

Importance of Electricity in our Daily Life:

Electricity is one of those discoveries that have changed the daily life of everybody on the planet. Electricity is the key component to modern technology and without it most of the things that we use everyday simply could not work, and would never have been created. Our mobile phones, our computers, the Internet, our heating systems, our televisions, and our light bulbs - nearly everything in the home would be completely different. There would be completely different systems put in place in the home to ensure that we can remain warm, and to ensure that we can live properly every day.

Indeed, modern society would be incredibly different. Imagine how different things would be today without the Internet. The World Wide Web has had a huge effect on our lives. It has made everybody more aware of the world they live in, and it's allowed them to learn about our surroundings and know more about how near enough everything within modern society works. It is our gateway for knowledge, and allows us to find out nearly anything within a matter of seconds, hence, electricity has made us an incredibly intelligent and aware society.

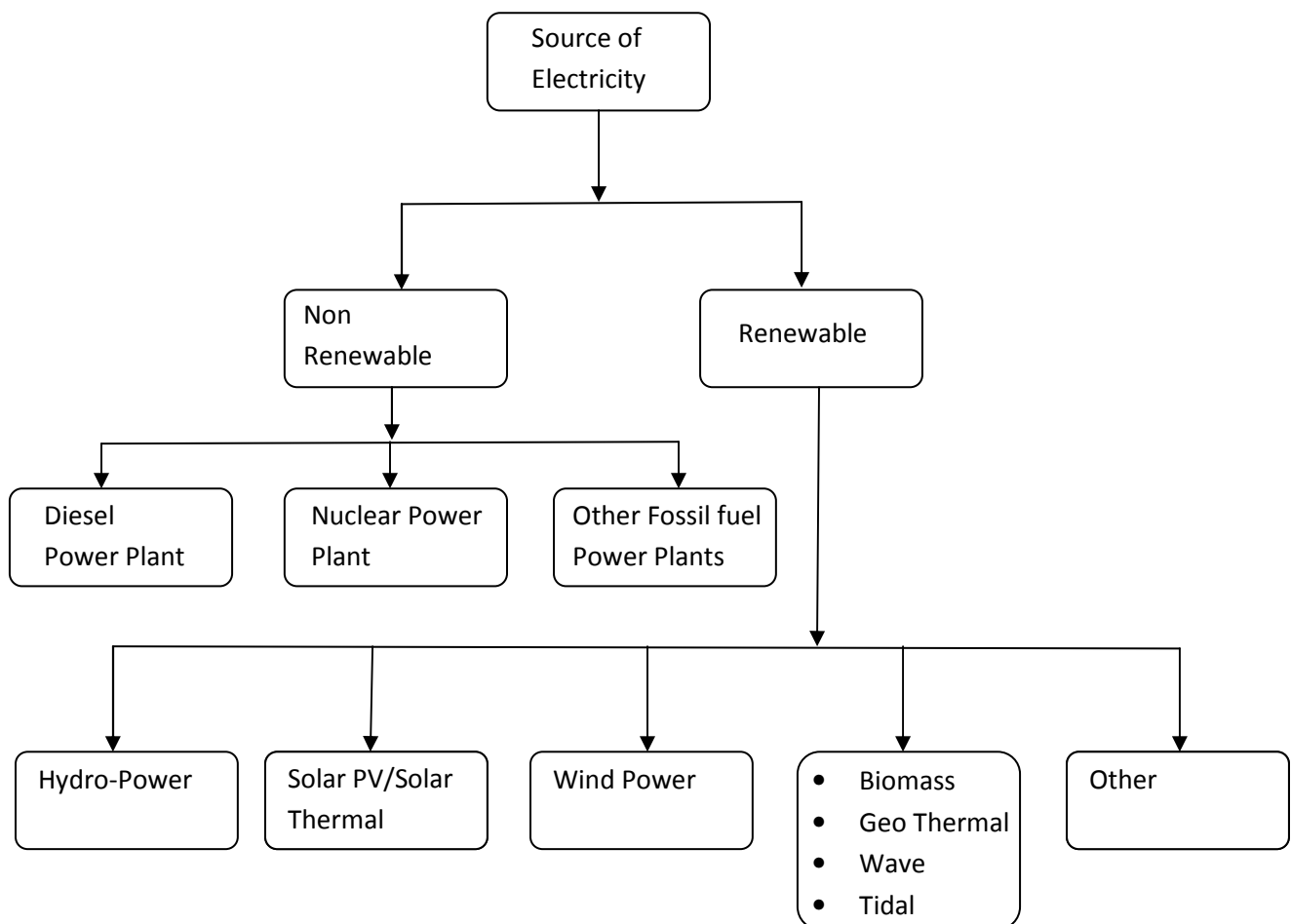
It's also allowed us to become healthier. Without electricity, hospitals would have significantly less medical equipment available to help people with medical problems. Electricity, hence, saves lives and allows people to live longer. So not only are we more aware and intelligent society but we have become much healthier. Our lives are improved no end by electricity, and it's certainly true that most peoples' living quality would be significantly reduced and affected if electricity were to somehow disappear. Electricity is the basis of most modern inventions and naturally without it, the 21st century would be comparable to the 19th.

