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Review of the prospects for renewable energy growth in various nations

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Abstract

In order to address environmental issues, renewable energy has become a crucial choice. Innovation in this area has the potential to lessen greenhouse gas emissions and increase energy efficiency. This essay provides an overview of the state of renewable energy development in various nations. An analysis has been conducted on the development trend of emerging renewable energy. Maintaining the rationality of policy making and modifying the energy market are both important to validate the development of renewable energy sources. An appropriate educational framework and public knowledge of renewable energy sources support the growth of the energy industry. This analysis reveals that a significant experiment on renewable energy is underway.

Keywords: Renewable energy Resources, Energy Policy, Energy Industry

1. Introduction

Reducing the greenhouse effect and increasing energy efficiency are challenges facing the modern world [1, 2]. The most effective alternate solution to this issue is to use renewable energy. Additionally, it has a big impact on raising employment levels globally and enhancing environmental protection in many nations. Many nations developed innovative energy technologies using renewable energy sources [3, 4]. The experience of low-carbon development is crucial given the evolution of national policies and the maturity of renewable energy technology [5]. Numerous research have examined how renewable energy has developed. Pazheri et al. [6] discussed the most recent advancement in bringing down the cost of renewable energy and assessed the state of renewable energy [7]. Zhang and others. examined the development of renewable energy sources and China's energy framework [8]. Both the capacity of renewable energy technologies and the proportion of electricity consumed in total energy should be increased in order to reduce carbon emissions. Wang et al. examined energy-saving policies and projected China's state of sustainable energy development [9]. Even though a lot of work has already been done on various renewable energy sources, very little systematic comparison and analysis of them has been done in the literature. Furthermore, these can contain partial or missing figures. For this reason, a thorough and methodical examination of global renewable energy must be done using the study findings published by credible organizations.

1. Development state of renewable energy:

Based on statistical data, the proportion of primary energy consumed globally has decreased annually; nevertheless, for the past two years, the rate of global energy consumption has been steadily increasing. Comparably, throughout the previous ten years, the growth in the consumption rate of fossil fuels has only totalled 16.90% [10,15]. The rate of consumption is likewise declining in the case of coal. For instance, comparing the statistics from 2017, the growth rate only made up roughly one-third of the growth rate of the primary energy consumption. The total amount of nuclear electricity consumed worldwide has been steadily declining due to safety concerns. When compared to a decade ago, the rate of nuclear power consumption has been steadily declining for the past two years [11]. However, throughout the previous three years, natural gas utilization has also shown considerable increase and is expected to reach its peak in ten years. There was a substantial growth tendency in alternative renewable energy sources, with growth rates as high as 16.64% [12]. This was about 11 times faster than the yearly growth rate of fossil energy consumption. Different countries have different development structures for renewable energy sources, including geothermal, biomass, wind, solar, and hydrogen energy. There is still a lot of space for expansion in China's renewable energy [13].

Renewable Energy Evolution in European Union:

In the European Union, the evolution of energy has begun much earlier. The world's largest carbon emissions trading scheme was originally introduced in 2003, and the outcome was impressive. They have sustainability criteria, support strategies, and short-, medium-, and long-term development policies and goals. The EU leads the world in energy structural transformation. Their power consumption rate from coal, nuclear, and non-hydro renewable energy sources is 2.5 times greater than the average for the world [13]. Various projections predict a 50% increase in the EU's generation of renewable power in 2030 compared to the current situation [14, 15]. In addition to energy efficiency, there is a greater need for electricity. Based on the current situation, it is anticipated that additional efforts will be required by the EU to meet its objective for renewable energy [16].

Renewable Energy Evolution in US, Australia, and Brazil:

Australia became one of the three net energy exporters among members of the Organization for Economic Cooperation and Development (OECD) and ranked ninth in the world in terms of energy production. However, the percentage of renewable energy is somewhat low, and the overall energy structure is still being developed [20]. Brazil, which is ranked tenth in the world for installed capacity, has enormous wind power potential. Additionally dedicated to the development of alternative fuels, Brazil rose to prominence in the field of liquid biofuels [15]. Regarding the manufacturing of wood pellets and biomass electricity, the United States has emerged as the global leader in both production and exports. The state of renewable energy development is favorable. The EIA report states that there will be a large growth in the energy consumption of industry and electricity, and that there will also be a constant increase in the proportionate rate of renewable energy consumption [15].

Renewable Energy Evolution in India:

India is the world's second-most populous nation. Here, there is a clear mismatch between the supply and demand for energy, and there is also a high demand for renewable energy. India suffers energy shortages, external energy reliance, and increasingly serious energy security challenges, contingent on economic growth and energy demand. Since the demand for renewable energy is always rising, the supply must also rise proportionately to meet the need. In India's energy structure, fossil fuels continue to have a commanding lead, while coal has long since surpassed 50%. Natural gas, oil, and coal production have not kept up with the rate of use. Thus, India has to continue its rapid progress in renewable energy. Renewable energy is developing quickly and has a lot of potential. One positive, according to the sources, is that India is the seventh-largest producer of hydropower, with 45.29 GW of built capacity in 2017 [17–19]. India has exceptionally abundant biomass resources because of its geographic advantages. 8.4 GW of electricity were produced in 2017, according to the report, through gasification, combined heat and power, and biomass generating. However, there is not enough of a spread of renewable energy in India. However, in contrast to traditional energy, which is still expanding

rapidly, the development of renewable energy must be bolstered in light of the sharp rise in overall energy demand [20]. Bloomberg New Energy Finance (BNEF) projects that by 2050, 75% of India's energy production will come from renewable sources.

2. Conclusions

The current study determined the need for renewable energy in various parts of the world and the corresponding development in those areas. The EU consumes a very high percentage of renewable energy, the renewable energy sector is growing rapidly, and greenhouse gas emissions overall are down. Conversely, India is seeing an increase in the usage of biogas and wind power. The USA and Australia are likewise demonstrating the growth of renewable energy. Long-term learning from global experience will be required to meet the objectives and boost renewable energy sources' absorption capability. Improving the power system's capacity to maximize available resources is necessary to raise the amount of renewable energy that can be absorbed.

3. References

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