



**"Nepal-EU Cooperation: Unlocking
Nepal's Hydropower Potential"**

EIAS Briefing Seminar, June 28th 2016

*Proposed Points raised by prof. Han Verschure
for the Panel discussion*

“Energy not needed is the best energy” !

Decrease demand for energy.

However at present the demand is much larger than the supply in Nepal, with regular power cuts as a consequence.

Measures to decrease demand are multiple : more efficient lighting, better insulation of buildings, more energy efficient transport, energy-saving household appliances, more energy-efficient industrial production (e.g. brick production), re-use and recycling,Some can be short-term and low-cost, others longer-term and imply more costs.

DO MORE WITH LESS

Reconvert to Renewable Energy : Solar, Wind, Geo-thermal, Biomass, Bio-gas, and certainly Hydropower (of various sizes from small to large scale). Particularly try to make **good mix** wherever appropriate.

Presently Biomass (wood, crops residue, ...) dominate in energy uses for households and for some production processes, often depleting forest resources and causing health hazards.



Decentralized small scale RE technologies

Technology dissemination	Potential, million household	Outreach, million household	Target , July 2017, million household
Improved cook stoves	3.7	0.74 (2012)	0. 475 ICS
Household biogas plants	> 1.3	0.290,510 (2012)	0.130
Solar home system	-	0.411258 (9.9 MWp) (2/2014)	0.6
Micro hydro	-	0.180755 (18.1 MW)	0.15 (25 MW)

Source: AEPC/NRREP

Key drivers for success:

- Financing mechanism combined with quality monitoring
- Market approach for service delivery
- Institutional arrangement (Alternative Energy Promotion Centre)
- Deregulation of distributed generation

What is

Energy Efficiency?

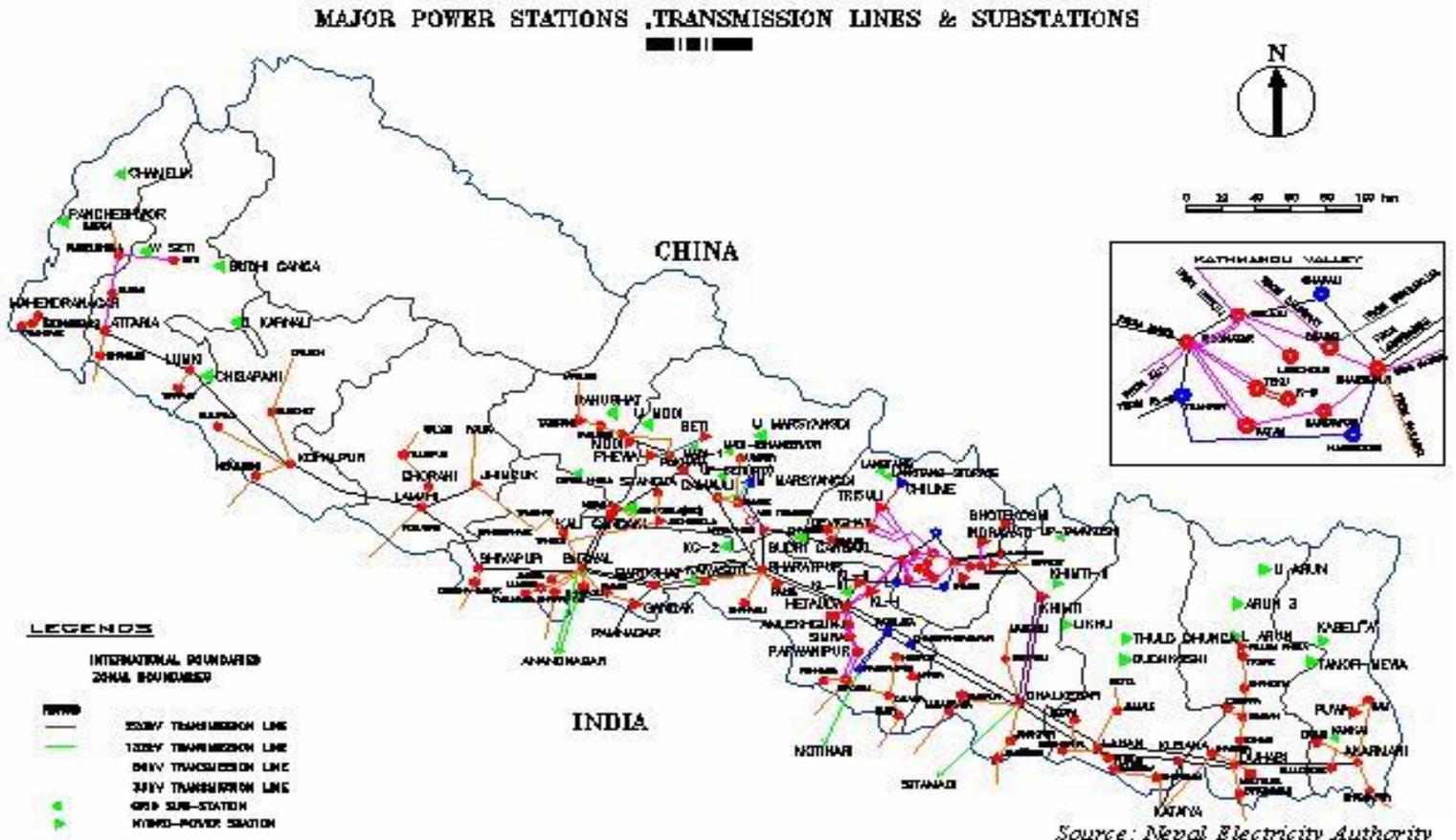
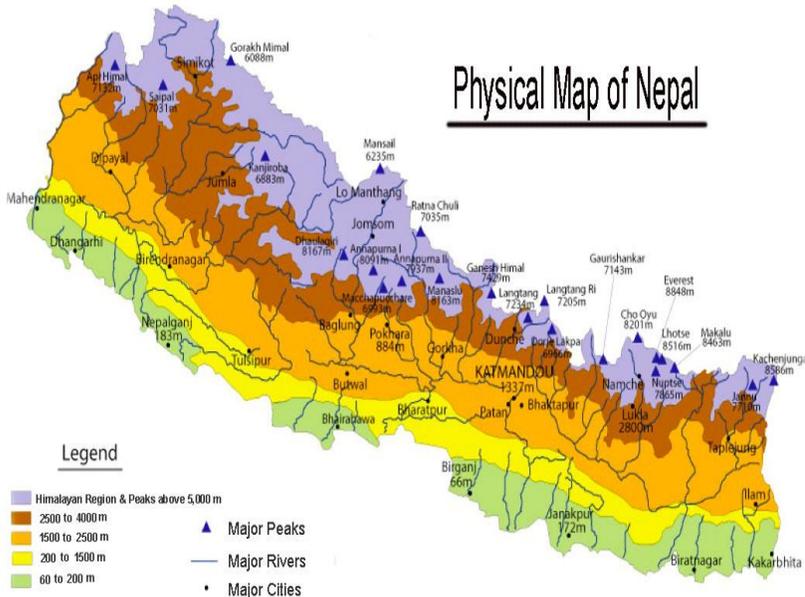
Energy Efficiency, is the goal of efforts to reduce the amount of energy required to provide products and services.

