

Executive Exchange  
on  
Integration of Grid Connected  
Renewable Energy in the Power  
Sector

Madrid, Spain (19-23 Oct 2009)

Country Presentation

Nepal

Mr. Shiv Chandra Jha, NEA

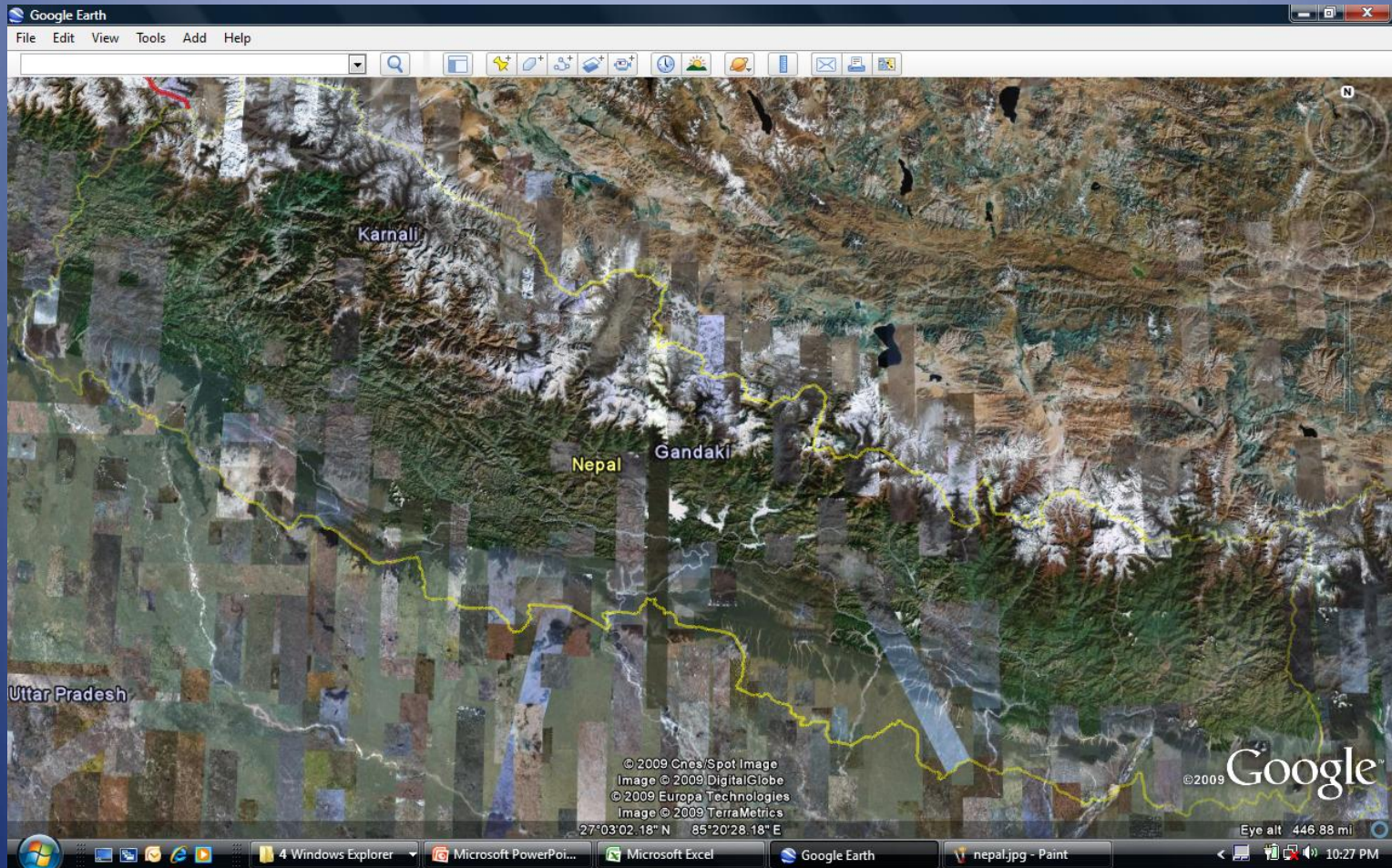
Mr. Bipin Karki, AEPC

# Nepal, Geographical Location



© 2009 Europa Technologies  
Data SIO, NOAA, U.S. Navy, NGA, GEBCO  
© 2009 Tele Atlas  
US Dept of State Geographer  
48°16'06.31" N 8°52'02.32" E

