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ABSTRACT This article first deal with the current scenario of the wind energy in India. Wind energy is available at no cost and it does not emit no greenhouse gases. Harnessing the energy of wind to obtain some useful work like pumping water, sailing boats and grinding grains has been therefore a very long time. In modern time wind energy is used to generate electricity. Wind energy is a clean sources of energy and India has a huge potential for wind energy (302 GW in the country at 100 m height and 695.50 GW at 120 m above the ground level). This vast potential has remained unexplored which can be achieved through well framed policies initiated by government of India. Wind power has emerged as a biggest source of Renewable energy in the world.

KEYWORDS : Wind energy, non-conventional energy, Sources of Wind energy, Indian market, Renewable sources

Introduction:

India is the 2nd most populated country in the world that is approx. 17.5 % of the total world population. India is highly reliable on the renewable source of energy production [1]. Wind Energy is integral to India's Clean Energy Transition. India has a huge capability of over 300GW onshore and 195GW alongshore wind energy. We also have a given public target of achieving over 140GW by 2030 and are formerly anticipating a 24.4 GW increase by 2025 [2]. Because wind energy is a free and renewable resource, no matter how much is used today, there will be an equal supply in the future. Wind energy is also a non-polluting source of electricity [3]. Wind farms, unlike conventional power plants, emit no air pollutants or greenhouse gases.

Wind energy is also used to distilled water by using active distillation unit [4] using hybrid system of solar wind and system should be more economical [5]. Energy[4] and exergy analysis[6] of active distillation water can be used for increasing their efficiency.

Renewable energy sources included solar energy, Wind energy, geothermal energy, biomass energy (biogas plant [7], [8]) and energy of tides are the common renewable sources.

Sources of Wind energy in India:

India has a vast coastal line which is a good resources of the fresh wind. Besides these there are other ways to generate the wind which get attention now a days [9].

Wind power development in India began in the 1990s and has accelerated dramatically in recent years. Despite being a relative newbie to the wind business when compared to Denmark or the United States, India has become the world's fifth largest installed wind power capacity because to domestic governmental backing [10].

The indigenous wind power industry in India is leading the way and has made steady progress. The wind industry's growth has resulted in a strong ecosystem, project operating capabilities, and a manufacturing base of roughly 10,000 megawatts per year [9]. With a total installed capacity of 39.25 GW (as of March 31, 2021), the country now ranks fourth in the world for wind installed capacity and generated roughly 60.149 billion units in 2020-21 [3].

There are a number of wind farm in India. We had taken into our article the largest producers of wind energy from them [10].

- A) By Offshore Wind Turbine
B) Highway windmill

Future of wind energy Sector in India:

In recent years, India's wind power producing capacity has expanded dramatically. The entire installed wind power capacity was 40 GW as of November 30, 2021, making it the fourth greatest in the world [11].

The Southern, Western, and Northern regions have the most wind power capacity [12].

As on 31st March 2021 India has installed capacity of 39.5 GW and has generated around 60.149 billion unit during 2020-21 [9].

With a 7600-kilometer coastline surrounded on three sides by water, India has a high chance of harnessing offshore wind energy. In light of this, the government issued a "National offshore wind energy strategy" in a Gazette Notification dated October 6, 2015.

Wind power is essential to India's clean energy transition. India's wind energy potential is enormous, with about 300 GW onshore and 195 GW offshore. We also have a stated national goal of exceeding 140 GW by 2030, with a 24.4 GW increase expected by 2025 [13].

Conclusion:

India is a country with limitless potential, but that potential is not being fully realised. Wind energy is an excellent way for India to meet its energy needs while also developing its economy. India's future and progress are dependent on a number of things, one of which is its ability to meet its own energy needs. It will liberate India from its nuclear energy reliance on other countries. Although the government's ambitions appear unrealistic at this time, they do seek to be self-sufficient. They are concentrating on wind as the most important renewable energy source (generation and distribution).

India is currently on an upward trend with a gentler slope than previously. If it wants to meet its energy sector ambitions, it will have to maintain the slope of this growth rate steeper.

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