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Geographical investigation of the regional characteristics of wind energy in the Satara district

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Abstract

An effort has been made in this essay to examine the physical qualities and geographic features of windmills in Satara District, an area of eastern and western Maharashtra. Wind energy will become more significant in the future as well as in the present. It has a 4,050 square mile area and 3,003,741 (2011) residents spread out among 1719 localities. Electricity generated from 1891 wind turbines totals 175, 15 Mega Watts. All of these wind turbines are placed at certain heights throughout the forest, mountains, and arid regions. The amount of agricultural and wooded area has somewhat decreased as a result of the windmill installation. However, the Satara district has developed significantly as a result of this electrical generation.

Key Words: *Wind Energy, Agriculture Land.*

Introduction

The twenty-first century is a challenging century. Therefore, using it is essential or risk falling behind. Additionally, it does more than only satisfy societal requirements. There are many different types of alternative energy, with wind energy being one of them. The development of wind power, a fossil fuel, renewable, significant, natural, and sustainable energy source, has been prompted by the lack of conventional energy, which is a result of human activity and environmental challenges in many regions of the world. A number of factors, including migration, liberalization, monetization, privatization, industrialization, globalization, urbanization, and computerization, have made the world more difficult. In all of the world's diverse physical and cultural contexts, the development of science and technology, computer technology, and space technology has ignited a frenzy of economic activity and produced job opportunities. There are many different activities that have been finished using both conventional and unconventional energy. Raising the level of life for society's residents has been made feasible thanks to the tremendous rise in population and the burden it has placed on a particular location. As a result, energy has become a major focus of a wide variety of activities and processes. As a result, energy is essential in deciding how the world's diverse regions will develop globally. As a result, alternative energy is becoming more and more significant not just in India but also globally. India is not only one of the 83 countries, but also ranks fifth globally in terms of installed wind generating capacity, trailing only China, which has more than 19.1 GW. The production and delivery of their products provide the biggest difficulty for Spain, Germany, and the United States. As a result, India today successfully utilizes its identity. Alternative energy can so generate energy while using less space, generating no greenhouse gases, and being less obtrusive. There is no direct access to wind energy. The energy from the wind must thus be captured by a suitable device known as a windmill. It is an apparatus that changes the mechanical energy that comes from wind energy into electrical energy.

Study area

Satara district is situated in the western part of Maharashtra and lies between north latitudes17° 05′ and 18° 11′ and east longitude of 73 ° 33′ and 74° 54′. The geographical area of the district is 10480 sq. km.

Objective

Local features of Windmills in the Satara district

Production and Installation of windmills in Satara District

A) Database and methodology

The study is based on primary and secondary data collected from house hold should and MEDA Maharashtra Wind velocity, Installation, Production, Distribution and top sheets.

B) Methodology

Analyze to the Maps and Tables

Home schedules and the Maharashtra Energy Development Agency are among the study's primary and secondary data sources (MEDA). While this was going on, secondary data was acquired on the creators, locations, heights in meters, and ratings for the total installed capacity in Megawatts and the amount of wind energy each turbine produces in Kilowatts. Using the information obtained, tables and maps have been produced. The data has been correctly processed using the analytical procedure.

Wind energy production and Installation in Satara District

Wind energy production and Installation in Satara District

Sr no	Taluka	Total Wind Mills Installation	Wind production Capacity in MW
1	Satara	160	97.94
2	Patan	964	486.61
3	Wai	51	40.08
4	Khatav	338	507.82
5	Man	138	128.71
6	Jaoli	111	161.75
7	Koregaon	98	161.25
8	Karad	29	32.7
9	Phaltan	2	1.6
Total		**1891**	**1775.15**

Source; Based on Field Work.Analysis

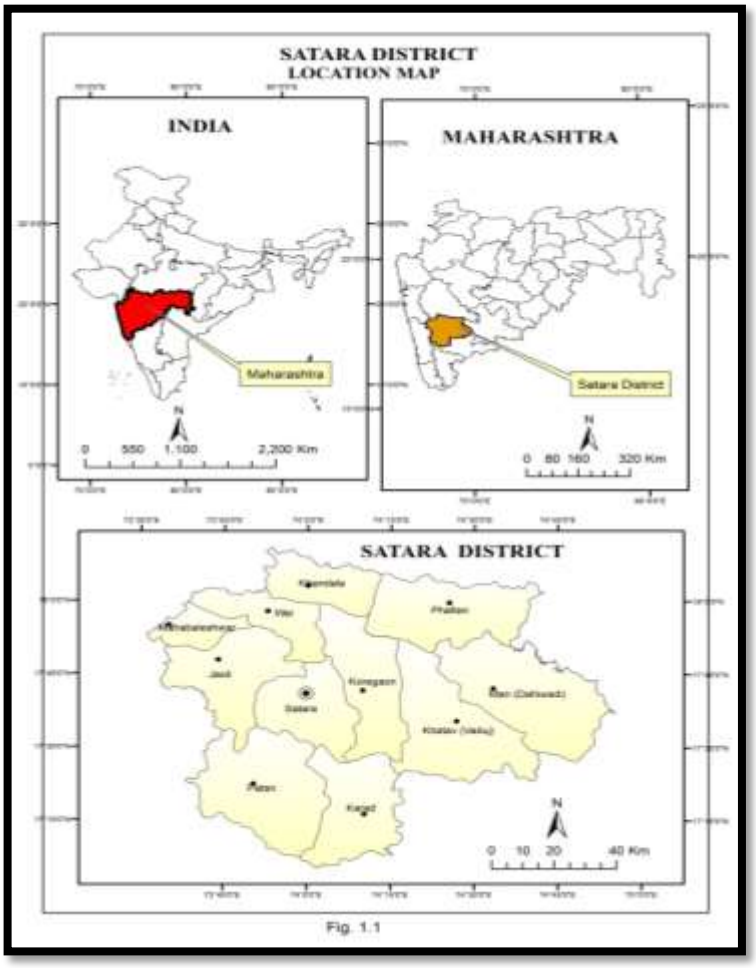

Fig. 1.1

The Satara district is home to the state of Maharashtra's first-highest windmill installation. Since 1996, 1891 windmills have been erected and are in operation among the 16 businesses in Nine Talukas. The research area produces significant amounts of alternative energy each year at a rate of 15 Mw. Following Patan Taluka, which built 413 wind turbines in 6 communities and produced 643.26 Mw of wind energy, is Khatav Taluka, which can produce 338 wind turbines in 3 settlements and 507.54 Mw of wind energy. Jaoli Taluka built 111 wind turbines in three cities, generating 161.51 Mw of electricity. In order to produce 161.25 Mw, 98 windmills have been constructed in 2 villages in Koregaon Taluka. Even though Satara Taluka has the fewest number of windmills—just two—with a total capacity of 97.94 Mw each, out of the 138 in the taluka, Satara Taluka nevertheless contributes to the production of wind energy. Displays

the 1891 windmills that have been built and the 1891 installations that will soon be made in the research area. These are found in remote, steep, and wooded areas. As a result, the research has evaluated the future and challenge of turning agricultural land into non-agriculture in India as a serious issue and an impossible owing to environmental considerations. The information in the table above fully supports the perspective on Icefall and the environment.

Conclusion

According to the report, it is critically necessary to produce wind energy in order to conduct every day and socioeconomic operations. By creating alternative wind energy, the population's demands will be met and the energy deficit will be eliminated. The study area is thus a suitable site for the installation of wind turbines and the generation of wind energy. The fact that shifting agricultural land to non-agricultural use has significant environmental problems and should not be permitted in upcoming study area installations is still positive.

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