

# Renewable Energy Development

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**Abstract** – Most of the world's energy sources are derived from the conventional, non-renewable sources like coal, oil and natural gases. These fuels are finite and can run out in the near future the civilization will be forced to research and develop alternative energy sources, our current rate of fossil fuel usage will lead to an energy crisis this century. Energy created from sources other than conventional sources like fossil fuel and nuclear reactor are termed renewable energy. It is also termed non-conventional energy. The renewable energy sources are continuously replenished by the natural processes. Renewable energy is called so as most of the energy comes directly or indirectly from sources like sun and wind, and can never be exhausted. A renewable energy system converts the energy found in sunlight, wind, falling-water, sea waves, geothermal heat, or biomass into a form that can be used such as heat or electricity. The main difference between renewable and non-renewable energy sources is that while in renewable energy, sources are flow of energy, whereas the non-renewable sources like fossil and nuclear fuels are stocks of energy. There are all alternatives for non-renewable resources. Whereas the paper observes that these problems are also creates consequence of environmental pollution. The paper recommends awareness creation and change in attitude to use renewable energy.

**Keywords:** energy sources, Renewable energy, Research and Develop alternative energy, Renewable energy resources, natural processes, Sunlight, Wind, Environmental pollution

## 1. INTRODUCTION

Most of the world's energy sources are derived from the conventional, non-renewable sources like coal, oil and natural gases. These fuels are finite and can run out in the near future the civilization will be forced to develop alternative energy sources. Our current rate of fossil fuel usage will lead to an energy crisis this century. Energy created from sources other than conventional sources like fossil fuel and nuclear reactor are termed renewable energy. It is also termed non-conventional energy. The renewable energy sources are continuously replenished by the natural processes. Renewable energy is called so as most of the energy comes directly or indirectly from sources like sun and wind, and can never be exhausted. A renewable energy system converts the energy found in sunlight, wind, falling-water, sea waves, geothermal heat, or biomass into a form that can be used such as heat or electricity. The main difference between renewable and non-renewable energy sources is that while in renewable energy, sources are flow of energy, whereas the non-renewable sources like fossil and nuclear fuels are stocks of energy. There are all alternatives for non-renewable resources. So the need for renewable resources is increases rapidly in all countries. This paper observes

the problems of using non-renewable energy resources and development of renewable energy are more needed in all countries.

## 2. OBJECTIVE OF THE STUDY

- To know the effects of using non-renewable energy
- To create awareness on change in attitude to use renewable energy.

## 3. WHY DO WE NEED TO USE RENEWABLE ENERGY RESOURCES?

For thousands of years we have burning fossil fuels to generate energy, but using of non-renewable energy resources is the biggest problem. The main cause behind it is our dependence on fossil fuels. Another problem with using fossil fuels to generate energy is that there is not an unlimited amount available. For the past couple of centuries, we have come to more and more on the world's supply of fossil fuels, and that supply is fast running out. As the demand for fossil fuels has increased, the cost of using them has also increased and each year we find ourselves with larger and larger energy bills. And

another major problem with using of non-renewable energy is it creates many environmental issues

#### **4. EFFECTS OF USING NON-RENEWABLE ENERGY RESOURCES**

##### **Atmospheric Effects**

We all paid a value purchased gasoline. Those represent the direct costs of fossil fuels; money paid out of pocket for energy from coal, natural gas, and oil. But those expenses don't reflect the total cost of fossil fuels to each of us individually or to society as a whole. Known as externalities, the *hidden* costs of fossil fuels aren't represented in their market price, despite serious impacts to our health and environment. Costs accrue at every point of the fossil fuel supply chain. Extraction processes can generate air and water pollution, and harm local communities. Transporting fuels from the mine or well can cause air pollution and lead to serious accidents and spills. When the fuels are burned, they emit toxins and global warming emissions. Even the waste products are hazardous to public health and the environment.

