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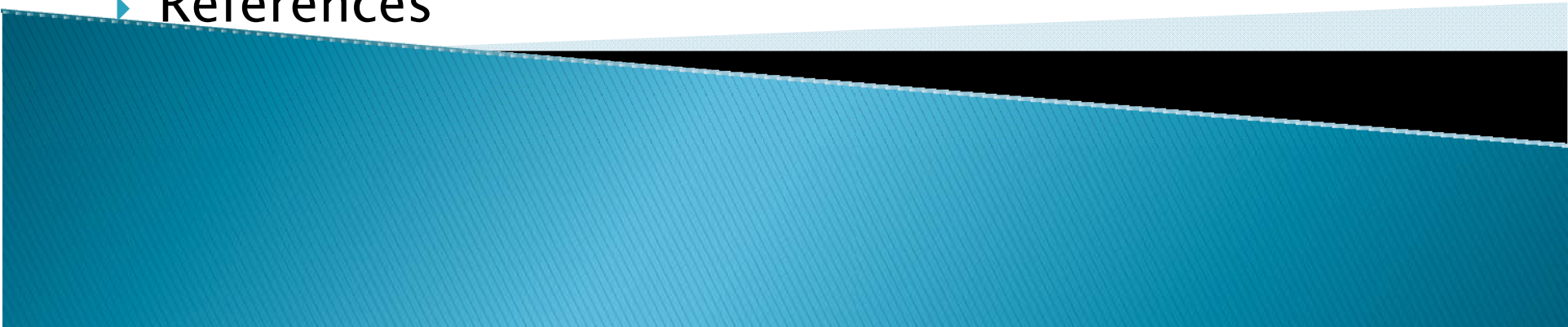
A COUNTRY REPORT OF NEPAL

Presented by:

Pralhad Prasad Sapkota
Under Secretary
Government of Nepal, Ministry of Energy,
Kathmandu, Nepal

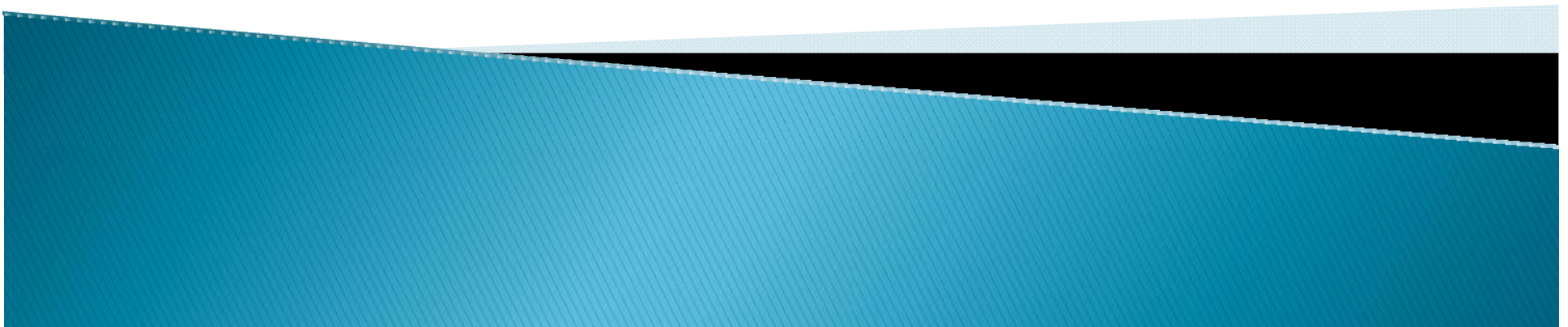


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Beginning

Nepal possesses abundant hydropower potential with big rivers from perennial source the Himalaya. Nepal has formulated and implemented various measures to harness her hydropower potential. This presentation is more concentrated on hydropower energy.



