

**Water and Energy Consultant Association  
Nepal(WECAN), 10<sup>th</sup> Annual General Meeting 2019,  
Kathmandu, Nepal.**

**Presentation on  
Role of WECAN in Promotion of Mini/Small  
Hydropower Projects in Federal Context of Nepal**

**Presentation by  
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Executive Member, WECAN**

# WECAN Introduction

- Consulting Companies/Individual Experts
- Total 84 Members
- Member Consulting Firms/Consultants working at National and International Level.
- We are planning to develop WECAN as Brain Centre of Nepalese Engineers
- Coordination with all Stakeholders
- Established in the Year 2009
- Web: [wecan.org.np](http://wecan.org.np), email: [info@wecan.org.np](mailto:info@wecan.org.np)

# Objective of WECAN

- Supporting Consultant's Values, rights and maintaining professionalism.
- Coordinating at national and international level for carrying out seminars, workshops, training and consulting services.
- Creating awareness about the importance of water and energy by media.
- Creating WECAN fund internally involving consulting firms and individual consultants so that it can support for strengthening the technical capability of water and energy sector within the country.
- Creating a common platform for all water and energy consultants working within and abroad country so that it could even support for long term economic development of the country.

# Strategies

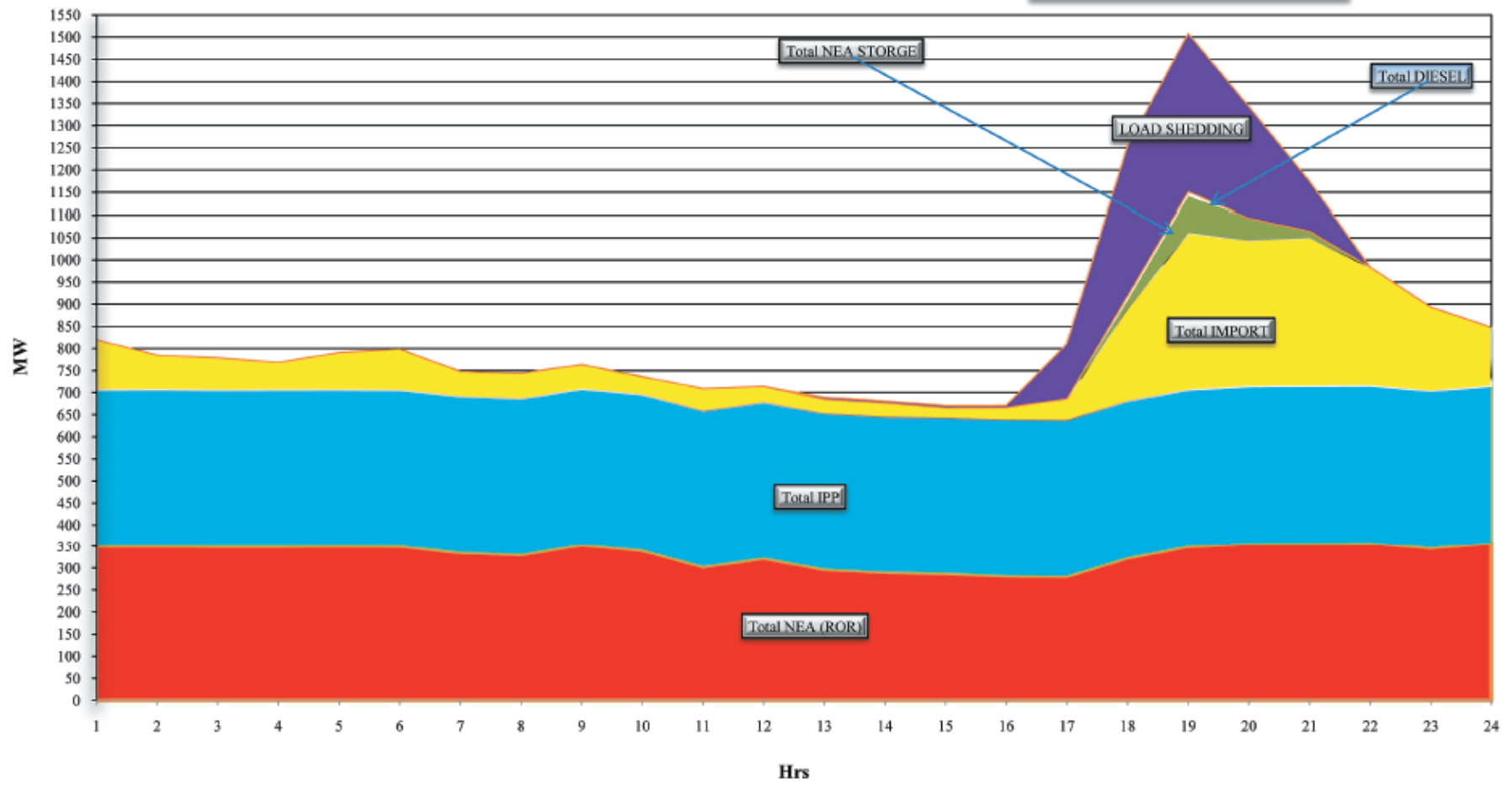
- Conducting Trainings, Workshops, Seminar and exhibitions to meet the technical demand within and outside the country in small hydropower sector.
- Coordination and cooperation at Government and Non Government Level in Water and Energy Sector.
- Coordination and Cooperation with different organization(DoED, NEA, AEPC etc) for carrying out consulting service of small hydropower projects.
- Coordinating other organizations and individuals with similar objectives working directly or indirectly working outside the country.

