

NON CONVENTIONAL SOURCE OF ENERGY (19) ①

Energy is an important input for development. It aims at human welfare covering house hold, agriculture, transport & industrial complexes like natural resources, energy resources are also renewable as well as non renewable.

Source of energy are found of two forms.

- ① Conventional source of energy
- ② Non conventional source of energy

① Conventional source of energy: —

Major sources of energy in this type are coal, mineral oil & natural gasses, fire wood & nuclear power.

② Non conventional source of energy:

Coal, mineral oil & natural gasses & nuclear minerals are non renewable source of energy. More over the centralized system in conventional source of energy involves much expenditure on setting of infra structure & management. There is now a trend towards decentralization. It provides greater initiative to local people who could fulfil their needs & resources & plan a strategy that suits best to them.

During 1970 the crisis of energy was developed by scientist

that should be renewable & pollution free. Due to rapid depletion of conventional energy source, many countries all over the world concentrate the vast potential of non conventional energy like dendrothermal, solar, wind, ocean, geothermal heat, biomass, farm and animal waste including human excreta. All these sources are renewable & ~~in~~ expensive inexpensive.

In India, the potential for energy by conventional technology lies with the department of power or central electricity, authority & the state government. The department of non conventional ~~energy~~ sources is actively involved in R & D activity for developing non conventional know-how technology. The non conventional sources can augment power in specific areas in a decentralised manner. The non conventional source of energy are as follows.

- ① solar energy
- ② Wind energy
- ③ Tidal energy
- ④ Geothermal energy
- ⑤ Biomass ~~based~~ based energy.

① solar energy: —

Solar energy is one of the type of non-conventional source of energy. It can be used as domestic heating & water supply can be met by this.

✓ The solar energy is utilized in various countries of the world on commercial scale. India receives sunshine with about 16482108 kWh/m^2 per year in 250-300 days. The daily solar energy receives in between $5-7 \text{ kWh/m}^2$ at different part of the country. This solar energy resource may be converted into other form of energy to thermal or photovoltaic conversion ~~systems~~ ^{systems}. The solar thermal ~~couple~~ ^{system} uses radiation in the form of heat that ~~in turn~~ ^{turn} may be converted to mechanical, electrical or chemical energy. Solar thermal devices like solar cookers, solar water & air heater, solar drier, solar wood seasoning kilns & silicon systems have been developed. A solar cooker consisting of an aluminium ~~reflector~~ ^{aluminium} has been tried and introduced by DENS in extremely cold & remote areas of Ladakh. IIT have been successful development the technology to trap solar energy & wind energy on the icy continent of Antarctica & remote area of leh & Ladakh. On a solar cooker, one meter square collector area at 17.3% efficiency would give a saving of 663 kg of wood at $4708 \times 10^3 \text{ kcal/kg}$.

The solar electrification corporation has identified 90 thousand villages in remote areas where electric supply is very costly & physically tedious.

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On such cases thermal conversion or photovoltaic conversion can be used as biomass best system. According to ABE (1985) nearly 30 thousand villages would be benefited by photovoltaics more than 300 villages in Rajasthan, Gujarat, U.P & Maryland are supplied with street lighting unit.

(2) Wind energy : —

The country where the areas are quite windy. Average annual wind density of 3 kW/m^2 per day are prevalent at a no. of places in Indian peninsular along ~~coastline~~ ^{coastline} in Gujarat, western ghat & parts of central India. The wind densities are more than 10 kW/m^2 per day during winter & wind densities exceeding 4 kW/m^2 per day during 5-7 ~~mon~~ months in a year.

Wind energy may be converted into mechanical & electrical energies. About 20000 MW (megawatt) in electricity can be generated in India from wind. According to ZNES the wind farms with a total capacity of 3.3 MW set up in Mandvi. 1.1 MW in Kutch 530 kW in Okha etc.

(3) Tidal or ocean energy : —

Tidal power generation depends on rise & fall on sea level due to tidal action.