MAP OF NEPAL



INTRODUCTION

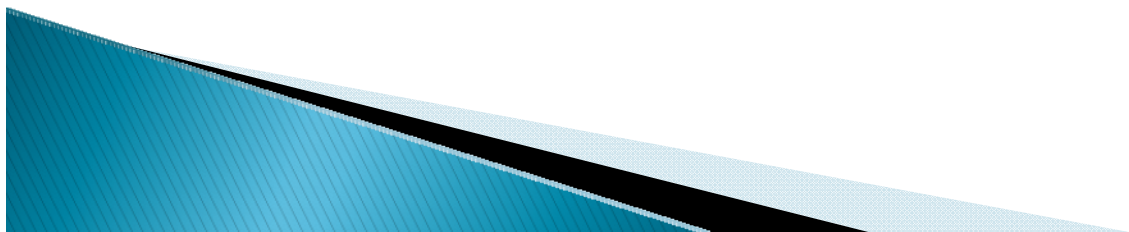
- ▶ Location: 26 22' East – 30 27' East Longitude
- ▶ 80 04' North – 88 12' North
- ▶ Landlocked country– India in the east, south and west and China in the north
- ▶ Area– 147181 sq km
- ▶ Population: 23,214,681 (2001 Census). Currently estimated as 27 millions
- ▶ Divided into three geographical regions viz. mountains, hills and terai
- ▶ Administrative divisions:– Divided into 5 development regions, 14 zones, 75 districts
- ▶ River system consists of three main river basins namely Koshi, Karnali and Mahakali
- ▶ Highest Peak– Mount Everest 8848 mt.
- ▶ More than 6000 rivers originated from Nepal flowing to India.



Functions of Ministry of Energy

The Ministry of Energy has been entrusted with the following responsibilities and tasks:

- ▶ Formulation, implementation, and monitoring and evaluation of policies, plan and programmes for production, conservation, regulation and utilization of energy.
- ▶ Development of Human Resources related to energy and electricity.
- ▶ Study, research, feasibility study, construction, operation, maintenance and development of energy development and electricity development projects.
- ▶ Promotion of private parties in electricity development.
- ▶ Matters related to bilateral and multilateral dialogues, agreements and understandings regarding energy and electricity.



Institutional Arrangements

A number of institutions exist in the energy sector.

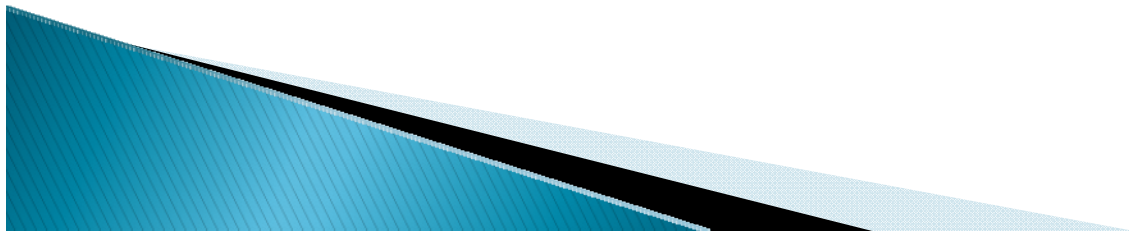
- ▶ Six different ministries – Ministry of Energy, Ministry of Forests and Soil Conservation, Ministry of Agriculture and Co-operatives, Ministry of Commerce and Supplies, Ministry of Environment and Ministry of Industry
- ▶ Commissions:
 - a) National Planning Commission
 - b) Water and Energy Commission
- ▶ Corporation and Others
 - d) Alternative Energy Promotion Centre (AEP), Timber Corporation of Nepal, Nepal Oil Corporation, Nepal Electricity Authority



Policy Documents

The following have been major policy documents guiding energy production, development, utilization and regulation

- ▶ Periodic Development Plan
- ▶ Industrial Policy – 1992
- ▶ Foreign Investment & One–Window Policy–1992
- ▶ Hydropower Development Policies 1992 and 2001, Water Resources Act 1992, and Electricity Act 1992
- ▶ Water Resources Strategy 2002 and National Water Plan 2005
- ▶ National Electricity Crisis Resolution Action Plan 2008
- ▶ Report of the Task Force for Hydropower Development 2008
- ▶ Rural Energy Policy 2006
- ▶ Forest Sector policies and Forest Act, 1992
- ▶ Industrial Enterprises Act – 1992
- ▶ Foreign Investment and Technology Transfer Act – 1992
- ▶ Environment Protection Act – 1996 (Regulation–1997)



Policy Documents (contd....)

