

To Make This Earth a Livable Planet: Usage of Renewable Energy Sources

Priyanka Yadav, Research Scholar, Department of commerce, IGU Meerpur, Rewari

Email ID: Priyankarao2010@gmail.com

Abstract- Earth is a natural source of energy. We get energy from natural sources like Sun, Water, Wind, earth. Energy is the essential part of our life. It is used all around us. In day to day life we depend on energy. Energy can be in the form of thermal, radiant, electrical, mechanical, and chemical and atomic energy. Thermal and radiant energy comes directly from sun, electrical and mechanical energy comes indirectly from the sun, and chemical and atomic energy are independent from sun. Energy is present in many different forms all around us. It is everywhere in great abundance. Nature has been producing lots of energy. Energy that comes from resources which are naturally replenished on a human timescale, such as sunlight, wind, rain, tides, waves, and geothermal heat. Renewable energy replaces conventional fuels in four distinct areas: electricity generation, air and water heating/cooling, motor fuels, and rural energy services. Solar energy is used for generating electricity, Heating of water and heating and cooling of buildings. Wind and Hydroelectric energy is also used to produce electricity. Biomass is used for making bioproducts and making fuels and gases. Hydrogen and fuel cells are used for reducing pollution in cities. Hydrogen is used in fuel cell which is similar to batteries and gives power to motor. Geothermal power is used to produce electricity and cooling or heating of buildings using shallow ground.

Introduction

Earth is a beautiful living planet of the universe. Human activities are affecting the earth and disturb the natural process of the

universe. Now a day's human beings became very selfish and their activity are badly affecting the earth like throwing the waste on roads, harmful gases emitted from our home, vehicles, and industries, disposing the sewages, drainage, disposing the non degradable waste by industries. Earth is a natural source of energy. We get energy from natural sources like Sun, Water, Wind, earth. Energy is the essential part of our life. It is used all around us. In day to day life we depend on energy. Energy can be in the form of thermal, radiant, electrical, mechanical, and chemical and atomic energy. Thermal and radiant energy comes directly from sun, electrical and mechanical energy comes indirectly from the sun, and chemical and atomic energy are independent from sun.

In Ancient times man and sun were the only resources of energy. For light and heat man relied on sun and did physical work himself. He discovered fire as first usable source of energy and animal to do some works .The role of coal was major in human development and industrial revolution and then oil and gases are used to run the machines which men's were use to do their work.

Natural energy resources

Energy is present in many different forms all around us. It is everywhere in great abundance. Nature has been producing lots of energy. We can never begin to use it all, not even with the most advanced technology. Earth is a natural planet and there are various following natural sources of energy.

- Sun - Sun is the source of light and heat. Its light is internally produced and received by earth through radiation
- Wind – The unequal distribution of radiant heat from sun on the surface of the earth produces variations in heat contents of the air mass with corresponding variations in its density. These variations cause air movement, which is modified by the earth's rotation, inclination, uneven distribution of land and ocean masses, and geographic abnormalities. This flow of air is called wind. Wind can be used in many passive ways like cooling and combustion air.
- Water – About three fourth of the earth's surface is water. The natural cycle of water evaporation and precipitation created by the sun is a force needed to sustain life on earth. Many forms of energy can be realized from this movement of water in its natural cycle like electric energy and thermal energy.
- Earth – Geothermal energy is provided by subterranean movement of water in contact with the intense heat produced at the earth's core. This core can provide steam and hot water.
- Vegetation – Photosynthesis takes place in the chlorophyll cells of green plants. Consuming carbon dioxide, producing carbohydrates and freeing oxygen. This relationship of sun and plants that created the biosphere around the earth allows man and animals to survive. Biomass is the plant and animal material produced by photochemical reaction.

Renewable energy

Energy that comes from resources which are naturally replenished on a human timescale, such as sunlight, wind, rain, tides, waves, and geothermal heat. Renewable energy replaces conventional fuels in four distinct areas: electricity generation, air and water heating/cooling, motor fuels, and rural energy services.

Based on REN21's 2014 report, renewables contributed 19 percent to our global energy consumption and 22 percent to our electricity generation in 2012 and 2013, respectively. This energy consumption is divided as 9% coming from traditional biomass, 4.2% as heat energy (non-biomass), 3.8% hydro electricity and 2% is electricity from wind, solar, geothermal, and biomass. Countries like China and the United States heavily investing in wind, hydro, solar and biofuels.

Use of Renewable energy sources

Solar Energy - Solar panels convert the sun's light in to usable solar energy using N-type and P-type semiconductor material. When sunlight is absorbed by these materials, the solar energy knocks electrons loose from their atoms, allowing the electrons to flow through the material to produce electricity. This process of converting light (photons) to electricity (voltage) is called the photovoltaic (PV) effect. This form of energy relies on the nuclear fusion power from the core of the Sun. This energy can be collected and converted in a few different ways. Some of solar energy technologies are:

- **Photovoltaic systems** are used to produce electricity from sunlight.
- **Solar hot water** is used for heating water with solar energy.

- **Solar electricity** is produced by using the sun's heat to produce electricity.
- **Passive solar heating and daylighting** using solar energy to heat and light buildings
- **Solar process space heating and cooling** is done for industrial and commercial uses of the sun's heat.