In today's culture, electricity is a vital part of functioning as a society. Simple tasks, such as waking up at a designated time or enjoying a piece of music, are accomplished currently via electronic means. One only needs to consider the consequences of a relatively short power outage factories close down, phones and computers go dead, traffic slows to a crawl, food spoils in refrigerators to accurately observe how power-dependent our society has become. However, electricity is a constantly developing technology, and the aspects one currently associates with electricity and electricity generation are nowhere close to the original features. In the past century and a half, electricity has steadily evolved from a scientific curiosity, to a luxury of the affluent, to a modern need. Along the way, it has been shaped by a variety of non-technological factors: economic, political, social, and environmental, to name a few.

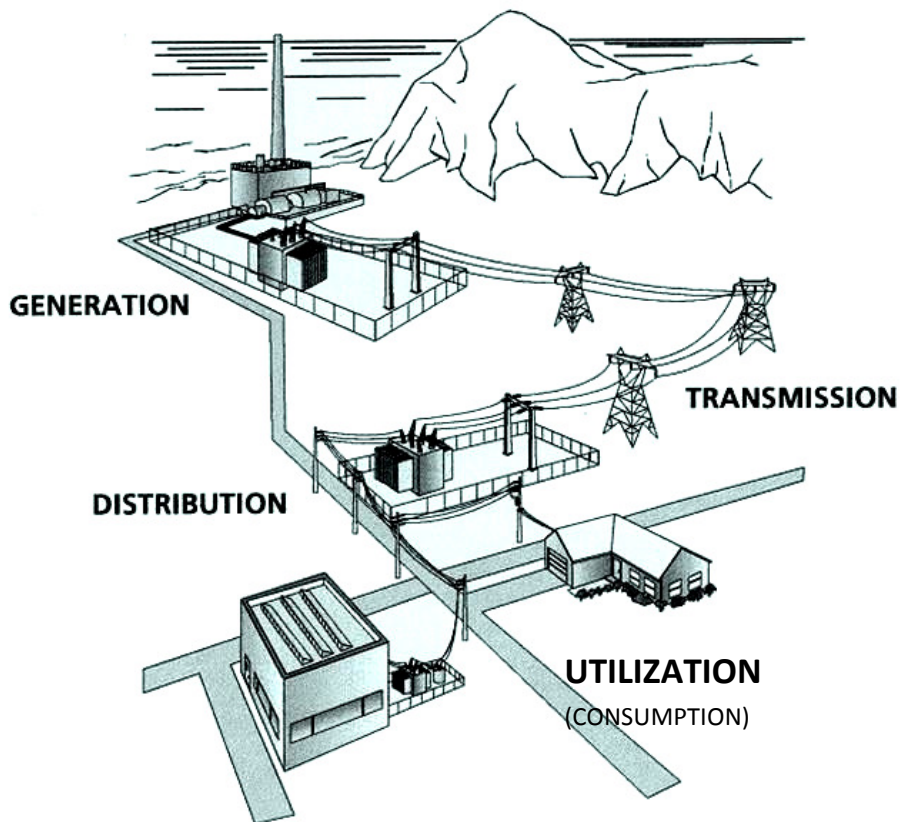
Sources of Electric Energy

Electricity is energy that has been harnessed and refined from a wide range of sources and is suitable for diverse uses. Here are six common energy sources used to make electricity:

