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Geographical Study for Green Energy Resources

Dr. Shoukat Fakir[1], Dr. Sharad K. Auti[2]
[1,2]A.C.S. College, Sonai

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Correspondence Address:
Dr. Shoukat Fakir
A.C.S. College, Sonai
Email-
shoukatfakir@gmail.com

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Abstract

Energy is most important element for human economic development. Day by day need of energy resources had increasing Thermal energy is one of important sources for industrial development. It made environmental bad effects as the causes for global warming. Green energy resources are eco-friendly, which reduces the carbon material in the environment. Green energy resources are include- Solar, Wind, Hydroelectric, Geothermal and biomass. Green energy has more capacity for development of the sustainable development. Our nation, India has more capacity for generation of green energy.

Keyword- *Green Energy, Renewable Energy, Sustainable Development, Electricity, Rural Development.*

Introduction

Energy is the ability to do work of is known as the energy. There are two types of the energy as the Potential energy and Kinetic energy. This energy has more capacity because of it can be changes its from in number of the terms. The fundamental principle of energy was developed through the work of several pioneering scientists as- James Prescott Joule, Julius Robert Von Mayer, and Hermann Von Helmholtz. These scientists had study the thermodynamics and its related laws. Electricity is a form of energy resulting for the existences of charged particles such electrons or protons either statically as an accumulation of charge or dynamically as a current. Electric technology had study by the – Benjamin Franklin, Alessandro Volta, Michael Faraday, Thomas Alva Edison, Nikola Tesla, George Westom Gjpise, Werner Von Siemens, William Stanley Jr. Charles F. Brush. Rovert Von Lieben. Green Emerging is the development and commercialization of industrial processes that are economically feasible and reduces the risk to human health and environment.

In India, there is potential scope for the green energy resources due to the climatic, topographic condition. India has aim for 500 GW of renewable energy resources up to 2030. Total generation capacity of electricity by different sources is Thermal power, wind energy and nuclear power.

Sources of electricity in India: India is fast developing nation, It has need of large amount of electricity in number of the field. This electricity is useful in different kinds of activity as agriculture, domestic and industrial development. It is also useful for the regional planning activity. The following table shows the sources of electricity in India.

No.	Sources of Electrify	Percentages (%)	Capacity
1.	Coal Energy	53.45	240
2.	Hydro Electricity	16.60	53
3.	Wind Energy	10.20	52
4.	Solar Power	9.90	110
5.	Gas Energy	6.80	-
6.	Bio power	2.70	11
7.	Nuclear Energy	1.80	9
8.	Lignite	1,80	-
9.	Diesel	0.10	-
	Total	100%	475 Gw.

As of June 2025, India's total installed Power capacity has reached a significant with 476 Gw. Now a day renewable energy is going to more capacity for Indian total electricity.

Hydro- Electricity in India: This kind of electricity is generated with water velocity. In India it has share up to 17%. It is also green energy. At the global level first hydro- electrical plant was started in 1807 at Darjeeling. It has power capacity was 130 Kw. Hydropower can provide large amounts of low –Carbon electricity.

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This electricity has many more advantages as flexibility, High value power, Suitability for industrial applications, reduced carbon emissions It has some disadvantages as Ecosystem damages and loss of land and Methane emission. In India major hydro- electric plants are-Tehri (2400Mw), Koyna (1900Mw), Srisailam (800Mw), Natpa Jhakr (1500Mw) and Sardar Sarovar(1200Mw).

Solar Electricity in India: Solar electricity is energy from the sun converted into electricity using technologies like photovoltaic or concentrating solar power. This electricity is clean and renewable, abundant and reduced electricity bills. Today at the global level total utility for solar electricity is cover 7% global electricity power. Solar cells, thin film solar, photovoltaic solar cells and concentrated solar power. Bhadla Solar Park, Rajasthan (2245 Mw.) Pavagada Solar Park, Karnatka (2245 Mw.) Kurnool Ultra Mega Solar Park Andhra Pradesh (1000 Mw.) Rewa Ultra Mega Solar Park Madhya Pradesh (750 Mw.) NP Kunta Solar Park Ahdhra Pradesh (978 Mw.)

