

# International Journal of Innovative Research in Science, Engineering and Technology

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## Sustainable Energy: Needs, Uses, Types and Resources

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**ABSTRACT:** The study of sustainable energy sources is an important topic in the field of combustion science. Sustainable energy is energy that is consumed at insignificant rates compared to its supply and with manageable collateral effects, especially environmental effects. Another common definition of sustainable energy is an energy system that serves the needs of the present without compromising the ability of future generations to meet their needs. The aim of this paper is to know about the needs and types of sustainable energy .

**KEYWORDS:** Sustainable, renewable sources , energy sources

### I. INTRODUCTION

#### Some renewable energy sources

Sustainable sources of energy include solar, wind, water, biomass and geothermal. Non renewable energy sources include coal, oil and natural gas. Sustainable electricity production plays an increasing role in reducing Australia's greenhouse gas emissions

Solar energy does not emit harmful greenhouse gases, such as carbon dioxide that contributes to climate change, does not rely on non-renewable carbon-based fuel or produce harmful radioactive waste, as does nuclear power. Solar energy depends on the natural energy produced by the sun to generate electricity.

#### Renewable source of energy

Renewable energy is energy generated from natural resources—such as sunlight, wind, rain, tides and geothermal heat—which are renewable (naturally replenished). Renewable energy technologies range from solar power, wind power, hydroelectricity/micro hydro, biomass and biofuels for transportation

### II. RELATED WORK

#### Need for Sustainable Energy

During ancient times, wood, timber and waste products were the only major energy sources. In short, biomass was the only way to get energy. When more technology was developed, fossil fuels like coal, oil and natural gas were discovered. Fossil fuels proved boom to the mankind as they were widely available and could be harnessed easily. When these fossil fuels were started using extensively by all the countries across the globe, they led to degradation of environment. Coal and oil are two of the major sources that produce large amount of carbon dioxide in the air. This led to increase in global warming.

Also, few countries have hold on these valuable products which led to the rise in prices of these fuels. Now, with rising prices, increasing air pollution and risk of getting expired soon forced scientists to look out for some alternative or renewable energy sources. The need of the hour was to look for resources that are available widely, cause no pollution and are replenishable. Sustainable Energy, at that time came into the picture as it could meet our today's increasing demand of energy demand of energy and also provide us with an option to make use of them in future also.

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## III. TYPES AND USES OF SUSTAINABLE ENERGY

Sustainable energy are not just a part of renewable energy sources, they are also the sources of energy that can best be used to power homes and industries without any harmful effects being experienced. This is the sole reason why many people advice the use of these forms of energy in everyday life. It is because its effects to the environment are purely beneficial.

### **Solar Energy**

Solar energy is the best form of sustainable energy. This energy manifests itself in tow forms. There is the light and the heat. Both of these forms are equally important to us in our day to day living and other forms of life. For instance, the plants need the light to grow and generate food while man needs the heat energy to maintain body temperature and power their homes and industries. This means that it is the greatest form of sustainable energy. It can be used two folds with greater results as needed. This only serves to generate confidence and ensure that we live the way we intended without causing further harm to the environment.

According to activists, it is the future of energy. Evidence of intensive use of this alternative energy source can be seen everywhere. There are many companies that are making solar panels to tap this energy for use at home or in the industries. Consequently, the energy is also being tapped for commercial purposes in many fields like powering of homes in power grids. All that one needs to do is to get hold of the solar panel and install it in the homes or commercial property. During the summer periods, you can cut down on your energy costs.

### **Wind Energy**

Wind is a sustainable energy source. It is available naturally and can be tapped to produce vast amounts of power that can be used in many ways and places. For instance, sailors tap this energy to help the ship propel through its various directions to distant shores for trading. Nowadays, this energy sources is being commercialized. There are many companies that have invested heavily on power grids and windmills to tap into this energy source. The energy generated can be sold to other people to power their homes and industries. In the near future, sustainable energy like wind power will be a big industry and the fossil fuels exploration will have halted and no longer being used.

### **Geothermal Energy**

Geothermal energy allows us fetch the energy from beneath the earth. This occurs by installing geothermal power stations that can use heat coming out from inside the earth and use it to generate electricity. The temperature below the earth around 10,000 meters is so high that it can used to boil water. Geothermal energy cannot be harnessed everywhere as high temperature is needed to produce steam that could move turbines. It can be harnessed in those areas that have high seismic activity and are prone to volcanoes. They are environment friendly and can produce energy throughout the day but their ability to produce energy at suitable regions restricts us from using it on a much wider scale.

### **Ocean Energy**

There is massive size of oceans in this world. About 70% of the earth is covered with water. The potential that ocean energy has to generate power is much higher than any other source of energy. This sustainable energy allows us to harness it in 3 ways i.e. wave, tidal or ocean thermal energy conversion (OTEC). Tides have immense power which when effectively tapped can generate a lot of energy and can be used to power millions of homes. Waves produced at the oceans can be used by ocean thermal plants to convert the kinetic energy in waves to mechanical energy of turbines which can again converted to electrical energy through generators. Setting up of big plants at ocean may cause ecological imbalance and disturb aquatic life.

### **Biomass Energy**

Biomass energy is produced by burning of wood, timber, landfills and municipal and agricultural waste. It is completely renewable and does not produce harmful gases like carbon dioxide which is primarily responsible for increase in global warming. Although, carbon dioxide is produced by burning these products but that is equally compensated when plants take this carbon dioxide and produce oxygen. It also helps to reduce landfills but are not as effective as fossil fuels.

### **Hydroelectric Power**

On the other hand, there are the rivers or waterfalls whose energy of the moving water is captured that can turn turbines to generate power. This is commonly known as hydroelectric power. It is very common nowadays and it is powering

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most parts of the world and one of the biggest form of alternative energy currently being used. There are many companies and countries that are exporting this energy to other countries who unable to harness it on their own due to lack of the necessary resources or conditions. The energy is commonly transported in form of power lines to various parts of the country and even outside the country.

These are the three best case examples of sustainable energy forms that are projected to run the world in the near future. They are very sustainable and so not cause any environmental effects. Their inability to be depleted and lack of effect to the environmental makes them a perfect candidate to future energy needs.

## IV.CONCLUSION

Solar energy is the best form of sustainable energy. This energy manifests itself in tow forms. There is the light and the heat. Both of these forms are equally important to us in our day to day living and other forms of life. For instance, the plants need the light to grow and generate food while man needs the heat energy to maintain body temperature and power their homes and industries.

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