Nepal National Energy Strategy is currently being drafted and planned to be approved by the end of current fiscal year. The draft paper has suggested following National Energy Policy Principles.

Vision

- ▶ *To meet the demand for energy services of the people of Nepal by ensuring security, sufficiency, and sustainability for its poverty reduction and economic development through the efficient use of the indigenous energy resources.*
- ▶ The major strategic objectives are:
 - To make consumption of biomass energy resources sustainable
 - To make hydropower resources as the main energy resources
 - To reduce dependence on imported fossil fuels
 - To develop alternative energy technologies such as biogas, solar, wind and etc.



Energy Statistics

Energy Consumption (2005) (in 000 GJ) is as follows:

Traditional energy– 322105 (87.7%)

- Firewood– 286960 (78.1%)
- Biomass 13964 (3.8%)
- Animal Dung 21181 (5.8%)

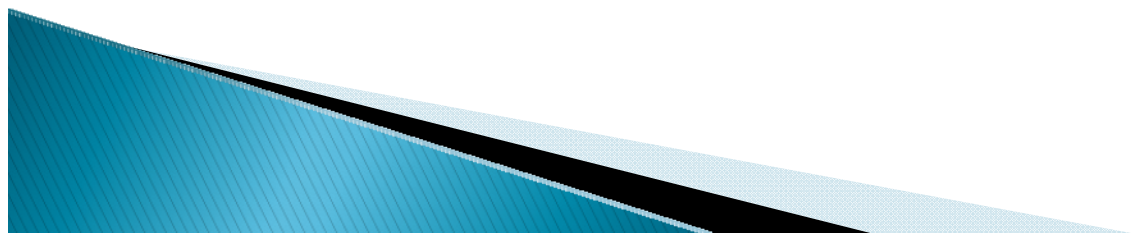
Commercial energy – 43195 (11.8%)

- Petroleum– 30,063 (8.2%)
- Electricity– 6673(1.8%)
- Coal– 6459 (1.8%)

Renewable– 1955 (0.5%)

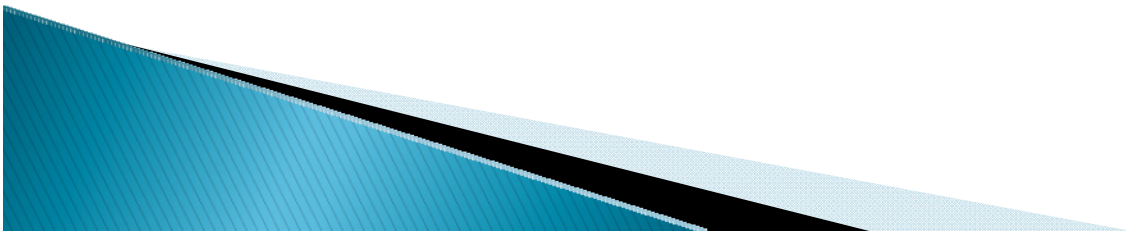
TOTAL

100%



Electrical Energy Scenario

- ▶ Contribution to total energy use: 1.8%
- ▶ 689 MW of installed capacity
- ▶ Run of river hydro dominated generation
- ▶ Only one storage plant of 92 MW
- ▶ High demand in winter and less demand in monsoon
- ▶ High generation in monsoon and less generation in winter



Electrical Energy Scenario(Contd.)

- ▶ For seasonal balance, we need to focus in large size storage plants.
- ▶ Heavy power deficit with load shedding.
- ▶ 130 MW being imported from India

Hydropower Potential, Demand and Supply in Nepal

Hydropower potential (MW)

Theoretical Hydropower potential-	83290
Technical Hydropower potential-	45160
Economic Hydropower potential-	42133

Present Status

Installed Capacity: 692.4 MW

In Grid 688.9 MW

Off Grid 4.5 MW

Hydro 635.5 MW

Thermal 53.4 MW

ROR 542.5 MW

Storage 92 MW

IPP 161.5 MW

NEA 381 MW

Present Status

Supply Demand Scenario (National Grid)

