





Outline

1. Energy supply in Nepal
 2. Demand vs. supply
 3. The impact of climate change
 4. Export potential
 5. Energy efficiency measures
 6. Investment climate
 7. Key policy recommendations
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Demand vs. supply

- Demand exceeds supply
 - Results in load shedding
 - Consumers buy diesel generators
 - 2008: 'National energy crisis' > Action plan
 - But gap between supply and demand will continue
 - Large hydropower schemes have long lead time
 - Shorter term alternatives also being considered e.g. diesel thermal generation plant
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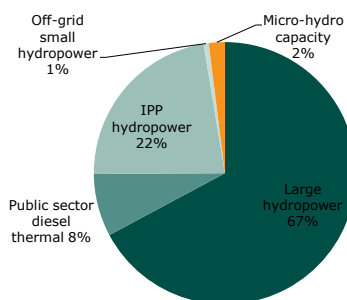
Energy supply issues

- Currently generation is 92% hydropower
- Significant potential for solar power
- Potential for wind power less clear
- Community-based electrification is increasing access
- Fossil fuel subsidies are unaffordable and make Nepal uncompetitive
- Biogas – potential opportunity for commercialisation
- Biofuel - another potential opportunity but currently experimental

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Energy supply



- Consumer's own diesel generators total 530 to 800 MW = same as grid energy!
- Transmission and distribution losses of around 30%

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The impact of climate change on hydropower

- Could affect hydropower potential in Nepal due to:
 - Increased glacier melt
 - Changes in rainfall patterns and quantity
- Reduces reliability and increases investment risk
- Policy implications:
 - Diversification of renewable energy sources
 - More dispersed sites for power generation e.g. more focus on small hydro

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Potential to export electricity

- Electricity shortage in India and high carbon content = export opportunity for Nepal?
- Cross-border infrastructure constrains capacity
- But new Muzzafarpur-Dhalkebar line opening 2016
- But Nepal more likely to import electricity!
- Investment in Nepal maybe constrained due to
 - Generation being cheaper in India
 - Financial situation of NEA = investment risk



Energy efficiency

- High and rising energy prices undermine competitiveness
- Energy efficiency measures reduce costs & improve competitiveness
- NEEP estimates potential energy savings of NPR 6,337 million and 15% reduction in GHGs
- But limited uptake of energy efficiency measures in Nepal to date
- Other countries starting to move = threat to Nepal
- Policy implication: Regulation or incentives would help

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Energy efficiency gains in Cambodia

Company	Investment Cost (\$)	Savings per year (US\$)	GHG Reductions (tons per year)	GHG Reductions (%)	Payback period
Ly Ly Food Industry Co.	390,000	237,600	941	66%	20 months
Sky High Garment Company	109,100	396,000	2,112	31%	4 months
Vinh Cheang Rice Mill	1,480,000	612,800	510	39%	30 months
Punleu Preah Atith Brick Company	502,000	373,000	1,338	10%	16 months
Peng Kimheng Ice Factory	62,000	249,340	634	78%	3 months

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Investment climate

- Private investment is a key component of Nepal's energy strategy, but is hampered by:
 - Bureaucratic delays and unclear procedures
 - Unclear mechanisms for addressing community interests and benefit sharing
 - Unclear mandates of key institutions / regulatory authority
 - Political and market uncertainties
 - Depoliticising energy sector decisions could help
 - Carbon markets are slow to develop but public climate finance may help
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Summarising the emerging story

- Energy constraints have hampered Nepal's competitiveness
 - Fossil fuel subsidies undermine competitiveness and create financial constraints to improving energy supply
 - Substantial potential to develop renewables, especially hydro = low carbon growth trajectory
 - Potential to develop new markets for biogas and biofuels
 - Huge potential savings from energy efficiency measures
 - Public climate finance can help support these efforts
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Key policy recommendations

To thrive and compete in a carbon constrained global economy:

- Remove fossil fuel subsidies and incentivise energy efficiency measures.
- Develop in a climate resilient mix of renewable sources of energy
- Create a better investment climate for private investment into the energy sector and explore new opportunities such as commercial biogas.

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Shaping policy for development

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