- Chemical energy. This is stored, or “potential,” energy. Releasing chemical energy from in carbon-based fuels generally requires combustion – for example the burning of coal, oil, natural gas, or a biomass such as wood.
- Thermal energy. Typical sources of thermal energy are heat from underground hot springs, combustion of fossil fuels and biomass (per above) or industrial processes.
- Kinetic energy. Kinetic energy is movement, which occurs when water moves with tides or flows downstream, or when air moves wind turbines in the wind.
- Nuclear energy. This is the energy stored in the bonds inside atoms and molecules. When nuclear energy is released, it can emit radioactivity and heat (thermal energy) as well.
- Rotational energy. This is the energy of spinning, typically produced by mechanical devices such as flywheels.
- Solar energy. Energy radiates from the sun and the light rays can be captured with photovoltaic and semiconductors. Mirrors can be used to concentrate the power, and the sun’s heat is also a thermal source.

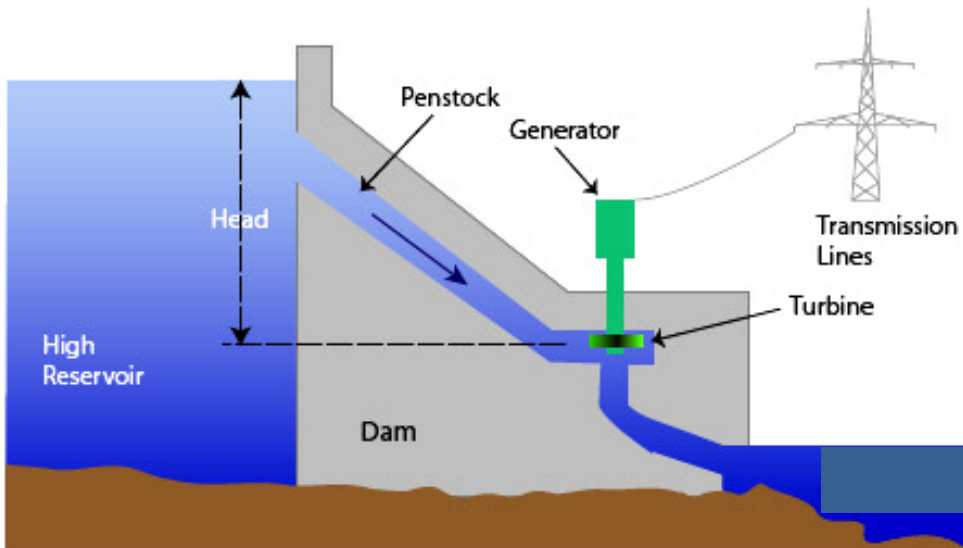


Generation, Transmission, Distribution and consumption of Electricity (Nepal)



Generation:

Electricity is generated by different methods as stated in Source of electricity. In case of Hydropower:



Potential energy of water in reservoir is passed through Penstock to a water turbine. Potential Energy of water is transferred to mechanical rotation by means of water turbine. A shaft coupled with turbine rotates the Generator and electricity is produced.

Transmission:

Generally power station are very long distance from load centre or consumer so electricity generated is required to transferred from generation station to different load centers via Transmission line. To reduce the transmission line loss voltage of transmission line is kept very high which may be 132kV, 320kV or more. But the power is not generated at such high voltage. Therefore, generated voltage is raised up to transmission voltage level by using step-up transformer at generation substation.

Then it is transmitted to different parts of the country via transmission towers and lines. There are also some substations which interconnects different transmission lines .Interconnected network of transmission line is also known as grid.

Distribution:

Near the load centre, at distribution substation the transmitted voltage is reduced to Primary Distribution voltages 11kV, 33kV or 66kV via step down transformer from which electricity for large industrial consumer can be supplied. A number branches of primary distribution supply starts from distribution substation and which is known as feeders. From feeders, voltage is further reduced to 220V-380V via pole mounted distribution transformer to supply small industrial, commercial as well as domestic Consumer. It is known as secondary distribution.

Utilization:

Electricity is supplied to different consumers via connection lines through an Energy meter which is used to determine monthly electricity consumption of that consumer.

Domestic: Electricity is used for mainly lighting, cooking, heating and cooling , cleaning, personal caring, computer and entertainment.

Commercial : Lights, office equipments, computer and entertainment, heating and cooling, cooking, personal caring, lift, elevator etc.

Industrial Load: Motors, lights, HVAC etc.