Installed Capacity	689 MW
ROR	543 MW
Storage	92 MW
Thermal	53 MW

DRY Season Scenario

Dry Season Capacity	307 MW
ROR	190 MW
Storage	92 MW
Thermal	25 MW

IMPORT

Total Capacity	80 MW
Power Exchange	50 MW
Treaty	30 MW

DEMAND

WET Season	780 MW
DRY Season	893 MW

DEFICIT

DRY Season	440 MW
WET Season	160 MW

Electrical Energy Demand and Supply Forecasting (in Medium Growth Rate) (2010–2020)

Year	Production Capacity (MW)		Load Forecast (MW)	Surplus/ Deficit
	Rainy Season	Dry Season		
2011	651	321	957	-306/-636
2014	2063	958	1531	532/-573
2017	5342	2745	2110	3232/635
2020	10107	5486	2882	7225/2604

source: Report of task force

Hydropower development target

NATIONAL WATER PLAN

by 2017

Domestic demand to be met	2100 MW
Per capita consumption	160 kWh

by 2027

Domestic demand to be met	4000 MW
Per capita consumption	400 kWh
Export	Extensive

TYIP

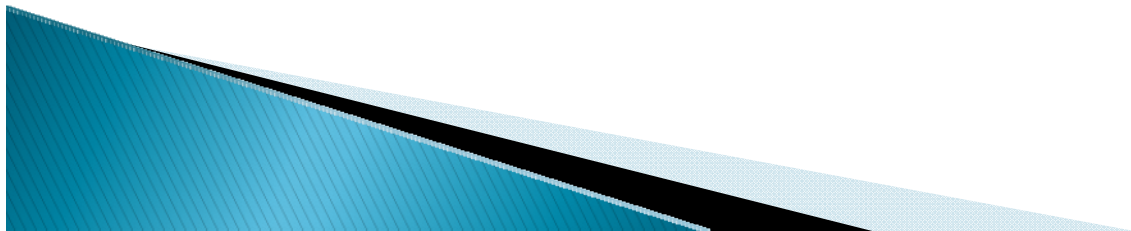
Under construction by FY end 66/67	2215 MW
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Visions of governments

Within 10 Years	10000 MW
Within 20 Years	25000 MW

Petroleum Products

Nepal oil Corporation has monopoly of importing and selling petroleum products. The growth of petroleum products in consumption is overwhelming. Motor spirit sales grew 300% in 2008/09 compared to 1993/94. HS Diesel rose more than 200% in 2008/09 than in 1993/94. LPG sales growth is twelve times. Nepal has to spend its 53% for importing petroleum products (NES draft report, 2009).



Petroleum Products

Sales of Petroleum Products [in KL except LPG]

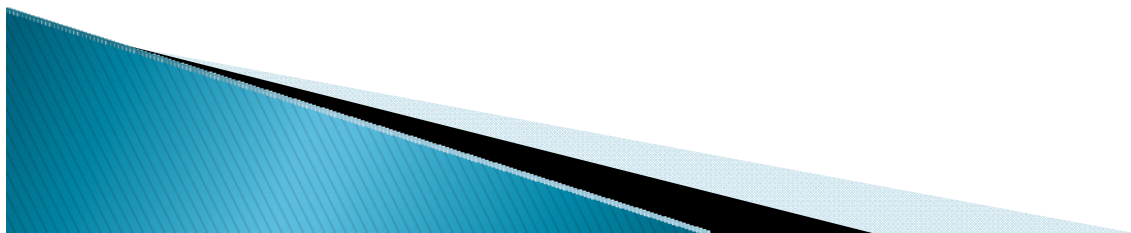
SN	Fiscal Year	MS	HSD	ATF	FO	LPG in MT
1	2009/2010 From July to February 2010	88741	308891	48304	1199	77219
2	2008/2009	124169	446468	68935	2171	115813
3	2004/2005	75989	315368	66825	2696	77594
4	2001/2002	63271	286233	47453	18255	48757
5	1997/1998	46939	300604	51412	27776	22961
6	1993/1994	31061	195689	30650	27319	9308

Source: Nepal Oil Corporation



Issues on petroleum products

- ▶ The country is becoming dangerously dependent on petroleum products for its energy requirement.
- ▶ Lack of competitive market price in petroleum sector due to monopoly of Nepal Oil Corporation