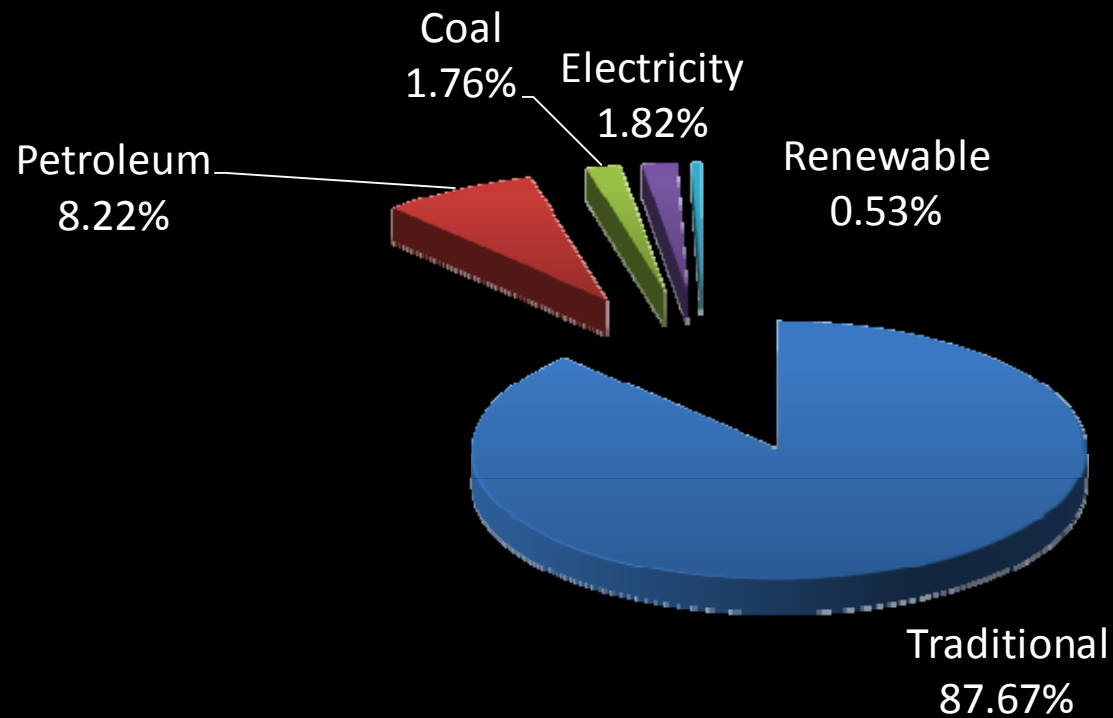
# Nepal – Himalayas, Mountains & Terai



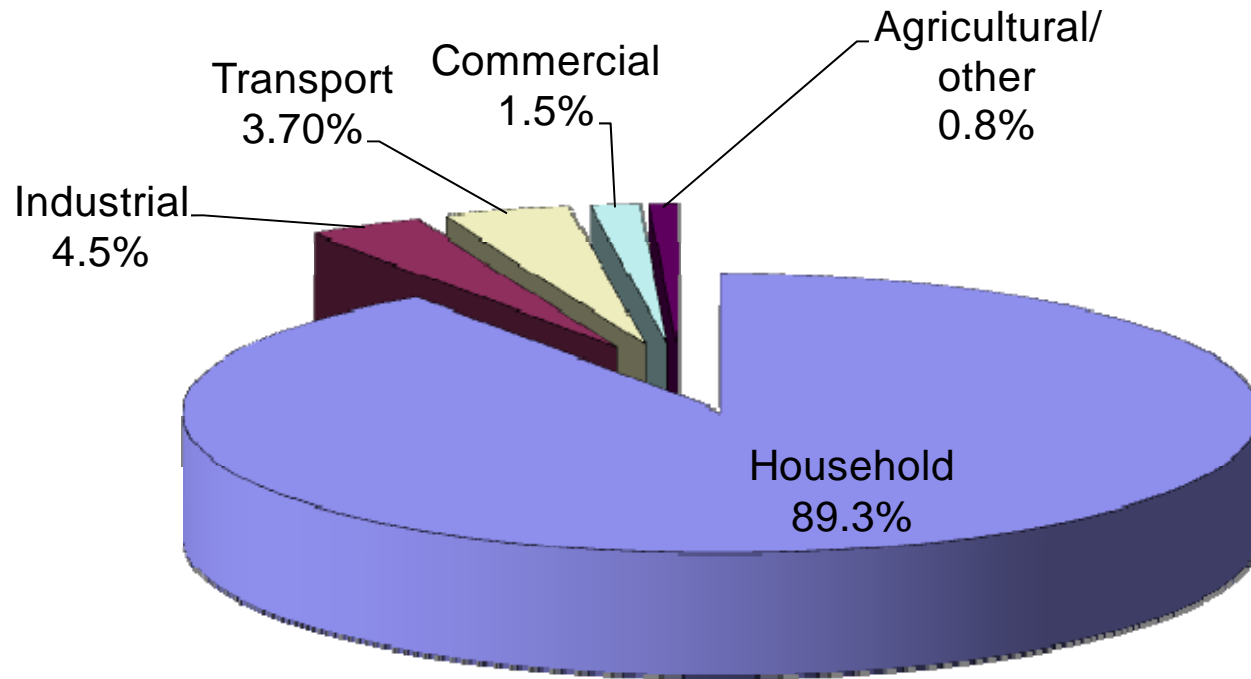
# Nepal, Country Information

- Total Population – 26 m
- Total Area – 147,181 sq.km
- Literacy percentage – 50%
- Population in cities – 15%
- Population having access to electricity – 40%

