

# Renewable Energy Potential of Maharashtra: A Review

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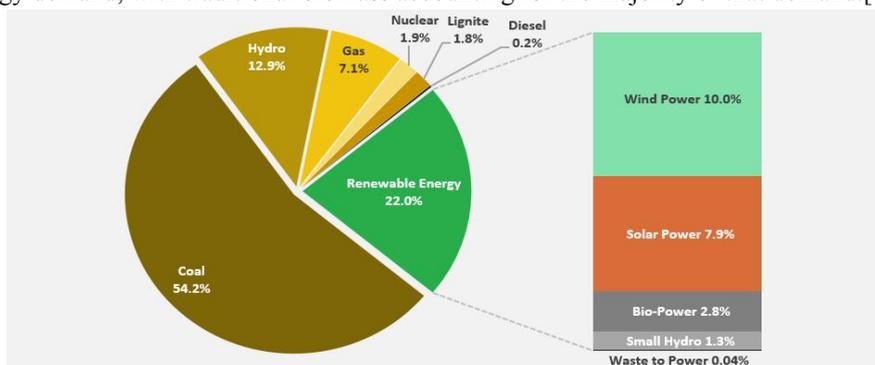
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**Abstract:** In 2021, the population for Maharashtra was 124,437 billion is one of the biggest and fastest-growing economies in India. There high demand for energy, which is obtained mainly by coal, oil, and petroleum, which apart from being non-renewable; is also harmful to the environment. Thus, Maharashtra must obtain energy security without affecting the flourishing economy, which would mean that alternative energy sources be found. The Government of Maharashtra has already made several provisions, and established many agencies that will help it achieve its goal of becoming one of the leading clean energy producers. Renewable energy is energy from a resource that is substitutable by surviving flows of energy, such as sun, wind, water, biological processes, and geothermal heat flows. These energy resources might be used as forms of energy. In this paper, the potential and technological possibilities in this direction are discussed in the Maharashtra context.

**Keywords:** Geothermal energy, Wind, solar, renewable energy, Biomass energy.

## I. INTRODUCTION

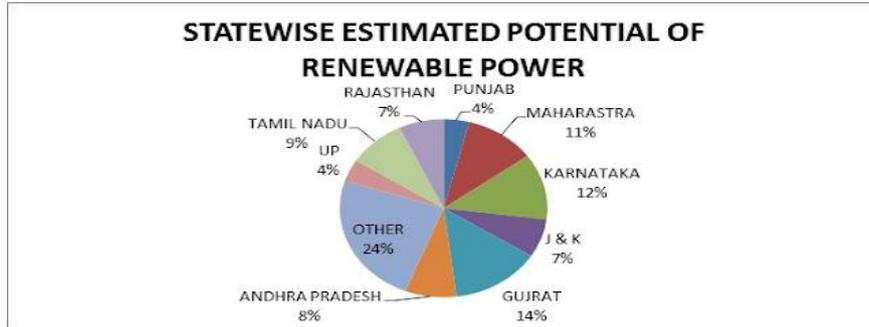
Energy is one of the primary inputs for the monetary improvement of any District. In the case of the growing district, the power sector assumes a essential significance in view of the ever to fulfil them. The worldwide production of energy is over 20,000TWh (terawatt-hour). Fossil fuels are expected to continue offering biggest strength customer after united states, China and Russia. A lot of the power used worldwide. Renewable energy assets accounted for 19% of worldwide energy demand, with traditional biomass accounting for the majority of that demand.[1-6]



**Figure 1:** Renewable energy percentage

## II. ELECTRICITY GENERATION IN MAHARASHTRA

Maharashtra is the greatest power generating state in India with an installed energy generation capacity of 26,838 MW (As on 31st August 2012). Maharashtra constitutes 13% of the entire established energy generation ability in India that is specifically from fossil fuels which include coal herbals fuel. The state of Maharashtra forms a main constituent of the western grid of India which now comes under North, East, West grid of India. Mahagenco has an mounted ability of 13602 MW. The Hydroelectric tasks within the state of Maharashtra were designed, erected and commissioned through the Water useful resource branch (WRD). After commissioning, the hydro projects had been passed over on long- rent to Mahagenco for Operation and upkeep. Currently there are 25 hydro projects, having capacity of 2580 MW.[7-9]



**Figure 2:** State wise renewable power

### III. RENEWABLE ENERGY STATUS OF MAHARASHTRA

The financial survey report stated that Maharashtra ranked 5th in India when it came to energy generation from renewable electricity. “The Maharashtra Energy Regulatory rate has set a purpose of attaining 25% strength era from renewable strength through 2025.” In the meantime, power distribution losses for Tata energy have long passed up by way of five% in 2021-22 while the ones of MSEDCL, Adani power, and great saw a drop in The important thing drivers for the growth of renewable power in India are subsequent:[10-12]

- High increase charge in basic electricity needs
- Want for a feasible answer for rural electrification
- Power top demand-deliver
- Stress on industry and polity to impede greenhouse gas emissions beyond 365 days.

