

Micro Hydro Power

LECTURE 2

Introduction

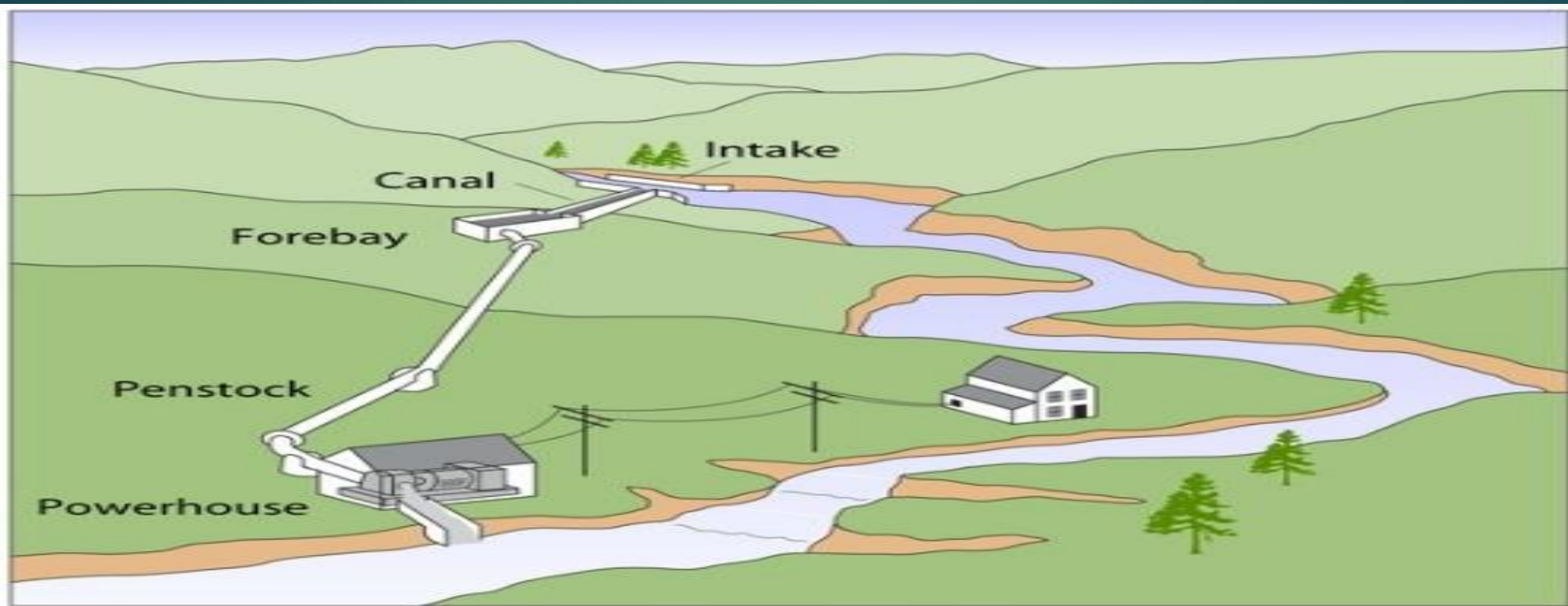
- ▶ Water power can be harnessed in many ways;
- ▶ tidal flows can be utilized to produce power by building a barrage across an estuary and releasing water in a controlled manner through a turbine;
- ▶ large dams hold water which can be used to provide large quantities of electricity;
- ▶ wave power is also harnessed in various ways
- ▶ It is a technology that has been utilized throughout the world, by a diverse range of societies and cultures, for many centuries
- ▶ Water can be harnessed on a large or a small scale
- ▶ Table below outlines the categories used to define the power output form hydropower

Classification of Hydropower Plant on the basis of capacity

Large- hydro	More than 100 MW and usually feeding into a large electricity grid
Medium-hydro	15 - 100 MW - usually feeding a grid
Small-hydro	1 - 15 MW - usually feeding into a grid
Mini-hydro	Above 100 kW, but below 1 MW; either stand alone schemes or more often feeding into the grid
Micro-hydro	From 5kW up to 100 kW; usually provided power for a small community or rural industry in remote areas away from the grid.
Pico-hydro	From a few hundred watts up to 5kW

Micro Hydro Plant

- ▶ Micro-hydro power is the small-scale harnessing of energy from falling water; for example, harnessing enough water from a local river to power a small factory or village.



In this microhydropower system, water is diverted into the penstock. Some generators can be placed directly into the stream.

Features of Micro Hydro Power (MHP) Plant

- ▶ 100kW or Below
- ▶ Mainly Run –of- River and waterway type
- ▶ Stable generation source for the rural electrification
- ▶ Supply to:
 - ▶ Just rural industry or a factory for self use
 - ▶ One or several isolated rural communities
 - ▶ Mini-grid in rural area
- ▶ Generation technology with a history and a simple principle that can be managed by local people

Features of Micro Hydro Power (MHP) Plant

- ▶ Minimal environmental impact
- ▶ High initial costs, but no fossil fuel required for its operation
- ▶ Provides electricity for lighting, livelihood activities and other multipurpose development
- ▶ Power can be supplied for 24 hours a day

Need Of Micro Hydro

- ▶ Rural electrification:
 - ▶ Microhydro are very simple and can provide a means for power supply to those area which are isolated from national grid
- ▶ Climate change:
 - ▶ To minimize the change in climate due to use of fossil fuel for power generation, it is better to use micro-hydro.
- ▶ Cost:
 - ▶ Lowest cost per watt hour
- ▶ Economic Growth of country:
 - ▶ Best way for increasing power and hence economic social growth of people and country

Roles of MHP for Rural Development

- ▶ Electricity is one of the key determinants for economic growth of an area or a whole nation. Thus MHP plays vital role on economic growth of rural areas
- ▶ MHP in rural areas helps in replacing traditional Kerosene lamps like Tuki and Panas completely for illumination purpose
- ▶ Electric lights in households extend the day providing additional hours for evening reading and work
- ▶ The MHP based electricity is used to power modern agro processing mills in the village which reduced difficulties specially for women as they no longer have to use ineffective and distant traditional water mills
- ▶ MHP creates an opportunities for the local people as the regular operation and maintenance of MHP is required
- ▶ Hence MHP provides a renewable, sustainable and clean source of energy to poor rural house holds in Nepal and thus improves the health, environment and living standard of people.

Historical Background and current Situation of MHP in Nepal

- ▶ assignment.

Thank you