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Alternate Energy Sources: A Better Way to Maintain Eco-paryavaran

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Abstract- Among all developing countries like India the basic need is energy .Various sources of energy are needed and being used for fast growth and development of any country. Time have impact on the type of energy sources to be used by mankind. It was the time when source of energy were abundantly available and used carelessly without considering future consequences and impact on environment. Different sources of energy like coal, petrol, diesel and wood were preferred. Alternate energy sources like solar power, biogas, wind power, wave/tidal energy, hydro power, biomass etc which are also available free of cost with us given no consideration. Some of these energy sources are degradable while other is non-degradable, some are easily available while other are tough and some are renewable while other are non-renewable. Energy is needed by every country and by every individual. Growing population ,urbanization, modernization, industrialization are few among all reason that laid stress and pressure on the growing need of energy sources or alternative energy sources that have no impact or less negative impact on society and the environment. The objective of this paper is to highlight various alternate sources of energy which could replace non-renewable sources and also meet the growing need of energy. It will also highlight the impact of these sources on society and environment.

Index Terms- Energy, Sources, Alternate, Renewable, Biomass, Hydro.

1. INTRODUCTION

Earth's ecosystem depends on the balanced human-environment relationship. Ecosystem/ecoparyavaran has many challenges like urbanization, industrialization, changing life style, population explosion, greenhouse gases like carbon dioxide etc. which is pushing earth's temperature and leads to rise see water level, floods, droughts and storm etc. To save human and environment we have to switch to those sources which produce less or no carbon dioxide. Renewable sources like sun, wind, tides, waves and plants are some sources of energy which are used to produce /create electricity without producing carbon dioxide. Renewable sources are important aspects of sustainability.

Growth of any nation depends on energy sources. Energy sources like solar power, biogas, wind power, wave/tidal energy, wood, hydro power and fossil fuel have proved a driver of economic growth of any country but at the same time some sources have adverse impact on society, social life and environment at large. Many gases like carbon dioxide and monoxides of carbon and nitrogen and many more toxic gases are produced by the use of conventional energy sources based on coal, fossil fuel and natural gases. Due to global pressure of development, energy demand had increased to its maximum level. India is the eleventh largest economy in the world, fourth in term of purchasing power/energy. Energy demand poses pressure on Indian economy.

Growing industries, urbanization, modernization, change in living style, migration from villages to cities, population explosions are known as indicator of development. No doubt India is a growing economy in the global world but still the conventional sources are not sufficiently available in India and we have to depend on other countries like Iran and Iraq to meet our growing energy demands. There is a need to shift to alternate sources of energy that poses no burden on Indian economy, society, and individual and on our environment.

2. SOURCES OF ENERGY

Energy sources are classified as:

- Renewable:-Replenished within short time period.
- Non-renewable:-Cannot replenish or take million of years to replenish.

Energy sources that are refilled by natural processes at least as fast as we use them are termed as renewable sources. Renewable energy is energy from natural resources suchas sunlight, wind, rain, tides, waves and g eothermal heat. Renewable energy sources are commonly used for electricity generation and motor

fuels. Renewable energy supplies can become exhausted if we use them faster than they become replenished. For example cutting of trees. If we use renewable sources wisely, energy supply can last forever. Water energy, wind energy, sun energy are some examples of renewable sources these are better alternate to non-renewable sources like fossil fuel.

3. RENEWABLE ENERGY SOURCES

- Hydro Power
- Solar Power
- Wind Power
- Biomass Power
- Geothermal Power
- Tidal power

3.1. Hydro Power

Hydropower is energy derived from the movement of water in rivers and oceans, originally used for irrigation and the operation of various mechanical devices. Hydro power refers to the production of electricity with the help of water. Water can be considered a renewable material when carefully controlled usage, treatment, and release are followed. Dam is constructed to produce electricity. Collected water has potential energy which converted to kinetic energy during motion and result electric energy. Other electricity generating methods are run-of-the-river hydroelectricity, which captures the kinetic energy in rivers or streams, without the use of dams. Traditionally, electricity was generated in thermal plants based on burning of coal or oil which has negative impact on environment as burning fuel produces harmful gas like carbon dioxide. India utilizes hydro electric power plants situated in its different parts like Bihar, Himachal Pradesh, Punjab, Jammu & Kashmir, Uttar Pradesh, Gujarat, Andhra Pradesh and many more.