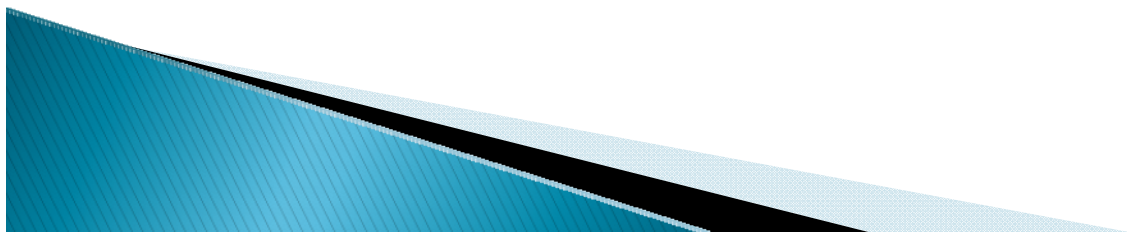


Consumption of Coal (TJ)

Consumption of Coal (in TJ) in Nepal is as follows.

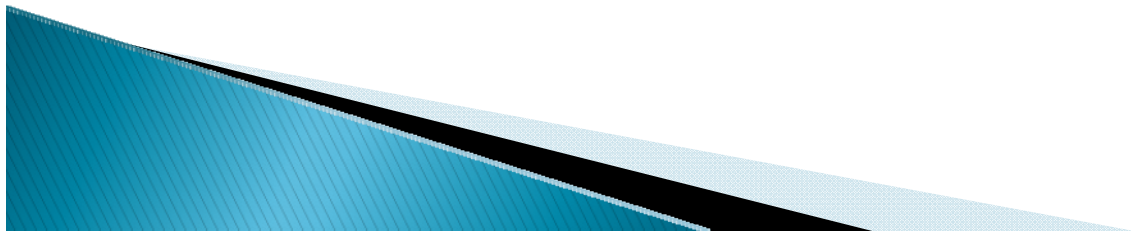
Year	Consumption
1990/91	1758
994/95	2805
1998/99	2847
2002/03	5610
2007/08	9257

Source: National Energy Strategy Draft Report



Legal and Policy Efforts for Hydropower Development

- ▶ Electricity Act, 1992
 - Competitive environment in power sector
 - Invites IPPs in Power Sector
 - BOOT as a basis of IPP participation
 - One window policy for IPPs
 - Legal reforms to encourage private sectors

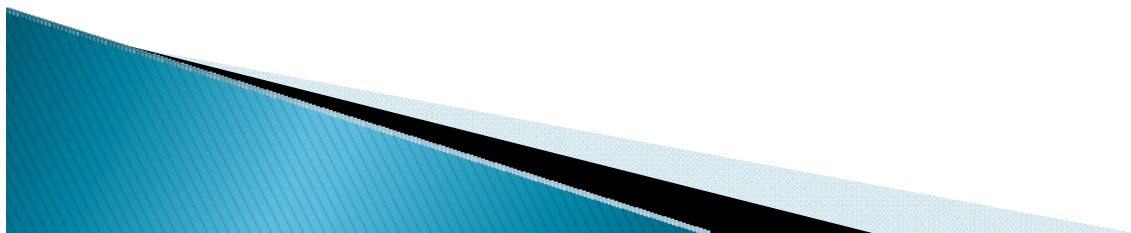


Legal and Policy Efforts for Hydropower Development (contd....)

- ▶ Hydro Power Development Policy, 2001
 - Maximizing use of resources for affordable and quality electricity
 - Tying up electricity with economic activity
 - Developing electricity as export commodity
 - Access to electricity through rural electrification