# Nepal, Energy Consumption Pattern, 2005



# Nepal's Energy Consumption, by Sector, 2005



# Energy Situation

- Total Hydropower potential 83GW
- Techno-Economically feasible Hydropower 42GW
- Total Installed Capacity 0.7GW
- 98% electricity supplied by electric grid
- 2% electricity supplied by Renewable Energy (Solar and Micro Hydropower)

# Two Main Players in the Energy Sector

- Nepal Electricity Authority (NEA),  
Ministry of Energy
- Alternative Energy Promotion Centre (AEPC),  
Ministry of Environment

# Nepal Electricity Authority (NEA)

- Principle public sector utility
- First “Hydropower” 100 years, 500kW
- Sole body responsible for generation, transmission and distribution services
- Mandate to operate as business corporation (recover full cost of providing services and generate some surplus for expansion)

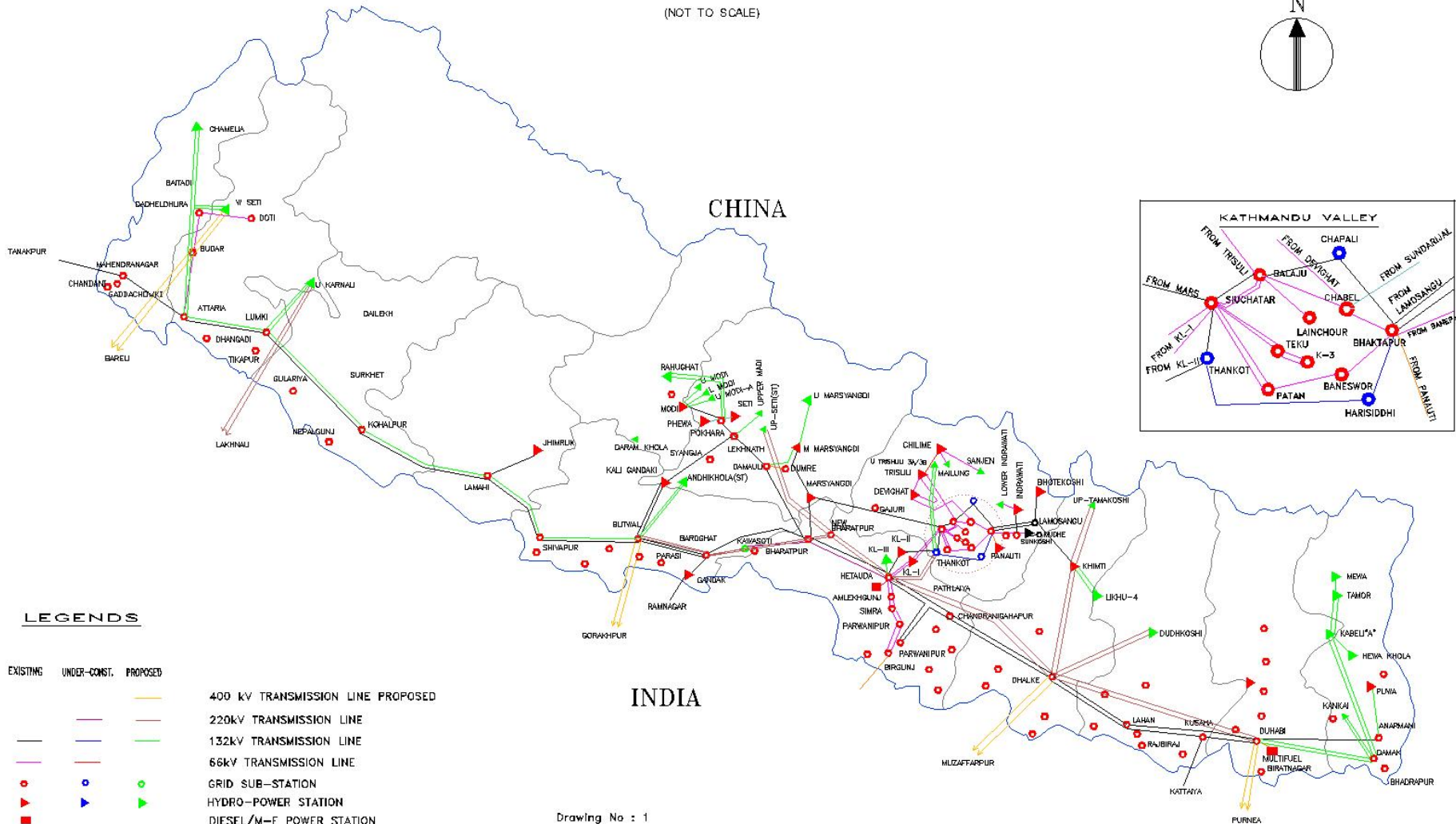
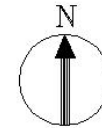
# NEA Electricity Sources