Nepal Energy Efficiency Programme

Hydropower is renewable energy and Nepal has great potentials, but

- is sensitive to seasonal/yearly variations
- At present not equally spread in all regions
- demands interventions in the natural environment
- presently only about approx. 10% (or less ?) of potential utilized in Nepal
- requires technology, maintenance and financial resources

Physical Map of Nepal



Building Hydropower stations (particularly if involving dam constructions) **have impacts** on **natural environment** and on **water ecology**.

In addition **socio-cultural, political and economic** impacts are also very important. Often these impacts are grossly underestimated/downplayed and/or unknown to technocrats (engineers, ...).

Often also **only** (narrowly defined) **economic** costs/benefits are calculated.

Disturbing ecology is a major **risk** (floods, draughts, sedimentation of rivers, ...). Equally disturbing are some **socio-cultural impacts** (e.g. involuntary resettlements).

Decentralized systems of Energy supply are a must in Nepal

- to guarantee **equitable spread** to all regions
- to adapt to **topographic difficulties** (regional varieties e.g. High-mountains, medium-altitude region and valleys, and Terai region)
- to adapt to a **variety of potential locations** (population densities, watersheds, landownerships, ...)
- to avoid construction of **expensive centralized distribution networks** on difficult terrain.
- **decentralized** systems are less prone to be dominated by a monopoly company dictating prices and tending towards increasing dependence on multinationals
- last but not least to stimulate **Community involvement** (see e.g. NACEUN – National Association of Community Electricity Users Nepal - and CREE – Community Rural Electricity Entity)

Size of Hydropower stations matters very much, certainly in Nepal, particularly in terms of impact on the environment, but also in terms of construction difficulties (technology, access, reachability, maintenance, ...)

So **smaller to medium-size** hydropower stations are **preferred** for Nepal. In any case, large scale would have international impacts (water-shed areas) and will require international negotiation, a delicate matter (cfr. blockade by India last year). **Large scale could generate** export revenues but also remains sensitive to international agreements and political situations.



Thank you

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