3.2. Solar Power

Solar power is a huge source of energy which is available whole of the year. Solar energy converts radiant heat collected from the sun into electricity. Solar energy is the most abundant and easily available renewable resource, and has been harnessed not by humans only but also by plants and other organisms in photosynthesis. Solar power is the conversion of sunlight into electricity. Photovoltaic (PV) cell are designed mainly for small-scale power generation. They are made from semiconductor material such as silicon that produces electricity when exposed to daylight. Solar Energy is collected by Photovoltaic (PV) cell and collectors such as mirror or parabolic dishes. Collected energy is being used to light the bulb or heating of water. PV cell light can be used in homes and street lights etc. Hot water can be used for domestic as well as for commercial purpose. Solar cooker is used to cook food free of cast and without loss to environment. There are many other domestic applications of solar power including solar stills, solar heating and air conditioning.

3.3. Wind Power

Wind power is the conversion of wind energy into a useful form of energy. It is one of the most technically and economically developed form of renewable electricity generator. Wind as a global energy source, widely available and produces no pollution during power generation. Wind energy is used through windmill. History shows that wind mill is used over 2000 years age in China, India and Persia to generate electricity. Wind energy can be used to produce electricity, underground water pumping, grinding and power supply in remote areas. Wind power is produced by the energy of wind turning aerodynamic blades mounted to a hub. The hub is connected to a shaft that turns a generator. The ten machines near Okha in the province of Gujarat were installed in India. In 2006 in the U.K., generation from wind exceeded generation from hydro-power and become the largest renewable technology in terms of electricity generation.

3.4. Biomass Power

Biomass resources include solid biomass, biogas, trees, food crops, algae, agricultural and forestry byproducts, liquid bio-fuels, municipal wastes and even Methane fumes from landfills. These biomass resources provide fuels, power production and products typically made from nonrenewable fossil fuels. The most useful form of biomass is sugarcane agricultural waste, residential and commercial waste pulp and paper residue, forest residue etc. Energy production from biomass is preferred because it can helps in reducing dependence on foreign oil and at the same time it has the potential to reduce greenhouse gas emissions as compared to fossil fuel. The agricultural and forestry industries also benefit from the demand for biomass. Commonly used methods to produce energy by using biomass are:

1) Fermentation
2) Gasification
3) Combustion
4) Anaerobic digestion

Potential of States for biomass production is, Andhra Pradesh (200 MW), Gujarat (200 MW), Maharashtra (1000 MW), Uttar Pradesh (100 MW), Punjab (150MW)……etc.

3.5. Geothermal Power

Geothermal energy is thermal energy generated and stored in the Earth. The word geothermal is derived from the Greek words *geo*, or "earth," and therme, meaning "heat."The heat inside the Earth is intense enough to melt rocks **(**magma)**.**Deep inside the Earth lies hot water and steam that can be used to heat our homes and businesses and generate electricity . It's called geothermal energy. Most of the time magma stays beneath the surface, heating surrounding rocks and the water but sometimes magma escapes through cracks in the Earth's crust in the form of volcanoes . Heated water sometime escapes through cracks in the Earth to form pools of hot water (hot springs) or bursts of hot water and steam (geysers) and the rest of the heated water remains in pools under the Earth's surface, called geothermal reservoirs. Geothermal heat is a byproduct of the natural decaying of minerals in the ground and the absorption of solar energy deep within the earth. While ancient uses of geothermal were limited to heating, modern technology allows for it to be converted into electricity. The most common home application uses geothermal for direct heating. Geothermal is sustainable and renewable and offers a very cost-effective way to heat your home. Geothermal power is cost effective, reliable, sustainable, and environmentally friendly. Geothermal wells release greenhouse gases trapped deep within the earth, but these emissions are much lower per energy unit than those of fossil fuels. Geothermal power is considered to be renewable because any projected heat extraction is small compared to the Earth's heat content.

3.6. Tidal power

Tidal energy is one of the oldest forms of energy .It is considered to be a renewable source of energy since it only uses the energy from the changing of the tides instead of burning or consuming any form of energy source. Tidal energy produces electricity and other forms of power through the use of water. The only one major tidal generating station in operation is a 240 megawatt station at the mouth of the La Rance river estuary in France. The technology used to convert tidal energy into electricity is very similar to that of traditional hydro-electric power plants and turbines are similar to wind turbines. Tidal energy has an efficiency of 80% in converting the potential energy of the water into electricity. This energy is a renewable energy and does not use any fossil fuels, thus has zero CO_2 emissions and has zero impact to the environment.

4. CONCLUSION

Global demand for energy is continuously increasing and it adversely impacted the environment. The benefits of alternate or renewable energy sources are that we have no other option to fulfill our increasing energy demands. To maintain ecoparyavaran, renewable sources are the only option. These are environment friendly energy sources as these produce no carbon dioxide and greenhouse gases. These sources have no contribution to global warming .The aim of using renewable sources of energy is to reduce the negative impact of non- renewable sources of energy on the environment and also to reduce the cost of energy purchase. These sources need one time investment only and available free afterword.

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