Electricity Grid Source	kW	%
NEA Hydro (Grid Connected)	472,994	61.5
NEA Hydro (Isolated)	4,536	0.6
Independent Power Producers (IPP) Hydro	158,315	20.6
NEA Thermal	53,410	6.9
NEA Solar (Isolated)	100	0.01
Electricity Import from India	80,000	10.4
Total	769,355	100.0

# POWER DEVELOPMENT MAP OF NEPAL TRANSMISSION LINES & SUBSTATIONS

(2009)

(NOT TO SCALE)

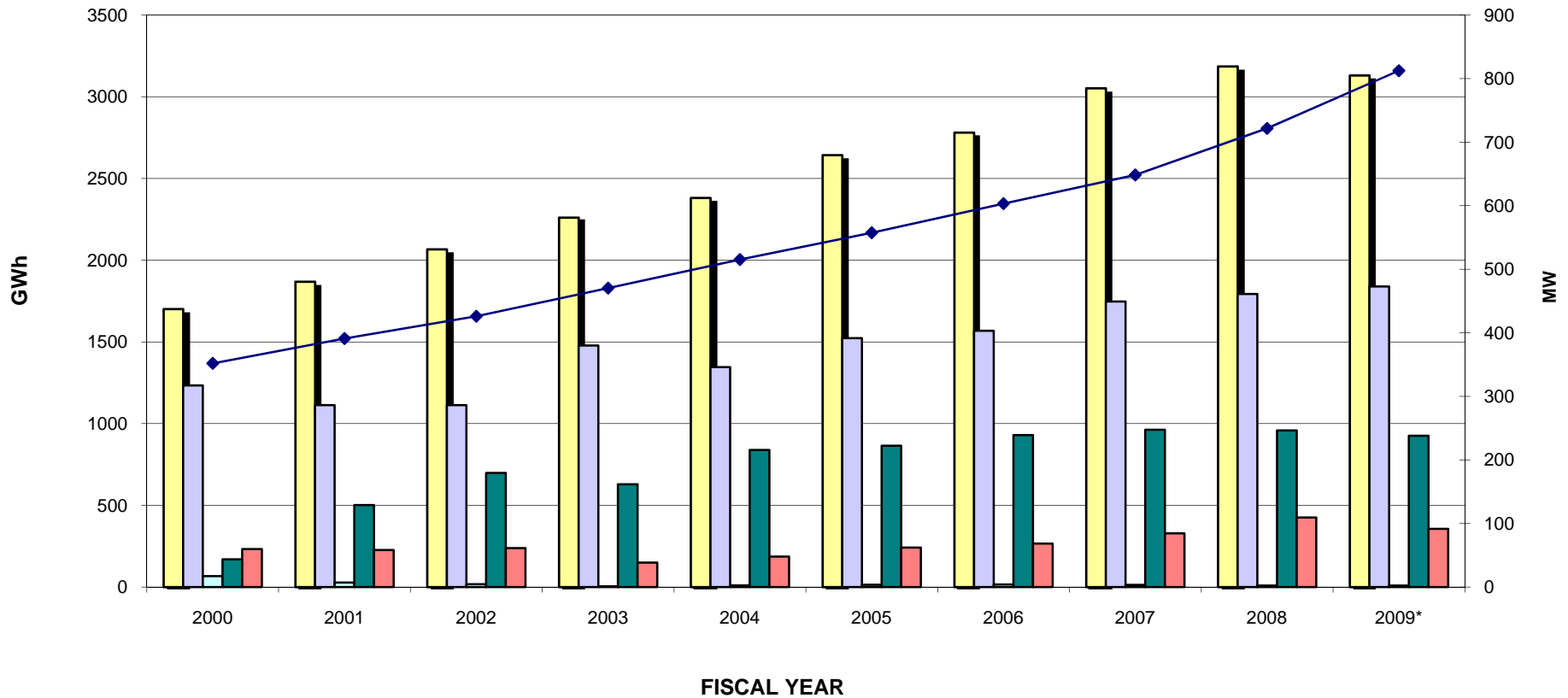


## LEGENDS

EXISTING	UNDER-CONST.	PROPOSED	
			400 kV TRANSMISSION LINE PROPOSED
			220kV TRANSMISSION LINE
			132kV TRANSMISSION LINE
			66kV TRANSMISSION LINE
			GRID SUB-STATION
			HYDRO-POWER STATION
			DIESEL/M-F POWER STATION