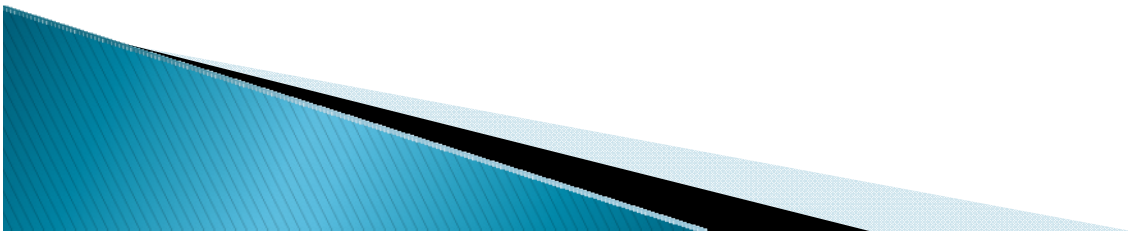
Plans and Strategies

- ▶ National Water Plan:
 - Fixes electricity targets for short term, mid term and long term frame work
 - Basin approach for water resources utilization
 - Integrated water resources management
 - Greater contribution of hydropower in overall energy scene



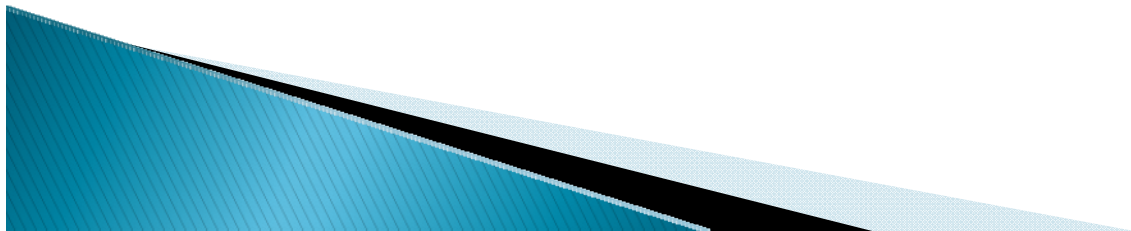
Plans and Strategies (Contd.)

- ▶ Energy Strategy:
 - Currently being drafted and planned to be approved by end of current fiscal year
 - Focuses on increasing contribution of electrical energy in the overall energy use
 - Fore casts 12000 MW in the next 20 years to replace all traditional sources of energy



Power Crisis Mitigation Plans

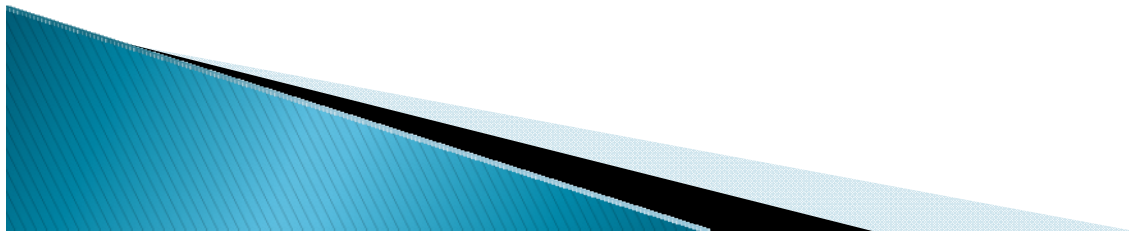
- ▶ Demand side management
- ▶ Increased import from India through 400 KV lines
- ▶ Speedy execution of current projects
- ▶ Focus on large size storage power plant (e.g. Budhigandaki 600MW)



New Acts

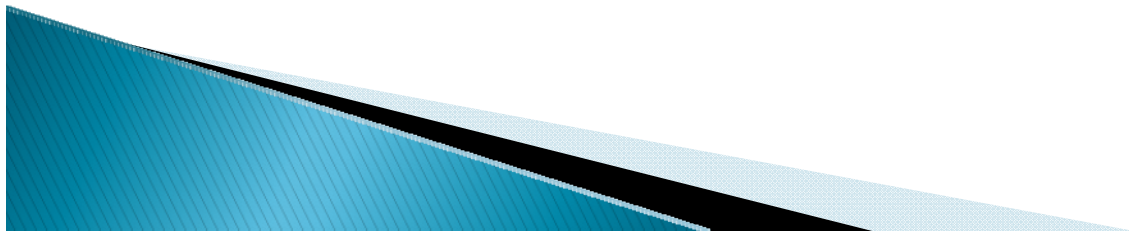
- ▶ **New Acts to come;**

- **Electricity Act (new)**
- **Nepal Electricity Regulatory Commission**



New Acts

- ▶ New Electricity Act; (presently under consideration of the parliament)
- ▶ Time bound and transparent license procedure
- ▶ De licensing up to 3 MW
- ▶ Trading of electricity allowed
- ▶ Company required
- ▶ Unbundling of the power sector
- ▶ Clear financial incentives
 - Exemption of corporate tax for 7 years and 50 % for next 3 years
 - Exemption of VAT on machines, equipments
- ▶ Provision for competition



