“Energy”/ “Electricity”

Nepal's real energy picture

Nepal's total energy consumption:

- **Traditional Biomass (~64%)**
- **Petroleum & Coal (~26%)**
- **Electricity & Renewables (~10%)**

When we talk about "energy policy" in Nepal, we're really talking about electricity policy.

The 64% that powers most households for cooking, heating barely enters the conversation.

Until we treat energy holistically, our policies will keep missing how Nepalis actually use energy.

Water Diplomacy

Not just energy, it's about valuable 'water'!

China	Nepal	India

Downstream Benefits:

Budhi Gandaki
1,200 MW

263m dam, Rs 374B
Risk: 100% Nepal

~650 cumecs to India in dry season, only from Budhigandaki

Karnali Chisapani
10,800 MW

Irrigation: 3.2M ha in India vs 191K ha in Nepal

Benefit Ratio: 17:1 for irrigation

Pancheshwar
6,480 MW

Irrigation for 130,000 ha in Nepal and 240,000 ha in India. Electricity-equal share.

Benefit-sharing frameworks, not volume-based treaties, are the way forward.

Nepal should develop a national '**benefit-sharing**' framework for all transboundary projects. No more negotiation and planning on a project-by-project basis.

NEPAL EXPERTS NETWORK

30,000

MW in a decade. But why?

~400 kWh
Per capita consumption
(one-fifth of global average)

11,500 MW
Already under PPA

147 + 265 HPPs
Survey license + production license

~3,400 MW
Currently installed

- ? Do we need 30,000 MW, or do we need to consume what we have more productively?
- ? Is this target based on economic analysis or political ambition?
- ? What is the impact on rivers of all these run-of-river projects?
- ? Energy sovereignty. Energy security. Energy efficiency. All three matter, why are we only talking about the first?

"Should we be driven by politically glamorous numbers or by public benefit in real sense?"

What to do with Surplus, instead of Export ?

Green Fertilizer

Surplus hydro → green hydrogen → ammonia → urea. Nepal imports all chemical fertilizer. Guaranteed domestic demand.

Green Hydrogen

Convert surplus to storable hydrogen fuel. But electrolyzer infrastructure is years away.

Data Centers

Cheap power attracts compute. **But** needs year-round reliability and connectivity.

Bitcoin Mining

Converts electricity to tradeable asset. **But** price volatility, no regulatory framework, no domestic value.

Right now, Nepal has surplus not because we generate too much, but because we consume too little productively.

*These options are on top of other domestic industries that could utilize the surplus.

NEPAL EXPERTS NETWORK

Monsoon: Surplus
Winter: Deficit

Same country. Two energy realities.

The solution is storage. But what kind?

Pumped Storage Hydro

→ 2,800+ identified sites

→ 50 TWh potential

→ Ideal for seasonal storage

→ Stores monsoon → winter

→ Expensive, long timelines

→ Financial viability uncertain

Best for: Weeks to months

Battery Storage (BESS)

→ 90% round-trip efficiency

→ Rapidly falling costs

→ Modular, fast to deploy

→ Works in remote areas

→ Not for seasonal storage

→ 15-20 year lifespan

Best for: Hours to days

Nepal needs both. PSH for seasonal balancing. BESS for daily peaks. The question is whether Nepal will invest before the mismatch becomes a crisis.

PV + pumped storage: $0.085/kWh

(close to NEA's dry season PPA rate)

Should Nepal Unbundle NEA?

1. **~3,400 MW installed**

   Below 3,000-3,500 MW, unbundling often doesn't work. Nepal is right at the threshold.

2. **Open Access Directive**

   Introduced but Karyabidhi (implementation procedures) aren't ready.

3. **No private transmission investment**

   They can invest, but haven't. If ROI were attractive, they would.

4. **Subsidized customers**

   How does a liberalized market handle lifeline tariffs?

5. **Institutional resistance**

   Norway recommended it. NEA couldn't act. Readiness or power dynamics?

We cannot freely open everything to market. First, we should be ready.