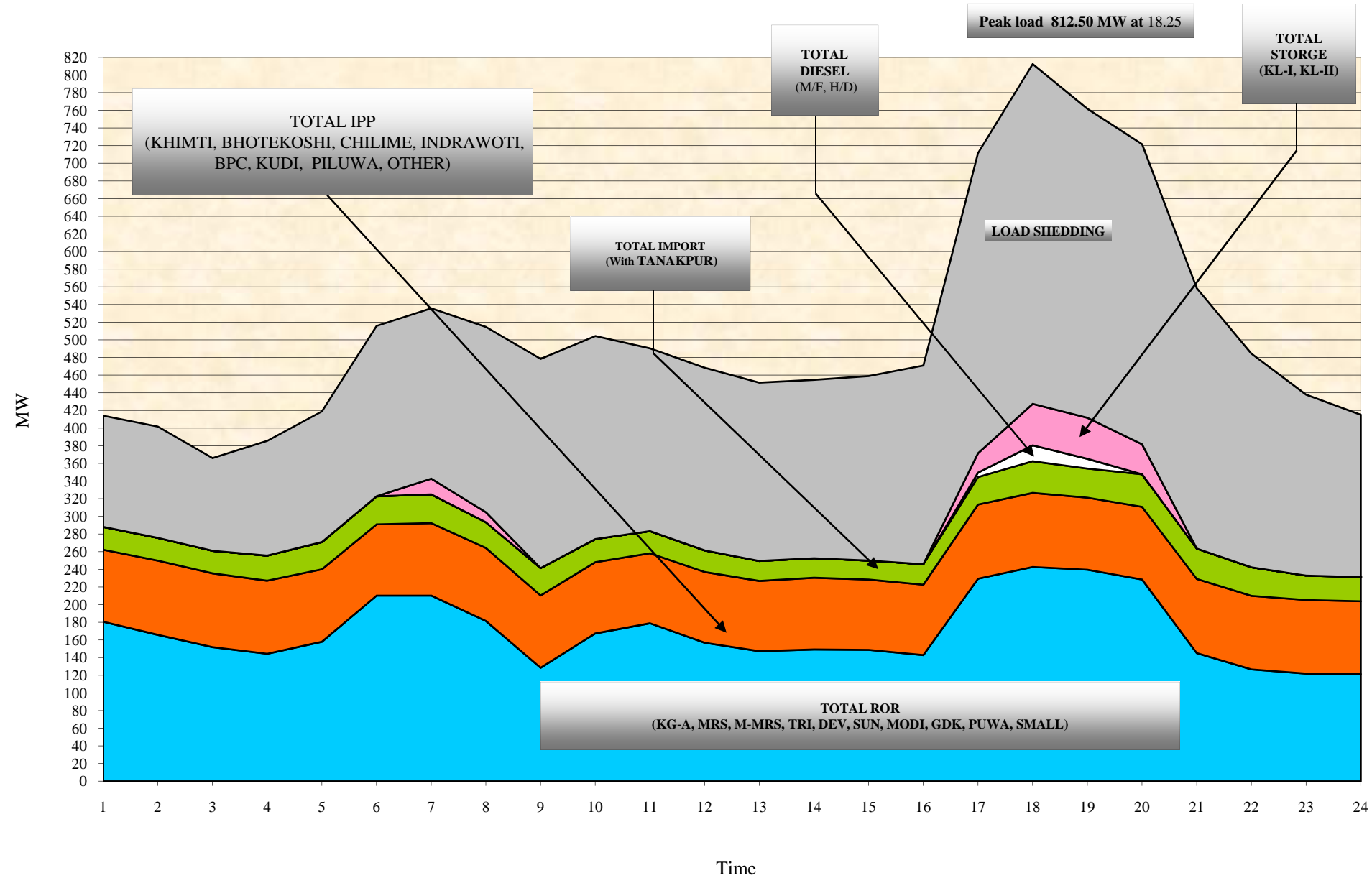
Drawing No : 1

# Total Energy Available and Peak Load

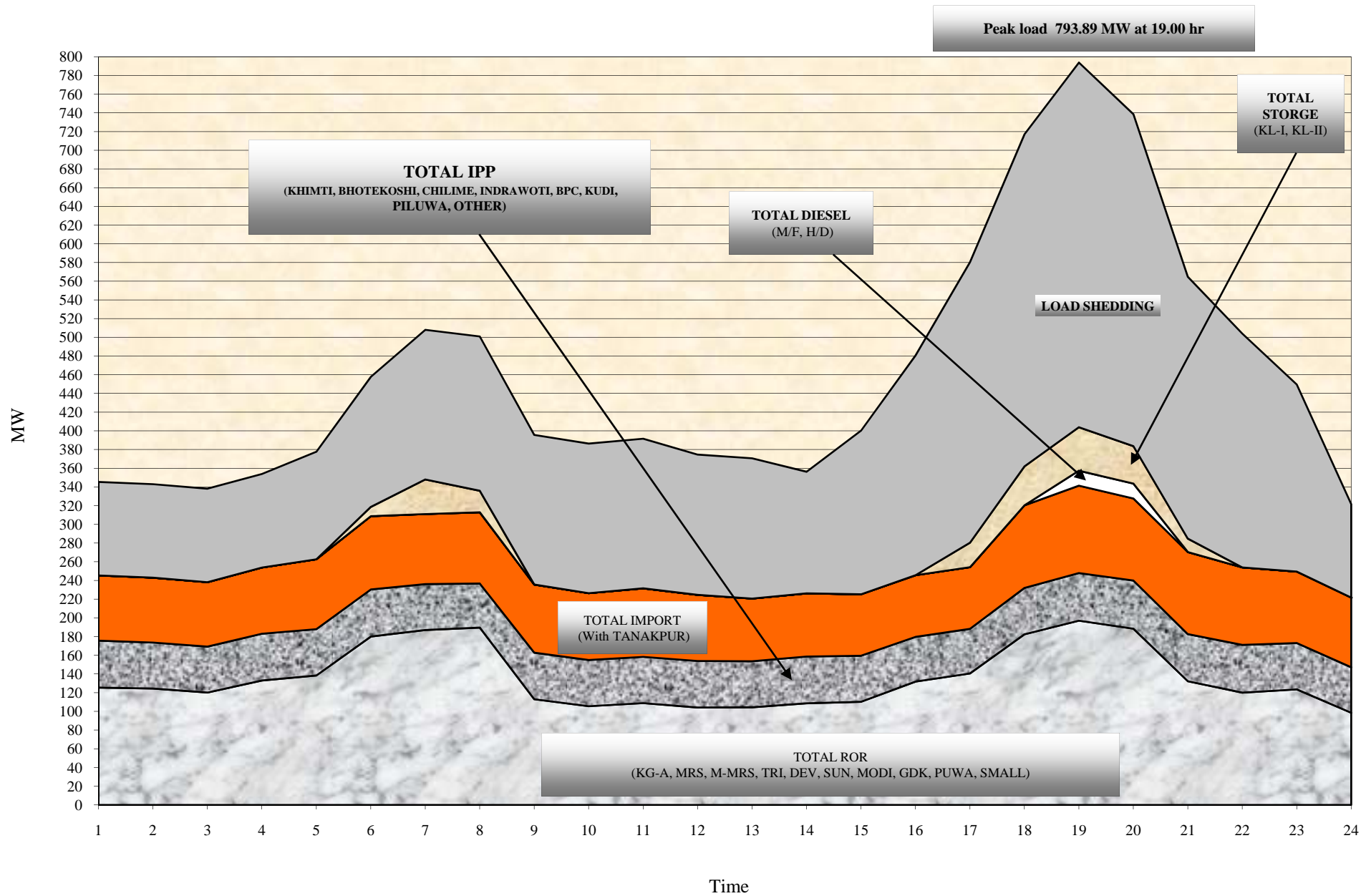


Available Energy (GWh)
  1. NEA Hydro
  2. NEA Thermal
