee can partially or fully purchase the electricity generated by generation-licensee,• Trading-licensees can purchase and sell electricity among them,• Trading-licensee can sell purchased electricity partially or wholesale, and• Trading-licensee can enter into cross-border trading of electricity.

Legal and Policy Framework

Legislation	Main Provision
Electricity Bill, 2023 (Clause 35)	<p>Cross-Border Electricity Trade: Trading-licensee shall have to get an approval for cross-border electricity trading from the ministry.</p> <p>However, no such additional approval is necessary for those generation-licensee which are granted permission for cross-border trade in the Generation License.</p> <p>The ministry may grant approval for cross border electricity trading based on the necessity and appropriateness.</p>

Power Sector Reform

- Electricity Act, 1992 opened the doors to some reforms like allowing entry of the private sector into the electricity sector and providing for a separate entity for consumer tariff determination.
- Rastriya Prasaran Grid Company (Transmission Company) and Vidyut Utpadan Company (Generation Company) were established in 2015 and 2016 respectively by the GoN as to-be successors of NEA's transmission and generation businesses respectively. However, due to the lack of clear legal provisions, the purpose of forming these companies has not been achieved so far.
- To make electricity market competitive, Electricity Regulatory Commission was established in 2019.
- GoN has been continuously making effort to bring Electricity Bill since 2008. Although the electricity bill has been tabled to the parliament many times, it has not been passed.
- New Electricity Bill was tabled to the parliament again in 13th September 2023.

Power Sector Reform

- Proposed Electricity Bill, 2023 has provision the following reform activities.
 - Introducing competition in development and operation of electricity projects
 - Unbundling of NEA
 - Recognising power trade and electricity supply services as licensed activities
 - open access to transmission infrastructures
 - competition in wholesale and retail electricity markets
 - Restructuring of a distribution utility into smaller utilities
 - Renewable energy integration

SAREM AND OPPORTUNITIES

- More than dozens of cross border interconnections are constructed and are operational.
- More high voltage cross border interconnections are planned and studied.
- Bilateral mechanism already established and are well functional to deal with cross border electricity trade by the two countries.
- Gol has in many occasions and through Policy documents has clearly shown willingness to import/export electricity neighboring countries.
- Nepal has already participated in Indian Exchange Market (IEX) for both import and export of electricity. Same is the case with Bhutan and Bangladesh.
- Opportunity to create South Asia Regional Electricity Market (SAREM).

SAREM AND OPPORTUNITIES

- Nepal has planned to develop more than 25000 MW of electricity by 2035 and export 15000 MW of electricity to India and Bangladesh.
- Such an ambitious target can be achieved only if bilateral electricity trade is extended to sub-regional and regional levels.
- Electricity demand and its characteristics in Indian and Bangladesh power market and electricity production from hydropower projects in Nepal are complementary in nature both in terms of daily and seasonal demand and supply scenarios.
- Hydropower as a clean and green energy sources will help India and Bangladesh to meet their international commitments on achieving climate change mitigation targets.
- Regional electricity market will create a favorable environment for the development of large hydropower projects of Nepal. Joint venture entities from Nepal, India and Bangladesh can collaborate for the development of such large project as a regional project.
- South Asian Regional Electricity Market will be beneficial for all the countries in the region to meet the significant increase in electricity demand due to potential increase in access, economic growth and increase in per capita income.

CONCLUSION

- India is a central hub for regional power trade in South Asia and can play the important role to create South Asia Regional Electricity Market.
- In South Asia, only India has a decentralized wholesale electricity market with stable and meaningful regulatory frameworks. Other countries in the region, need to follow and learn from India to create their domestic electricity market and reform in power sector.
- From Nepal's perspective, the Electricity Bill to be enacted as soon as possible to start reform initiatives in power sector of Nepal. Many reform initiatives rest on this bill.
- Regional Framework Agreement or MoU is needed to create any regional electricity market. The success story of regional electricity market in other region also proved it.
- SAARC Framework Agreement for Energy Cooperation (Electricity) signed in 2014 and BIMSTEC MoU on Grid Interconnection signed in 2018 for regional cooperation in energy sector in South Asia. These Agreement/MoU recognize the need to promote regional power trade.

THANK YOU