Wind Electricity: Wind is one most impotents energy sources in tropical countries. Wind is horizontal movement of air. Wind energy is free for everywhere. It has more potential in remote area development. India is a tropical country. Wind electricity generation programme started in 1983-84. In 1986 it was established in the coastal areas of Tamilnadu, Gujarat and Maharashtra. It was technology of 55Kw Vestas Wind turbine. Today its has installed capacity is 50 Mega Watt. India has fourth largest installed wind power capacity in the world.

Installed wind capacity by state on Dec. 2024

No.	Name of State	Total Capacity (MW)
1	Gujarat	12,473.78
2	Tamil Nadu	11,409.04
3	Karnataka	6,731.30
4	Rajasthan	5,216.38
5	Maharashtra	5,195.82
6	Rajasthan	4,096.65
7	Madhya Pradesh	2,844.29
8	Telangana	128.10
9	Kerala	63.50
10	Others	4.30
Total		**48,163.16**

Maharashtra is a leading state in India for wind energy with a significant installed capacity of over the 5,216 MW and it has high potential for more capacity for generation of electricity. The Maharashtra Energy Development Agency (MEDA) has implemented policies to support private investment and growth in this sector.

Biomass Renewable Energy Resources: Biomass energy is a renewable source derived from organic materials like plants, wood, agriculture waste and animal waste. It can be converted into heat, electricity or befouls through processes like combustion or anaerobic digestion. Biomass is any organic matter from plants and animals that stores energy from the sun. Today total generation of biomass electricity is 11 Gw. This biomass electricity is possible for the development of the rural development. In India, there are 12% population is living in the remote area. These kinds of population can be using this biotic energy in their regular activity and agricultural development. Most of energy sources are the plant and animal resources. Most of these energy sources are the renewable energy. It is possible by very low amount in the tribal zone. These population are mostly aware about how to use in a regular activity.

Advantages of Renewable Energy: There are following advantages of renewable energy resources as below.

1. Reduced emission of greenhouse gas material
2. Cleaner air and water
3. It is sustainable Energy Resources
4. It made minimized Pollution in Environment
5. This energy is independence and security
6. It develops more employment
7. Renewable energy is stable and lower costs energy resources
8. It has capacity for improvement of public health.

Disadvantages of Renewable Energy: There are following drawback of renewable energy resources as below.

1. Renewable Energy resources has a need of more coast in electrical generation plant
2. As a bigger electrical plant, it has a need of more intermittent.
3. This energy has need of specific Geographical condition.
4. It is not 100% carbon free energy
5. It has need of large Geographical places.
6. It has lower power efficiency.
7. Renewable energy is not possible for the 24 hours

Though these are disadvantages of renewable energy, but it has more advantages.

Conclusion for renewable energy resources: Renewable energy is a crucial for a sustainable future. It is mostly environmental benefits like as reduced emission, economic growth through job creation and develops energy in dependences. It is useful for control climatic changes. It improves the human health. Hence renewable energy resources are cleaner for global energy system. For the

purpose of regional development and rural planning, it has need of lot of energy resources. India's lot of population is living in the remote area. This rural development is more possible with the help of biotic energy. Electricity is more powerful sources of the power. Non-conventional energy resources have the limitation to generate the energy. Renewable energy sources as the solar, Wind, hydro-electric and biotic energy is more potential for the generation of the energy. It has more capacity for supply the services and regional planning purpose. In coming day, It can be provide for services for the development of the glorious and healthy development.

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Conflicts of interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

References

1. A Text Book of Renewable Energy Resources: Dr. Shailendra Kumar April- 2025
2. Renewable Energy Resources: John Twidell and Tony Weir.
3. Fundamentals and Application of Renewable Energy: Mehmet Kanoglu and Ynus Cengel.
4. Sustainable Energy – Without the hot air- David J.C Mckay-2008
5. Renewable Energy: Power for a sustainable Future- Godfrey Boyle-1996
6. The Renewable Energy Handbook: A Guide to Rural Energy Indecencies - William H. Kemp- 2005
7. Solar Energy: The Physics and Engineering: Arno Smets-2016
8. How to Avoid a Climate Disaster: The Solution and Need: Bill Gates-2021
9. Fundamentals of Renewable Energy Processes: Aldo V.da Rosa-2005
10. Wind Energy Handbook: Tony Burton – 2002
11. Power from the sun: A Practical Guide to Solar Electricity –Greg Pahi- 2007
12. Renewable Energy Resources: John Twidell-1986
13. Wind Energy Engineering: A Handbook- Trevor Letcher