  Nepal (IPP)
  India (Purchase)
  Peak Demand (MW)

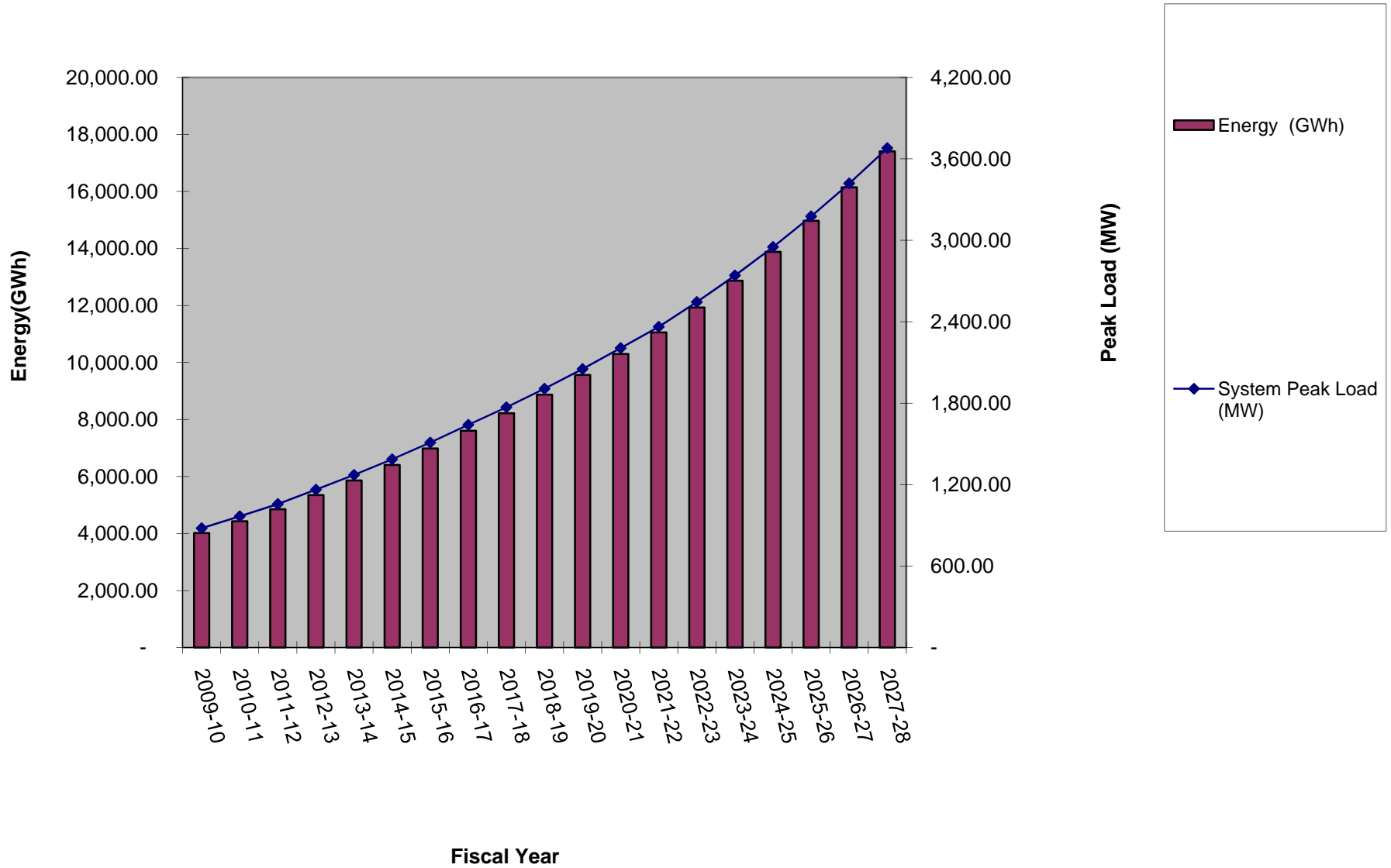
**Load Dispatch Center  
System Load Curve  
Magh 7, 2065 (Jan 20, 2009) Tuesday**