New Acts

New Electricity Act; (presently under consideration of the parliament)

Rights and privileges of the local people upto 10 % equity share for local people

Electrification in the area of $\frac{1}{2}$ km radius of headworks and powerhouse

Re-structuring of the royalty provisions

Different royalty for domestic and export projects

92 % of the royalty goes to the local government

High level "one window" service committee and task forces

Defined provisions for Export oriented projects

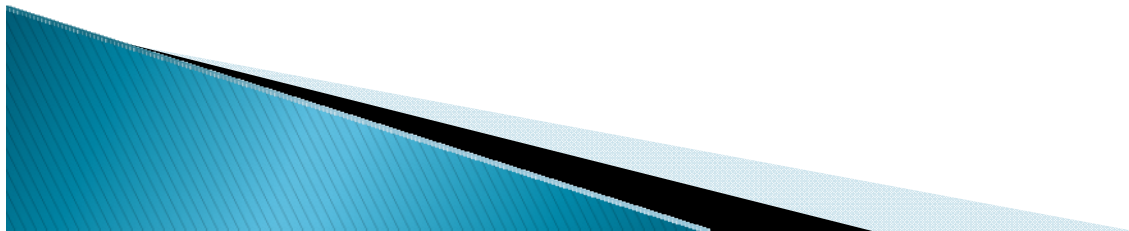
Power Trading through private sector will be opened



New Acts

Nepal Electricity Regulatory Commission;

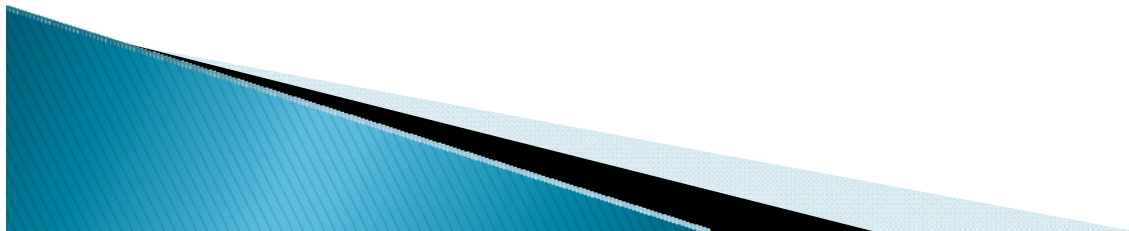
- ▶ Will be an independent commission
- ▶ will create Investment friendly environment
- ▶ Will protect the consumers (and other stakeholders) interest
- ▶ Will monitor, regulate the sector
- ▶ Will fix the tariff at various stages of transaction



Problems and challenges

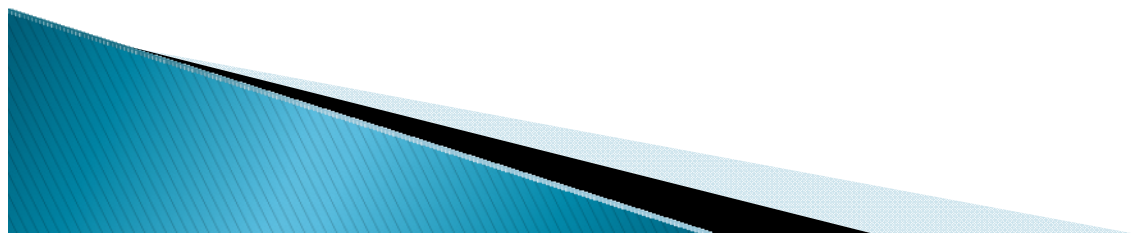
Problems and challenges in the formulation and implementation of energy policy in Nepal can be outlined as follows.

