

RENEWABLE ENERGY RESOURCES: CURRENT STATUS AND FUTURE PROSPECTS

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Abstract :

Renewable energy is energy from sources that are naturally replenishing but flow-limited; renewable resources are virtually inexhaustible in duration but limited in the amount of energy that is available per unit of time. This paper overviews the current trends of renewable energy globally and particularly in India as well as their growth and environmental issues. The role of new and renewable energy has been assuming increasing significance in recent times with the growing concern for the country's energy security.

Keywords: *Renewable Energy, Wind Energy, Solar Energy*

1. INTRODUCTION

Renewable resources include solar energy, wind, falling water, the heat of the earth

(geothermal), plant materials (biomass), waves, ocean currents, temperature differences in the oceans and the energy of the tides [1]. Renewable energy technologies produce power, heat or mechanical energy by converting those resources either to electricity or to motive power. Renewable energies are also often referred to as “green energies” or “clean energies” [2]. Still, this doesn't mean that these energies aren't harmful to the environment and have zero impact. In fact, these renewables' power consumption has been growing over the last year [3-5]. They have provided 8% of the world's electricity in 2017 and they now cover 1/3 of the power mix in Europe. At the same time, the energy grid gets 1/4 of the total energy in China and 1/6 in the United States, India, and Japan [6].



Land, energy and water are among our most precious resources, but the manner and extent to which they are exploited contributes to climate change [7-

9]. Meanwhile, the systems that provide these resources are themselves highly vulnerable to changes in climate [10]. This energy transition will be enabled by

technological innovation, notably in the field of renewable energy. In view of energy transition's central role to climate change mitigation that builds on the two pillars of energy efficiency and renewable energy [11].

2. SOLAR ENERGY

Solar power is generated in two main ways: Photovoltaics (PV), also called solar cells, are electronic devices that convert sunlight directly into electricity. Today, PV is one of the fastest-growing renewable energy technologies, and is ready to play a major role in the future global electricity generation mix.



FUTURE SCOPE

In China the use of solar is more. And they have separate road which consists of solar panels where it is used to charge the e- vehicle (electric vehicle) this system can be developed in India which may reduce the use of petrol (or) diesel.

3 WIND ENERGY

Wind is a renewable energy source. Overall, using wind to produce energy has fewer effects on the environment than many other energy sources. Wind turbines do not release emissions that can pollute the air or water (with rare

exceptions), and they do not require water for cooling.

FUTURE SCOPE

India plans to add 60 GW of wind power installed capacity by the year 2022. With the right steps, India's wind industry is poised to meet the government's revised target of 67 GW ahead of 2022. In India wind energy can be used for 24hour supply in village side and for small scale industries.



4 TIDAL ENERGY

Tidal energy is a renewable energy powered by the natural rise and fall of ocean tides and currents. Some of these technologies include turbines and paddles. Tidal energy is produced by the surge of ocean waters during the rise and fall of tides. Tidal energy is a renewable source of energy.



FUTURE SCOPE

The potential energy that could be harvested from tidal movements on a global scale is enormous. It is estimated that around 1 terawatt of exploitable power is stored in the world's oceans. This would be enough to power 10 billion 100-watt lightbulbs at once.

4 GEOTHERMAL ENERGY

Geothermal energy is heat derived within the sub-surface of the earth. Water and/or steam carry the geothermal energy to the Earth's surface. Depending on its characteristics, geothermal energy can be used for heating and cooling purposes or be harnessed to generate clean electricity.



FUTURE SCOPE

Geothermal Energy in India like other places in the world is moving at a snail's pace due to project development and financing problems. India is capable of generating 10 GW which is the entire world's generating geothermal capacity. India proposes to harness 10,000 MW (10 GW) of geothermal energy by 2030 through active international collaboration with countries such as the US, Philippines, Mexico and New Zealand. However it needs strong government support and

incentives along with financing to develop its potential.

5 BIOMASS ENERGY

Biomass is an energy source derived from organic material such as animal or plant matter and it is growing in popularity. Proponents increasingly favour biomass use over fossil fuels due to the low levels of carbon emitted when the material is burned, and see it as the answer to fighting climate change.

FUTURE SCOPE

India produces about 450-500 million tonnes of biomass per year. Biomass provides 32% of all the primary energy use in the country at present. There are about 63 million ha waste land in the country, out of which about 40 million ha area can be developed by undertaking plantations of Jatropha. India uses several incentive schemes to induce villagers to rehabilitate waste lands through the cultivation of Jatropha.



6 HYDRO ENERGY

Hydro power generates power by utilizing the energy of water falling from a higher position to a lower position. One of these hydro power generation systems is a "pumped-storage system", which pumps up water from a lower reservoir to a higher

reservoir during off-peak hours and generates power by dropping water from the higher reservoir to the lower reservoir during peak hours. We manufacture an entire generation system for these power plants.



FUTURE SCOPE

The Hydropower Vision report defines the societal, environmental and economic benefits of hydropower in a scenario where U.S. hydropower could grow from 101 gigawatts (GW) of combined generating and storage capacity in 2015 to nearly 150 GW by 2050, with more than 50 percent of this growth by 2030.

CONCLUSION

Fossil fuels are getting depleted, so we need to adapt an alternative, which is renewable resources. Wind energy can be used to supply enormous amount of power to village and Small scale industries. By maximum utilisation of renewable resources, overall pollution of the world gets minimised. Our country's economic growth will immensely get developed.

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