Wind Energy - We can use wind energy to produce electricity from wind turbines. About 2% of solar energy reaching earth is converted into wind energy. The movement of the atmosphere is driven by differences of temperature at the Earth's surface due to varying temperatures of the Earth's surface when lit by sunlight. Wind energy can be used to pump water or generate electricity, but requires extensive areal coverage to produce significant amounts of energy.

Hydroelectric energy - Flowing water creates energy that can be captured and turned into electricity. This is called hydroelectric power or hydropower. This form uses the gravitational potential of elevated water that was lifted from the oceans by sunlight. The most common type of hydroelectric power plant uses a dam on a river to store water in a reservoir. Water released from the reservoir flows through a turbine, spinning it, which in turn activates a generator to produce electricity.

Another type of hydroelectric power plant called a pumped storage plant can even store power. The power is sent from a power grid into the electric generators. The generators then spin the turbines backward, which causes the turbines to pump water from a river or lower reservoir to an upper reservoir, where the power is stored. To use the power, the water is released from the upper reservoir back down into the river or lower reservoir. This spins the turbines

forward, activating the generators to produce electricity.

Biomass - Biomass is the term for energy from plants. Wood is still our largest biomass energy resource. But many other sources of biomass can now be used, including plants, residues from agriculture or forestry, and the organic component of municipal and industrial wastes. Even the fumes from landfills can be used as a biomass energy source.

The use of biomass energy has the potential to greatly reduce our greenhouse gas emissions. The use of biomass feedstock can also help increase profits for the agricultural industry.

- **Bio fuels** are used by converting biomass into liquid fuels for transportation.
- **Bio power** is used by burning biomass directly, or converting it into a gaseous fuel or oil, to generate electricity
- **Bio products** are used by converting biomass into chemicals for making products that typically are made from petroleum.

Hydrogen and fuel cells. These are not strictly renewable energy resources but are very abundant in availability and are very low in pollution when utilized. Hydrogen can be burned as a fuel, typically in a vehicle, with only water as the combustion product. This clean burning fuel can mean a significant reduction of pollution in cities. In either case significant production of hydrogen requires abundant power. Due to the need for energy to produce the initial hydrogen gas, the result is the relocation of pollution from the cities to the power plants. There are several promising methods to

produce hydrogen, such as solar power, that may alter this picture drastically.

Geothermal power - Geothermal energy is the heat from the Earth. Geothermal heat pumps can tap into this resource to heat and cool buildings. A geothermal heat pump system consists of a heat pump, an air delivery system (ductwork), and a heat exchanger-a system of pipes buried in the shallow ground near the building. In the winter, the heat pump removes heat from the heat exchanger and pumps it into the indoor air delivery system. In the summer, the process is reversed, and the heat pump moves heat from the indoor air into the heat exchanger. The heat removed from the indoor air during the summer can also be used to provide a free source of hot water.

- **Geothermal electricity** is produced from geothermal energy.
- **Producing heat** directly from hot water within the earth.
- Geothermal heat pumps are used to **heat and cool buildings** using shallow ground.

Conclusion

There are many forms of renewable energy. Most of these renewable energies depend in one way or another on sunlight. Wind and hydroelectric power are the direct result of differential heating of the Earth's surface which leads to air moving about (wind) and precipitation forming as the air is lifted. Solar energy is the direct conversion of sunlight using panels or collectors. Biomass energy is stored sunlight contained in plants. Other renewable energies that do not depend on sunlight are geothermal energy, which is a result of radioactive decay in the crust combined with the original heat of accreting the Earth, and tidal energy, which is a conversion of gravitational energy. Solar

energy is used for generating electricity, Heating of water and heating and cooling of buildings. Wind and Hydroelectric energy is also used to produce electricity. Biomass is used for making bioproducts and making fuels and gases. Hydrogen and fuel cells are used for reducing pollution in cities. Hydrogen is used in fuel cell which is similar to batteries and gives power to motor. Geothermal power is used to produce electricity and cooling or heating of buildings using shallow ground.

References

1. <http://dnr.louisiana.gov/assets/TAD/education/ECEP/sources/b/b.htm> retrieved on October 7, 2015
2. https://en.wikipedia.org/wiki/Renewable_energy retrieved on October 9, 2015
3. Omar Ellabban, Haitham Abu-Rub, Frede Blaabjerg, Renewable energy resources: Current status, future prospects and their enabling technology. *Renewable and Sustainable Energy Reviews* 39, (2014), 748–764, p 749, doi:10.1016/j.rser.2014.07.113
4. REN21 (2010). *Renewables 2010 Global Status Report* p. 15.

5. REN21 (2014). "Renewables 2014: Global Status Report" (PDF). pp. 13, 17, 21, 25. ISBN 978-3-9815934-2-6. Archived from the original on 4 September 2014.
6. REN21 (2013). "Renewables global futures report 2013"
7. <http://www.altenergy.org/renewables/renewables.html> retrieved on October 9, 2015
8. <http://www.renewableenergyworld.com/solar-energy/tech.html> retrieved on October 9, 2015
9. <http://www.renewableenergyworld.com/geothermal-energy/tech.html> retrieved on October 9, 2015
10. <http://www.renewableenergyworld.com/hydropower/tech.html> retrieved on October 9, 2015