

# **Cross Border Power Exchange between Nepal and India**

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# Outline of Presentation

- **Introduction**
- **Types of Cross Border Power Exchange between Nepal and India**
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- **Existing Cross Border Facilities**
- **Proposed Cross Border Transmission Lines**
- **Major issues in Cross Border Power Trading**
- **Regional Power Grid**
- **Conclusion**

# Introduction

- **Power Exchange Starting from 1960s**
- **Electrification of Villages in Border Areas**
- **Import from India**
- **Export to India**
- **Present Power Crisis in Nepal**
- **Potential for Power Trade between Nepal and India**
  - **Huge Hydropower Potential in Nepal**
  - **Power Deficit in India**
- **Cross Border Transmission Lines Facilitate Power Trade between Nepal and India**
- **Need for Regional Power Grid**

# River Treaties

- **Koshi River Treaty**
  - Signed on April 25, 1954 and Amended on Dec 19, 1966
  - Power Import from Kataiya P/S for Electrification of Border Areas.
- **Gandak River Treaty**
  - Signed on Dec 4, 1959 and Amended on April 30, 1964
  - 15 MW Surajpura Hydropower Plant
  - Gandak – Ramnagar 132 kV Transmission Line
- **Mahakali River Treaty**
  - 70,000 MWh of Free Energy from Tanakpur P/S
  - Maximum 16 MW
  - Monthly Quota for Power and Energy
  - Power Import from Tanakpur at 132 kV Level

# Power Exchange

- **Power Exchange Agreement Commenced in 1972 with an Exchange of 5MW**
- **Level of Exchange Increased to 50 MW**
- **Agreed in Principle for 150 MW Power Exchange in 6<sup>th</sup> PEC Meeting in 2001 but not yet implemented**
- **Indo – Nepal Power Exchange Committee (PEC) Setup in 1991 to Regulate Power Exchange**
- **Power Exchange Price of INR 4.10 at 33 kV Level. Escalation of 5.5% per annum. Power Exchange Price at 11 kV and 132 kV are 7.5% Additional and 7.5% Rebate on Price at 33 kV Level Respectively**
- **9th Power Exchange Committee Meeting held in New Delhi in 2009 and 10th Meeting to be Convened in Kathmandu**

# Power Trading

- **Power Trading Agreement between India and Nepal on Feb 17, 1966**
- **Power Trading through Nodal Agency PTC India**
- **Power Trading Possible Through Central Grid Point Only**
- **Tanakpur only Center Grid Point at Present**
- **Maximum 20 MW Power Trading at Tanakpur**
- **Unscheduled Interchange (UI) at Tanakpur**

# Power Exchange Facilities between Nepal and India

- **At 132 kV Level**
  - Mahendranagar – Tanakpur
  - Duhabi – Kataiya
  - Gandak – Ramnagar
  
- **At 33 kV Level**
  - Siraha – Jaynagar (3 MW)
  - Birpur – Kataiya (10 MW)
  - Jaleswar - Sursand (6MW)
  - Birgunj – Raxaul (10 MW)
  - Bhairahwa – Nautanawa (5MW)
  - Koilabas – Lamhi (Not in Use)
  - Nepalgunj – Nanpara (8 MW)
  - Dhangadhi – Paliya
  - Mahendranagar – Lohiahed
  - Chandragadhi - Thakurgunj

# Power Exchange Facilities between Nepal and India

- **At 11 kV Level**
  - Gaur – India (Not in use)
  - Malangawa – Sonabarsha (Not in use)
  - Gandak – Balmikinagar
  - Biratnagar - Jogbani
  - Jhulaghat – Pithoragarh
  - Lali – Kandalchhina
  - Jauljibi – Dharchula
  - Huti - Dharchula

# Cross Border Transmission Lines

- **Initially Proposed Lines**
  - Dhalkebar – Sitamarhi 132 kV Transmission Line
  - Butwal – Anandanagar 132 kV Transmission Line
  - Birgunj – Motihari 132 kV Transmission Line
  - Anarmani – Siligurhi 132 kV Transmission Line
- **Revised Proposals**
  - Dhalkebar – Mujaffarpur 400 kV Transmission Line
  - Duhabi – Purnea 400 kV Transmission Line
  - Butwal – Gorakhpur 400 kV Transmission Line



# **Dhalkebar – Muzaffarpur 400 kV Transmission Lines**

- **First Cross Border Line to be Constructed between Nepal and India**
- **To be Operated in Synchronous Mode**
- **Length – 140 km, 45 km in Nepal and 95 km in India**
- **To be Constructed in Commercial Modality**
- **Power Transmission Commission Nepal Pvt. Ltd (PTCN) a JV Company of NEA and IL&FS with Share Holding of PGCIL in Nepal owns Nepal Portion**
- **Cross Border Power Transmission Company Pvt. Ltd. (CBPTC) a JV Company of IL&FS, Power Grid and SJVNL with Share Holding of NEA in India owns India Portion**

# **Dhalkebar – Muzaffarpur 400 kV Transmission Lines**

- **Detailed Feasibility Study done by Power Grid Corporation of India (PGCIL)**
- **Nepal Portion Costing US\$ 20 Million to be Partially Financed from US\$ 13.2 Million Line of Credit from Government of India and Commercial Loan**
- **India Portion Costing US\$ 32 Million to be Financed from Commercial Loan**
- **Asian Development Bank Considering Due Diligence Study for Political Risk Guarantee for the Project**
- **Expected to be Completed by 2013/2014**

# Major Issues in Dhalkebar – Muzzafarpur 400 kV Transmission Line

- **No Financial Closing Yet for the Project**
- **Power Sales Agreement (PSA) between NEA and PTC (150 MW for 25 Years)**
- **Implementation and Transmission Service Agreement (ITSA) between NEA and JV Companies**
- **Back to Back Transmission Service Agreement Between NEA and IPPs in Nepal**
- **Political Risk Guarantee (PRG). ADB Intending to Undertake Due Diligence Study**
- **Power System Synchronization and Power Flow**

# Regional Power Grid

- **Need for SAARC Regional Power Grid**
- **Cross Border Power Trade and Regional Power Grid Helps**
  - **To Utilize Natural Resources for Regional Development**
    - **Nepal & Bhutan have High Hydropower Potential**
    - **India has Huge Coal Reserves**
    - **Bangladesh has Large Gas Reserves**
  - **To Improve System Load Factor Utilizing Load Diversity**
  - **To Enhance Efficiency and Reliability of Power Supply**
  - **To Lower Reserve Margin and To Benefit from Economies of Scale in Power Generation**
  - **To Reduce Carbon Growth and Protect the Environment**
- **World Bank, ADB and USAID Willing to Promote Regional Power Grid in South Asia**

# Conclusion

- **Nepal In spite of Huge Hydropower Potential is Facing Acute Power Crisis at Present**
- **Dhalkebar – Muzaffarpur 400 kV Cross Border Transmission Line will Help to Mitigate Present Power Crisis in Nepal by Importing Power from India Initially and Facilitate Export to India Later When Nepal has Surplus Power**
- **Additional Cross Border Transmission Lines Required Between Nepal and India for Utilization of Anticipated Power Surplus in Nepal in the Years Ahead**
- **Need for Regional Cooperation for Regional Power Grid in South Asia**
- **Most Important Thing is the Political Will and Sincere Commitment from the Governments of the Respective Countries in the Region**

**Thanks  
For  
Your Attention**