International Journal of Environmental and Ecology Research
www.environmentaljournal.in
Online ISSN: 2664-7117; Print ISSN: 2664-7109; Impact Factor: RJIF 5.42
Received: 23-05-2020; Accepted: 15-06-2020; Published: 02-07-2020
Volume 2; Issue 1; 2020; Page No. 26-28

Preserving renewable energy resources for next generation

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Abstract
The paper is related with Indian Energy Sector, Sustainable Energy and Development, Energy and Planning, Energy Planning and Modeling Present Study and Motivation it will give outlook of environment, economy and energy relationship patterns. The paper will also discuss about the strategies and policies being followed to improve the utilization of renewable energy sources in the World, in India and in Maharashtra.

Keywords: natural resources, solar energy, photo cell, environment, energy, rain, sustainable energy

Introduction

Energy is recognized as a key input towards elevate the standard of living of citizens of any country, as is clear from the association between per capita electricity (a proxy for all energy forms) consumption and Human Development Index (HDI). Accordingly, energy policies of India have over the years directly aimed to increase per capita energy (and electricity) consumption, even while the main focus of the country's development agenda has been on eradication of poverty. With nearly 304 million Indians without access to electricity, and about 500 million people, still dependent on solid bio-mass for cooking, it may be acknowledged that the country has to still go a long way on securing its energy security objective. While India strives to achieve a double digit growth rate in its national income, making clean energy available to all of its citizens, ought to be included as a key component of the poverty alleviation programmes. Energy security and sustainable development are prime issues these days in developed as well as in developing countries.

Access to modern energy is essential at all levels of development, ranging from catering for basic human needs to fueling modern society. Energy has been described as "the golden thread that connects economic growth, social equity, and environmental sustainability".

Renewable energy sources

Following are the sources of renewable energy sources and they should be properly managed and preserved so that they are used for longer time for next generations.

- Renewable energy sources
- Hydropower
- Geothermal
- Biomass and biofuel
- Wind
- Solar heating
- Solar electricity
- Ocean energy
- Enabling technologies for renewable energy

Need for sustainability energy

Sustainable energy is a principle in which human use of energy "meets the needs of the present without compromising the ability of future generations to meet their own needs." Sustainable energy strategies generally have two pillars: cleaner methods of producing energy and energy conservation.

Sustainable energy technologies are deployed to generate electricity, to heat and cool buildings, and to power transportation systems and machines. When referring to methods of producing energy, the term "sustainable energy" is often used interchangeably with the term "renewable energy". In general, renewable energy sources such as solar energy, wind energy, geothermal energy, and tidal energy, are widely considered to be sustainable energy sources. However, particular renewable energy projects, such as the clearing of forests for production of biofuels, can lead to similar or even worse environmental damage when compared with using fossil fuel energy. There is considerable controversy over whether nuclear energy can be considered sustainable.

- Sustainable energy research
- Ethanol biofuels
- Other Biofuels
- Thorium
- Solar
- Wind
- Geothermal
- Hydrogen

Green energy is energy that can be extracted, generated, and/or consumed without any significant negative impact to the environment. The planet has a natural capability to recover which means pollution that does not go beyond that capability can still be termed green. It represents those renewable energy resources and technologies that provide the highest environmental benefit. The U.S. Environmental Protection Agency defines green power as electricity produced from solar, wind, geothermal, biogas,

Biomass and low-impact small hydroelectric sources.

Problems in Preserving Sustainability Energy

The inexorable rise in CO_2 emissions over the last 30 years and growing global demand for stable electricity, heating, cooling, and transportation represent a major challenge worldwide. A growing population and expanding middle class set the global energy scene in flux. The million-dollar question therefore becomes: how do we ensure access to clean and affordable energy for all and halt climate change, without stalling economic progress? Different countries face different kinds of energy challenges, which is why each country must find their own unique energy model to transition to a low-carbon economy. Some economies need to strengthen their domestic grid infrastructure to secure a stable supply of electricity, whereas others need to take action to reduce the country's overall energy consumption. Some already base their energy consumption on energy generated by renewable, while others are well underway with the digitalization of their energy system, rolling out sensors and smart meters, using data to create more intelligent and flexible energy systems. Transitioning to a low-carbon society marks a paradigm shift in the energy sphere. However, decarburization and economic growth are not mutually exclusive. The most prosperous societies of the future will also be the ones that are the most sustainable.

Enabling technologies for renewable energy

Solar and wind are Intermittent energy sources that supply electricity 10-40% of the time. To ensure a constant supply of electricity to the electrical grid at times when the sun is not shining or the wind is not blowing enough, there are several possible approaches:

- Using hydroelectricity or natural gas generation to produce electricity
- Importing electricity from other locations through long-distance transmission lines
- Using grid energy storage to store excess solar and wind energy and release it as needed. The most common storage method is pumped-storage hydroelectricity.

Images showing need of sustainable Energy management

Fig 1

Fig 2

Fig 3

Patterns and changes of energy use today are already dictating patterns well into the next century. We approach this question from the standpoint of sustainability. The key elements of sustainability that have to be reconciled are:

- sufficient growth of energy supplies to meet human needs (which means accommodating a minimum of 3 per cent per capita income growth in developing countries);
- energy efficiency and conservation measures, such that waste of primary resources is minimized;
- public health, recognizing the problems of risks to safety inherent in energy sources; and
- Protection of the biosphere and prevention of more localized forms of pollution.

The period ahead must be regarded as transitional from an era in which energy has been used in an unsustainable manner. A generally acceptable pathway to a safe and sustainable energy future has not yet been found. We do not believe that these dilemmas have yet been addressed by the international Community with a sufficient sense of urgency and in a global perspective.

Energy, Economy, and Environment

The growth or energy demand in response to industrialization, urbanization, and societal affluence has led to an extremely uneven global distribution of primary energy consumption.

Conclusion

It is clear that a low energy path is the best way towards a sustainable future. But given efficient and productive uses of primary energy, this need not mean a shortage of essential energy services. Within the next 50 years, nations have the opportunity to produce the same levels of energy services with as little as half the primary supply currently consumed. This requires profound structural changes in socio-economic and institutional arrangements and is an important challenge to global society.

More importantly, it will buy the time needed to mount major programmes on sustainable forms of renewable energy, and so begin the transition to a safer, more sustainable energy era. The development of renewable sources will depend in part on a rational approach to energy pricing to secure a stable matrix for such progress. Both the routine practice of efficient energy use and the development of renewable will help take pressure off traditional fuels, which are most needed to enable developing countries to realize their growth potential worldwide.

Acknowledgements

Author thanks all the well-wishers for the research contribution to make this research possible. Help from staff members in drafting the paper is very useful to me. All the authors whose references are taken are acknowledged through this paper.

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