- ▶ Heavy dependent on traditional source of energy.
- ▶ Integrative energy policy still does not exist.
- ▶ Investment in hydropower is financially beneficial but there is lack of investment friendly environment to attract the private and foreign investors to invest and boost up the hydropower development.
- ▶ The tendency of acquiring license for hydropower development and not undertaking the production and distribution.
- ▶ Forest rules only focus on conservation and no clear policy on sustainable use of biomass for energy.



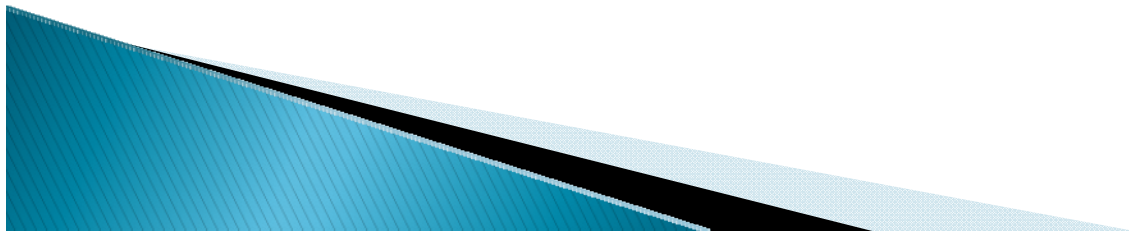
Problems and challenges

- ▶ Inadequate emphasis in the exploration, production, and development of potential oil and coal reserves.
- ▶ Lack efficient coordination between government agencies, e.g. between ministries and departments.
- ▶ There is delay on power sector restructuring programs.
- ▶ Lack of an effective policy for developing alternative fuels within the country.
- ▶ Lacks of technology know how, manpower and data about renewable energy (NPC, NES draft report, Report of task force).



Interest Areas

- ▶ Policy trends in energy production, conservation, regulation and utilization in developed and developing countries.
- ▶ Promotion of private and foreign investment in hydroelectricity projects.
- ▶ Development of human resource in the energy field.
- ▶ Efficient selection, implementation and administration of sustainable hydropower projects.
- ▶ Community participation in hydroelectricity and energy projects.
- ▶ Energy, environment and clean development mechanisms.
- ▶ Energy efficiency.



Reference:

National Planning Commission, Three Year Interim Plan(2007/08 – 2009/10), 2007.

Ministry of Energy, Report of Task Force on 10 Year Hydropower Development Plan, 2009.

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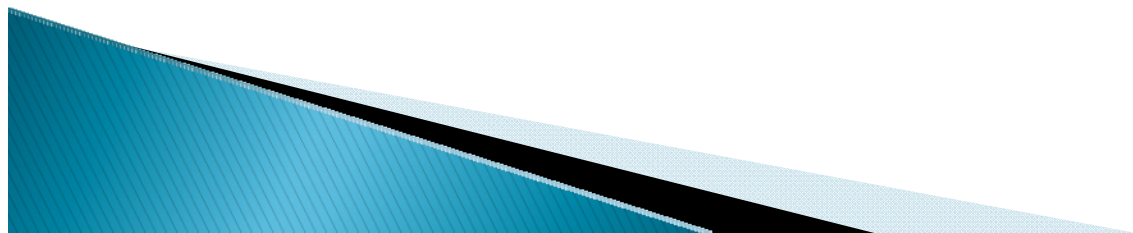
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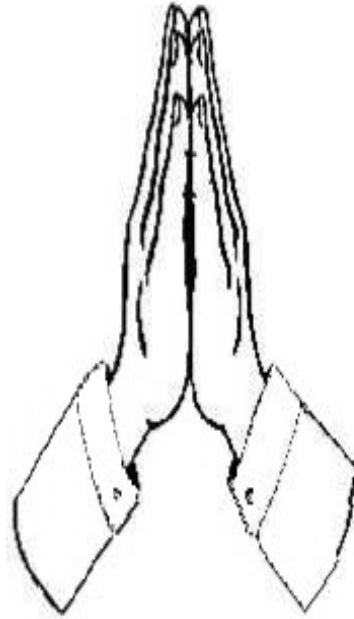
Water and Energy Commission, Water Resources Strategy 2002 and National Water Plan 2005.

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THANK YOU!