# Overview of the Energy Sector

# System Load Curve of Peak Load Day

Load Dispatch Center  
System Load Curve  
Kartik 2, 2074 (Oct 19, 2017) Thursday

Peak Load 1508.16 MW at 18:35 hr



No Load Shedding after 14<sup>th</sup> May 2018.

# Energy Consumption Status

- Per Capita Electricity Consumption: 150 kWh.
- Access to Electricity: 75% (60% grid(NEA), 15% renewables(AEPC)).
- Electricity as % of total energy consumed: 4%, mainly from Hydropower.

# Classification of Hydropower

- **Pico Hydro: <10 kW**
- **Micro Hydro: 10-100 kW**
- **Mini Hydro: 100kW- 1000 kW.**
- Small Hydro: 1000- 10000 kW.
- Medium Hydro: 10000-50000 kW.
- Large Hydro > 50000 kW.



# Key Agencies Involved

<b>Ministry of Energy, Water Resource and Irrigation.</b>	<b>Policy/Planning and Approvals.</b>
Department of Electricity Development	Government Interface with Private Sector.
Water and Energy Commission	Policy, Monitoring and Coordination.
Nepal Electricity Authority	Utility, Sole Power Purchaser, Grid Owner/Operator.
Tariff Fixation Commission	Fixes the tariff
Ministry of Environment	Environmental approval/clearances.
Investment Board	Promote HP Projects >500 MW
Alternative Energy Promotion Center(AEPC)	Responsible for Off Grid RE based electrification.
Private-Sector Financers	Banks, Financial Institutions(FIs)
Private Developers	Mainly Generations

# Three tier of Government in Nepal.

- Central or Federal Government based in Kathmandu, the Capital.
- 7 Provincial Government.
- 753 Local Governments which include 6 Metropolitan Cities(Mahanagarपालिका), 11 Sub Metropolitan Cities (Upa-Mahanagarपालिका), 276 Municipalities (Nagarपालिका) and 460 Rural Municipalities (Gaunपालिका).

# Federal Map of Nepal



# Province wise summary of identified mini hydropower sites up to 1 MW.

S.N	Province	No of local bodies	No of sites identified.	Power (MW)
1	Province 1	56	84	66.11
2	Province 2	-	-	-
3	Province 3	53	81	64.44
4	Province 4	29	54	45.14
5	Province 5	23	38	26.99
6	Province 6	60	102	94.75
7	Province 7	56	97	86.12
		<b>277</b>	<b>456</b>	<b>383.56</b>

# Licensing arrangement of Mini Hydropower

- Survey License

- Desk Study report showing the project boundary and major project components in topographic map of 1:25000 or 1:50000.
- Hydrology: Probability of exceedence Q45% (Grid Connected) and Q80% (Off Grid).
- License Fee Rs 5 Lakhs.
- Issuing agency Local Body after technical clearance from DoED.
- Duration of License 2 Years, but in case of extension requirement in the study/investigation, additional one year can be added.

- **Generation/Transmission/Distribution License.**
  - IEE/EIA as per condition and location of the site.
  - Power Purchase Agreement(PPA) or Connection Agreement.
  - In case of off grid projects-Details of area to be electrified.
  - Topo Sheet showing the major project components and co-ordinates.
  - Financial Closure Arrangement Documents (Equity and Loan proportion)
  - The construction has to be started within 3 years after issuing of Generation License.
  - Duration of license period is 35 years after that it has to be hand over to Government under running condition.
  - Royalty(Capacity and Energy) is decided by the local government.

# Present Practice of Consulting Works

	IPP's Projects	AEPC Projects	Remarks
<b>Small/Mini Hydropower Projects</b>	Preliminary/Desk Study		For Licensing.
	Feasibility Study	Feasibility Study	
	Environmental Study(IEE/EIA)		
	Detail Engineering Design		
	Tender Document Preparation Works.	Tendering Works.	
	Construction Supervision(Firm)		
	Performance testing	POV Testing.	

- Poor Engineering results in huge variation of the quantity, quality, cost and time during the construction stage. (Sick Projects)