

*[Namaste - Kuju Janpo la - Assalam o alaikum - Suba Udesanak- Good Morning ]*

# Regional Experience in the Energy Sector Restructuring and Reform

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# Outline of Presentation:

- **Energy and Electricity Scenario Nepal**
- **History of Power Sector Nepal**
- **The Dark Decade [Load Shedding]**
- **Reforming Institutions[Unbundling in the Nepal's Approach]**
- **Strengthening the Regulatory Framework**
- **Cross-Border Trade- From Isolation to Integration**
- **Achievements So Far**
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- **The Roadmap Forward**
- **A Personal Reflection**
- **Regional Experience in Energy Sector Restructuring and Reform**
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# Energy Scenario:

- **Total Primary Energy** :~711,750 (TJ) or 197,700 (GWh)\* [WECS, 2022/23 Report)
- **Biomass**: ~64%,
- **Petrol**: ~12%,
- **Coal**: ~5%,
- **Electricity**: ~4%
- **Electricity Generation Mix (Nearly 100% Renewable)**
- Nepal's grid electricity is dominated by a single renewable source:
  - Hydropower:~99%
  - Solar :~1% (This is a rapidly growing segment)

# Electricity Scenario:

- **Installed capacity: 3,878 MW, 2025** [ Before reform about **300 MW, 1992**]
- **Annual Energy in Grid : more than 15,600 GWh**
- **Peak: 2,901 MW**
- **Annual internal energy consumptions: 11,319 GWh**
- **Per Capita energy consumption: 465 kWh**
- **Trade with India: about 2,380 GWh export and about 1,712GWh**  
{now export can be done 1130 MW}
- **Trade with Bangladesh: 40 MW**

[source: NEA Annual Report, 2025 and Load Dispatch Center]

# Power Sector in Nepal Before Reform:

- **Early Beginnings (1911–1950s)**
- **1911:** Nepal's first hydropower plant, **Pharpi (500 kW)**,
- **1936: Sundarjal Hydropower Plant (640 kW)** built for supplying power to Kathmandu.
- These early projects were primarily built for the **Palaces, Administrative offices, and limited urban supply**, not for wider public consumption.
- Operations were under **His Majesty's Government (HMG), Public Works Department**, with no separate electricity institution.

# Formation of Institutional Entities (1960s–1970s):

## **a) Electricity Department (ED) – 1960**

Formed under the Ministry of Water Resources. Managed generation and distribution in urban centers.

## **b) Nepal Electricity Corporation (NEC) – 1962**

A semi-autonomous body. Focused on electricity supply in Kathmandu Valley and a few other towns.

## **c) Small Power Development Board (SPDB) – 1966**

Mandated to develop and promote **small hydropower plants (<1 MW)**, mainly in rural and hill areas.

## **d) Rural Electrification initiatives**

Often implemented through **local government, donor support (India, China, USSR, and UMN projects)**. **UMN (United Mission to Nepal)** played a huge role by pioneering community-based hydropower.

# Key Challenges Pre-NEA:

- **Fragmentation:** Generation, transmission, and distribution were split among multiple bodies (ED, NEC, SHPDB).
- **Poor coordination:** Lack of unified planning and investment strategy.
- **Financial weakness:** Tariff system was politically controlled, leaving utilities unable to recover costs.
- **Limited rural access:** Electrification was urban-focused; rural electrification was ad hoc.
- **Technical issues:** Frequent power cuts, poor maintenance, and system losses .

# Establishment of NEA (1985):

- In **August 1985**, Government of Nepal **merged all electricity-related entities**:
  - Electricity Department (ED)
  - Nepal Electricity Corporation (NEC)
  - Small Power Development Board (SPDB)
  - And other smaller units
- Created a single authority: **Nepal Electricity Authority (NEA)**, through the NEA Act, 1984.
- Goal: **Integrated development, generation, transmission, and distribution** of electricity across Nepal.



# Companies and Institutions Established/Run by UMN:

- **Butwal Technical Institute (BTI) – 1963**
- **Butwal Power Company (BPC) – 1966**
- **Nepal Hydro & Electric Ltd. (NHE) – 1966/early 1970s**
  - Started as the Butwal Electro-Mechanical Workshop
  - Hydro Consult Engineering Ltd. (HCE); Originated from the engineering department of BPC (which itself was UMN-created).
- **Hydro Lab Pvt. Ltd.**
- **Tinau Hydropower Plant (1 MW, 1978) –UMN created the ecosystem of technical manpower, institutions, and companies that still drive Nepal’s hydropower sector today.**

# The Dark Decade[Load Shedding]:

- **Privet Investment in Power Sector** : Hydropower Development Policy and Acts 1992. Electricity development Center -1993 and ETFC established-2018.
- **Load shedding**: By 2008, Facing about 16 hours of load shedding a day. Most painful period in Nepal's energy history. Sometimes, crisis forces transformation.
- **Plan**: National Energy Crisis Prevention and Electricity Development Decade Plan in 2017.
- **Remarkable happened**: The blackouts ended; Nepal moved from chronic deficit to seasonal surplus.

# Reforming Institutions :

- **Nepal needed its own model.** A model that fit our context, respected our institutions, and avoided unnecessary conflict.
- **First Phase: Internal unbundling practiced within NEA.**
- **Second phase.** Instead of breaking NEA apart by force, We created a **new Grid Company, Regulatory Commission and Trading Company.** Found a path that worked for us.
- **Strengthening the Regulatory Framework.**

# Cross-Border Trade: From Isolation to Integration

- **Cross-Border Trade.**
- **Power Trade Agreement [2014]**
- **For the first time, Nepali electricity is flowing to India, to Bangladesh.**
- **Cross-Border Line**
  - Dhalkebar-Muzaffarpur, [in operation]
  - Butwal-Gorakhpur,[under construction]
  - Dododhara-bareilly, Inarwa-Purnia, [pland for construction]

# Achievements So Far:

- **From Chronic deficit to seasonal surplus**
- **Billions of dollars in private investment,**
- **Created specialized institutions**
- **Export electricity,**

# Challenges We Must Confront:

- **Transmission bottlenecks**
- **Our supply mix is dominated by run-of-river hydropower.**
- **Tariff policy is politically sensitive.**
- **The financial health of NEA remains fragile.**
- **regional politics and regulatory harmonization**

# The Roadmap Forward :

- **First**, strengthen our transmission backbone.
- **Second**, diversify our supply mix.
- **Third**, deepen regulation and governance. Create space for open access and competition.
- **Fourth**, expand regional trade.

# A Personal Reflection and Conclusion :

- We created a Nepali solution for a Nepali problem. It worked — without disruption, without conflict, and without shock.
- Nepal will not only keep its own lights on — it will shine a light for the region.



# Regional Experience in Energy Sector Restructuring and Reform:

- India
- Bangladesh
- Bhutan
- Nepal
- Pakistan
- Sri Lanka
- Maldives
- Afghanistan

# What do we learn when we put all these stories together?

- **Strong laws and independent regulators must come first.**
- **Distribution is the weakest link in every country — if it fails, the sector cannot be sustainable.**
- **Bilateral and trilateral cooperation works better than waiting for large regional agreements.**
- **Dependence on a single fuel, a single market, or a single partner creates risks.**
- **Transmission and trading rules must go hand in hand to unlock cross-border trade.**

*THANK YOU*  
*and*  
*NAMASTE*