##### **Acid rain**

According to a paper published in 2014 in the journal Nature Geo science. Even before that, over 4 billion years ago, it is suspected that the air may have had 10,000 times as much carbon dioxide as today. Sulfur dioxide (SO<sub>2</sub>) and nitrogen oxides (NO<sub>x</sub>) released into the air by fossil-fuel power plants, vehicles and oil refineries are the biggest cause of acid rain today, according to the EPA

##### **Land pollution**

It is also important not to forget environmental impacts that come about as a result of the extraction of non-renewable resources or the disposal of the waste they generate. Harmful ash is stored in solid waste containment areas which are horizontal to rupturing and causing havoc in the surrounding areas. In 2008 the containment areas at the Kingston fossil plant in Tennessee ruptured releasing 5.4 million cubic yards of sludge which damaged houses in the surrounding areas and released harmful ash into the air.

##### **Oil spills**

Oil spills have a number of effects on the environment and economy. On a basic level, oil spill effects will damage waterways, marine life and plants and animals on the land. The impact of oil spills can also ruin the infrastructure and economy of a particular area with the long-term effects being felt for decades.

**The solution for all of these problems is Renewable energy, because renewable energy**

**provides array of benefits for both environment and human health**

#### **5. RENEWABLE ENERGY BENEFITS**

##### **Solar energy**

Fossil fuel has been around for millions of years. They have been used for powering countless things such as our household, businesses, manufacturing, and our cars to name a few. Our dependency has dated far back in time and continues even till today despite growing resources of alternative energy. Solar energy which is directly delivered from the sun, in the form of radiant energy, is the most abundant source of energy in the earth. This is the fastest growing type of alternative energy. It is estimated that annually the sun delivers more than 10,000 times the energy we get from non-renewable resources. Sunlight can be converted into electricity by solar thermal devices like thermo-electric converters, solar chimneys and solar ponds.

##### **Wind energy**

Wind power is growing worldwide as a major source of renewable energy. To meet the demand for alternative energy sources, large numbers of wind power generators are being deployed on wind farms both at land and sea. Wind energy is generated in the form of electricity by converting the rotation of turbine blades into electrical current by means of an electrical generator. Wind energy is plentiful, renewable widely distributed, clean and reduces greenhouse gasses. In olden days wind energy was used in windmills to turn mechanical machinery to do physical work, like crushing grains, pumping water, etc.

##### **Bio fuels**

Fossil fuels like coal and petroleum are the most common sources of energy. Fossil fuels are non-renewable sources, which means one day we will run out of them. As a result, the price of petroleum is also increasing day-by-day. Fossil fuels take millions of years to form through various geological processes. Their process of extraction is also very expensive. The emission of greenhouse gases (GHGs) by fossil fuels leads to the global warming. So, there is great demand for some renewable source of energy which should be cost effective and environmental friendly in nature. A bio fuel is a great alternative for fossil fuels.

Bio fuel which is available in solid, liquid, or gaseous state delivered from recently biological bodies like plants and animals.

- Solid-Wood, dried plant material, and manure
  - Liquid: Bio ethanol and Biodiesel
  - Gaseous: Biogas
- [3] <https://greentumble.com/can-non-renewable-resources-be-replaced/>
- [4] <https://www.justenergysolution.com/why-do-we-need-renewable-energy/>

### **Hydro energy**

Hydro energy is derived from the movement of water in rivers and oceans. This movement can be used to generate electricity using turbines. Hydropower is presently used in many places around the world. It accounts for around 25% of the world's electricity. Hydropower is much cheaper than most other forms of energy. 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. But hydroelectric power doesn't necessarily require a large dam. Some hydroelectric power plants just use a small canal to channel the river water through a turbine.

### **Geo thermal energy**

Geo thermal harnesses the natural flow of heat from the interior of the earth. This form of energy was first developed in Italy in the year 1904. The energy is derived from the natural decay of radioactive elements in earth's crust and mantle. These sources of energy never run out. With a much lower impact on the environment, using renewable energy helps to protect our planet by significantly reducing the amount of carbon emissions that we produce. By using renewable energy sources, we also reduce our dependence on fossil fuel gas and oil reserves, means that we can avoid the rising cost of energy bills and improve our energy security.

## **6. CONCLUSION**

The world's population growing briskly, availability of nonrenewable energy will be less. Using of coal, petroleum, natural gas, etc. causes many environmental issues like land pollution, acid rain, oil spills, and other geographical effects. So earth has to face a problem of energy crisis. We need to develop our renewable resources more and more by developing solar energy, biomass energy, hydroelectric energy, tidal energy, geothermal energy, to get better green and peaceful environment.

## **REFERENCES**

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