**Load Dispatch Center  
System Load Curve  
Falgun 25, 2065 (March 8, 2009) Sunday**



# Load Forecast



# Alternative Energy Promotion Centre (AEPC)

- Established in November 3, 1996
- **National Executing Agency** – Renewable energy (RE) programmes and projects
- **Government Institution under Ministry of Environment** - semi autonomous status; Board represented by public sector, private sector & subject expert
- **Mandate:** policy and plan formulation, resource mobilisation, technical support, M & E, quality assurance and coordination

# Alternative Energy Promotion Centre (AEPC)

- Renewable Energy Policy 2000  
(updates 2006, 2008, 2009)
- Subsidy Delivery Mechanism

# Alternative Energy Promotion Centre, (AEPC)

## Four Partners in RE Sector

### **The Government of Nepal (GoN):**

- Renewable energy policies and institutional development
- Standards, Guidelines & Quality Assurance (QA)
- Monitoring activities
- Support R and D activities
- Facilitate Financial support

### **External Development Partners**

- Technical assistance
- Financial assistance

### **Private Sector**

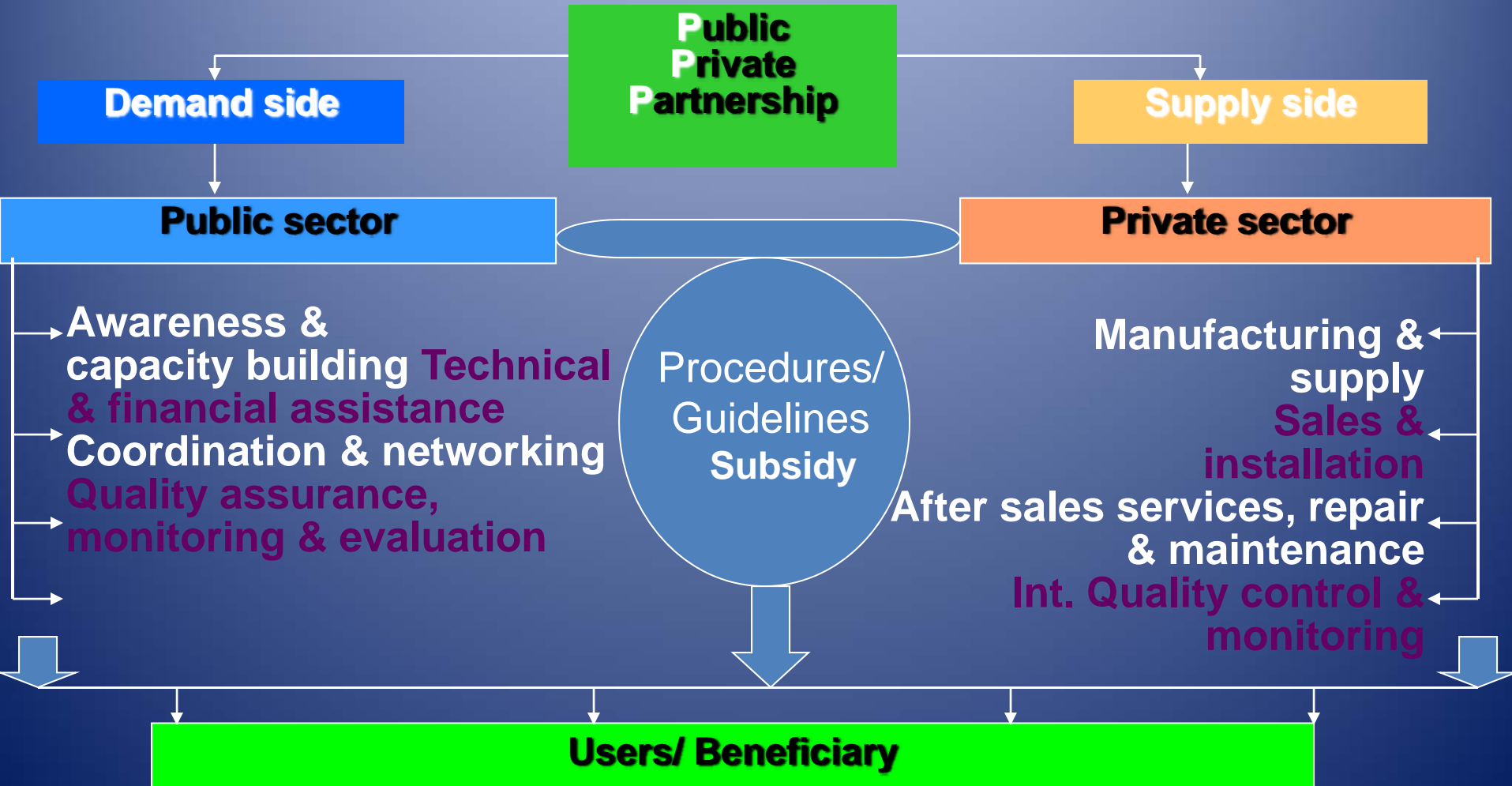
- Service delivery
- Promotion and marketing of products
- Innovation of technologies and applications
- Providing loans and insurance

### **Civil Society**

- Promotion
- Ownership and management of facilities.
- Participatory implementation
- Monitoring

# Alternative Energy Promotion Centre, (AEPC)

## Programme Implementation Modality



# AEPC Major Programs and Projects

Name	Date started	Phase	Planned Date of Ending	External Development Partners	Technology
Energy Sector Assistance Programme	2007	II	2012	Denmark Norway	Hydro Biomass Solar
Biogas Support Program (BSP)	2002	IV	2009	SNV, KfW	Biogas
Rural Energy Development Programme (REDP)	2007	III	2009	WB, UNDP	Hydro
