



# Alternative Energy Sources: A Low-Cost solution for Common Man!

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**Abstract:** The following are the Alternative solutions for energy apart from fossil fuel:

1. Solar Thermal Energy
2. Solar Photovoltaic Energy
3. Wind Energy
4. Hydroelectric Energy
5. Biomass Energy
6. Ocean Waves Energy

and many more are there which can be easily used effectively for producing energy for our daily requirement.

The fossil fuels energy source has been the main driving power for our modern era. The energy demand is rising every day and we are always looking for some very efficient mechanism to use more power and less wastage that also reduces the pollution of the environment

The total energy at present from renewable energy sources is around 2352 GW.

It is a fact that of the total power, the electricity power has the maximum share of 30% and it is a fact that when we use electricity for heating and transport, carbon imprints are 60% less hence less pollution and better environment.

**IndexTerms – Alternative sources of energy, Energy Crisis, Fossil Fuels, Energy needs of society.**

## OVERVIEW

### Solar panels

The solar panels kept under the solar sunlight produces DC power which is one of the cleanest renewable, abundant, and cheap sources of power. This can be easily generated with the least amount of movable system that has no wear and tear with no noise component.

As new technologies are developing, smaller, more efficient, and high-power density solar panels have been designed and easily available.

Solar panels installed in houses can meet peak demand power requirement, hence less dependent on the local grid and when not in use, supplies back to the grid which it is re-generating, contributing for society consumption and making the local population less dependent on power grid.

The limitation with this type of system is as follows:

1. Converting DC to AC at high voltage results in losses of energy.
2. The efficiency of the system depends upon the sun insolation in that area.
3. The type of panels used, and their efficiency plays an important role in power generation,
4. The climatic circumstances for example the sunshine should be adequate for the system to work.

**Concentrated solar Power plant:**

It is a unique technology, where power generation is done by concentrating the heat of the sun to generate steam which is sent into a steam turbine to produce power.

The cost of production is higher than the P V photovoltaic cell power generation system. This concentrated solar power plant is highly affected by the presence of a small volume of clouds which makes the system totally inoperative in bad weather.

**Tidal wave energy generation system**

Here the power is generated by systems which are mechanical in nature and convert rhythm mechanical energy into electrical power. There are mechanical systems which are made to float on the seashore and can operate generators through rhythmic movement of the waves captured through mechanical means.

For large-scale power generation, the high tide and low tide mechanism is used for powering hydro turbines by constructing a small dam along the sea beach. When high tide is there the water is made to run through the turbine for generation of energy and the spent water is stored towards the shore side and when there is low tide, the water is released from the land side towards sea making the turbine run for producing power. Hence, power is generated in both the high and low tide cycle.

**Wind Power production from wind turbine power plant:**

Wind energy is available all around the globe in abundance. Around 2% of the solar energy coming to the earth from the sun is converted into wind energy because of uneven heating of the surface of Earth.

This flow of wind pushes the turbine blades to rotate, creating mechanical energy that is put to rotate the generator for producing electrical energy.

**Small scale hydro power project**

The kinetic energy of a small river let or stream having a large volume of water generates enough electric power through a small water turbine connected to this feed.

Small effective water turbines are used connected to small generators which can produce electric power from the rotation of the water turbine.

This is the cheapest solution for electric power generation. The only limitation is that this can be produced over the location where “runoff” water is available, and the utilization of the power needs to be near to that installation or else transportation of power to long distance becomes a very costly proposal.

The plus point of this power generation is that the cost of power generation is very low and impact on the environment is also minimal. The disadvantage of this system is that the water flow rate is variable throughout the year, but the system will generate only for the designed capacity and will not respond to the high-volume flow or a low volume flow.

**Biomass Energy**

It is a clean renewable energy source which comes initially from the sun which grows plants and algae which are the main ingredients of generation of biomass energy. Municipal solid waste, crop waste and other bio waste are available around the year to manage this system.

For the time immemorial, biomass resources have been used as a common energy source directly as fuel or converted to another form of energy component product that is called feed stock.

Biodiesel is one of the most effective energy sources from plants which can be grown in any wasteland that does not require any high-water demand and care.

The bio waste can be used to generate gas in a specifically designed digester for a particular type of biomass utilization.

**CONCLUSION**

Hence we can conclude that power requirements for a small scale off- grid can be had from the above said technology readily available in the market.

This will make system economics more viable at remote areas where the power transmission through grids is not possible or has not reached yet.

These renewable energy sources require very less technology to implement and can be easily developed at remote areas, villages and places where the topography of the land is such that Power grid is not at all possible to be laid.

This renewable energy source will bring down the cost of energy requirement and will make small dwelling units more sustainable and self-sufficient in power requirement making growth in various independent locations instead of big cities.

The alternative energy development will open more jobs for the local population in the energy sector making it more sustainable and will result in development of local sustainable implements making local growth a better opportunity for power development and consumption of energy.

Needless to state that to limit the greenhouse emission we should start placing strict regulation on fossil fuel projects and should give more emphasis to alternate energy sources.

### References

- [1] Ali, A. 2001. Macroeconomic variables as common pervasive risk factors and the empirical content of the Arbitrage Pricing Theory. *Journal of Empirical finance*, 5(3): 221–240.
- [2] Basu, S. 1997. The Investment Performance of Common Stocks in Relation to their Price to Earnings Ratio: A Test of the Efficient Markets Hypothesis. *Journal of Finance*, 33(3): 663-682.
- [3] Bhatti, U. and Hanif. M. 2010. Validity of Capital Assets Pricing Model. Evidence from KSE-Pakistan. *European Journal of Economics, Finance and Administrative Science*, 3 (20).

