Small tidal power plant have been constructed in china & USSR. The most important application of tidal power is in electricity generation. France constructed 1st major tidal electric plant in 1966. In India exploitation of tidal energy are constructed in gulfs of kutch & Cambay. Other suitable sites have been constructed near Lakshadweep island & Andaman & Nicobar island. In India the potential of the tidal power is 9000 mW, of which 800-1000 mW in gulf of kutch, 7000-8000 mW in Cambay & rest in sundarban.

The central electricity authority & Gujrat electricity board carried out side studies for stablishment of tidal plants in gulf of kutch. India has an excellent OTEC (ocean thermal energy conversion) potential & some of the best site of the world. Tidal energy is divided in to.

(i) OTEC
(ii) Wind wave energy.

(i) OTEC :—

It utilizes the temperature difference between the warm surface sea water (28 - 30°c) & cold deep sea water (5-7°c) which is available at a depth of 800 - 1000 meter in tropical water. The advantages of OTEC is that power in continuous, renewable & pollution free.

A floating OTEC plant can generate power even at mid sea.

(ii) Wind wave energy :

It is a incessant motion of the sea surface in form of wind waves constitute a source of energy. About 1.5% of the incoming energy from sun is converted in to wind energy. In India the coastal line extent to about 6000 km in length, wave energy potential is estimated to be around 60000 mW. Gujrat may become the 1st state of the country to make use of tidal power.

(4) Geothermal energy :

The heat of earth is utilized for power generation from the interior surface. This is possible in volcanic region or hot springs. The potential of the earth heat was estimated by the developing countries at 400×10^{18} joules for geothermal energy which has capacity at 2300 mW in 1990. Efforts are being made to utilize this energy for generating power and creating ~~fe~~ refrigeration. A cold storage unit & 5 mW power plant have been setup Manikaran, HP. At present about 350 geothermal springs have been located in the country.

(5) Biomass based energy :—

Biomass may be defined as all materials originating from photosynthesis. Thus, biomass includes all new plant growth, residues & waste. Biomass can also be produce from hydrocarbon plants, oils etc. Biomass energy systems are renewable and a sink for CO_2 help to conserve soil & water.

(1) petroplants :—

Several attends have been made to identified potential plants species as source of liquid hydrocarbons a substitute from liquid fuel. The hydrocarbons present in such plants can be converted in to petrolium hydrocarbons. The plants belong to Euphorbiaceae, Asclepiladiaceae Apocynaceae, Urticaceae, Convolvulaceae & Sapotaceae. There is need to increase the biomass of these plants & conversion of their hydrocarbon in to petrolium fractions. The Indian institute of petrolium Dehradun has done excillent work in this area. The product obtained from their latex, processed biofruit, where gases, neptha, kerosene, gas oil, heavies, coke,.

(11) Biogas :

Cattle dung is used to produce biogas. Biogas is an important solution to present energy crisis, specialy in rular areas. There is plenty of animal dung every year, from which about 22425 million m^3 gas can be produced. This gas replace kerosene oil used in villages mainly for lighting & cooking. Besides cooking biogas can be utilized to produced steam, which can be used to run machine & turbines for generating electricity. India has appreciable potential for biogas energy. Sharma (1987) mentions that some 1050 million tuns of wt. animal dung is available per year in India to produce dews amount of biogas. Biogas is composed of CH_4, CO_2, H_2 & N_2.

In India to make best use of biogas technology, two things should be better known

(i) Strains of methan generating bacteria.
(ii) Restracted use of water

And also there is a need for methanogen. Land area is also a factor Biogas can also be generated from sludge obtained from primary treatment of row sewage & plants. Besides the gas, the rest matter from sewage is good manner. There have been developed Usha gram by using biomass, animal poltri waste & human excreta.

(iii) Energy plantation :—

Denuded waste lands are being used for plantation of fast growing shrub centre with high calorific value. They provide fuel wood, charcoal, fodder, power & scope for rular employment. Dendrothermial plants may be setup in Rajasthan & M.P on experimental basis.

(iv) Energy from Urban waste :—

A pilot plant for demonstration has been setup in Delhi to treat solid municipal waste for conversion in to energy. It produces 4mw energy every year. Sewage incities is used for generating gas & electricity.

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