Renewable Energy Project (REP)	2004		2010	EU	Solar
Improved Water Mills Programme (IWMP)	2003		2008	SNV	Water Mills
Wind Technology	2008			UNEP! Denmark! UNDP!	Wind
Biofuels	2008			SNV!	

# AEPC – Progress Status

SN	RE Type	Unit	Progress	Number of HHs benefited
Access to Electricity			7 % Population	
1.	Biogas Plants	Number	200,000	200,000
2.	Micro hydropower	kW	10,500	1,05,000
3.	Solar Home System	Number	180,000	180,000
4.	Solar Tuki	Number	60,000	60,000
5.	Solar Cooker/Dryer	Number	2,500	2,500
6.	Improved Cook Stoves	Number	300,000	300,000
7.	Improved Water Mill	Number	5000	148,000
8.	ISPS (182) & PVPS (57)	Number	240	39,000
<b>Total HHs benefitted</b>				<b>929,500</b>

# Collaboration and Cooperation...1

- **German Development Service (DED):**
  - Technical support to build the capacity of biogas companies
  - Assisting District Energy and Environment Units in planning, monitoring and promotion strategy at local level
- **RisØ Laboratory, Denmark:**
  - Wind Mapping activities, *Training AEPC staffs*
- **German Technical Cooperation (GTZ) and CIM/GTZ:**
  - Technical Support, Support on CDM and RET financing
- **World Wildlife Fund (WWF)/ Nepal**
  - Biogas promotion
- **USAID SARI/E**
  - Regional centre of Excellency in Micro Hydropower (RCEMH)
- **RVWRMP/GoN+FINNIDA**
  - MHP and integrated Community Development

# Collaboration and Cooperation...2

- Asian Institute of Technology
- Winrock International
- Tribhuvan University
- Kathmandu University
- Federation of Community Forestry Users' Nepal (FECOFUN)
- Poverty Alleviation Fund (PAF)
- National Dairy Association
- National Cooperative Federation (NCFN)
- Agriculture Development Bank Limited
- Practical Action Nepal (former ITDG)
- NTNC/ACAP
- NSTB/CTEVT

Thank You