### IV. PROS AND CONS OF RENEWABLE ENERGY

Renewable electricity technology (RETS) has several properly-identified advantages about traditional, largely fossil fuels-based totally, electrical systems. First off by using selling power safety and much greater stability in regards to the marketplace fee volatility, secondly the renewables are scalable (as small as in a few kilowatts) and also can be mounted in modular designs. On the other hand, several RETS additionally have disadvantages. First, some primary strength flows (e.g., solar and wind) are variable and now not predictable, requiring hybridization with structures that might be greater below human management. Some renewable energy bureaucracies, which include biofuels, compete for arable land and irrigation water with meals crops. [13]

### V. SOLAR ENERGY

Many of the renewable assets of electricity, solar electricity has a huge ability for energy era in Maharashtra. There are 250-300 days of clear sun with available common radiation of four to 6 kWh/sq.Meter over an afternoon. There is the ability to generate 1.5 million units/MW/year thru sun photovoltaic structures & up to 2.5 million devices/MW/ year through solar thermal systems. Maharashtra is already in method to boost this full-size source and involved sun mission builders can put up their proposals to MEDA.[14]



**Figure 3:** Solar Park

### VI.WIND ENERGY

Assessed wind strength capacity in the united states is about 49130 MW, while in Maharashtra it's miles 5439 MW. Websites with Annual imply Wind Density above 2 hundred W/m2 is considered appropriate for wind power tasks. 339

such sites have been recognized within u. S of which forty sites are in Maharashtra. Wind velocity monitoring is in progress at 211 websites To install self-assurance inside the investors, demonstration tasks worth 7.34 MW hooked up potential was initiated inside the state with help from MNRE, set up through MEDA. Thus the entire ability of demonstration Wind strength challenge by MEDA is 11.09 MW in Maharashtra.[15]

#### **VII. BIOMASS ENERGY**

The styles of biomass used within the assignment are typically the ones which might be used for burning functions viz: domestic heating, cooking in rural regions. Some names are Coconut shell, Jute sticks, Maize stalks, groundnut straw/shell, Tur stalks, cold stalks, Rice husk, Juliflora, and so forth. The Ministry of recent and Renewable electricity (MNRE), GoI with help of ORG-Marg, Jaipur has performed country stage biomass assessment observation for Maharashtra. This examination indicates the available biomass electricity ability in Maharashtra to be 781 MW. The state government has been promoting strength generation from biomass electricity tasks. MEDA is giving technical support and steerage to result in private investment into this area and ensures fast implementation of the tasks.[16]

#### **VIII. GEOTHERMAL ENERGY**

Some of the identified sites are the Tapi basin, Jalgaon, Dhule, and Salbardi warm spring in Maharashtra. Maharashtra energy improvement agency (MEDA) has executed a Memorandum of expertise (MoU) with M/s Thermax Ltd. For development & implementation of strength generation from Geothermal energy inside the West coast of Maharashtra.[17]

#### **IX. CONCLUSION**

Aside from creating national degree awareness regarding green renewable strength alternatives, efforts are required for promoting studies and improvement in this alternative technology and sources. Developments in renewable technology are, but, progressing swiftly each in India and across the world, and higher stages of regional cooperation can play a key role in accelerating the tempo and unfolding of renewable energy improvement. By using 2050, some estimates positioned Maharashtra's energy technology necessities at one terawatt or one thousand billion watts. This would be a six-fold growth in India's contemporary hooked-up energy ability. It's far a massive task. But it is a huge possibility too, for Indian agencies, for the advent of Maharashtra jobs, for more Maharashtra prosperity. Maharashtra is already domestic to Suzlon, the 1/3 main wind energy installer global, with nearly 10% of the overall international marketplace. Different modern groups in solar energy, a biomass energy manufacturing, and electricity efficiency are growing in India's vibrant entrepreneurial region. Because most of Maharashtra's strength flowers have yet to be constructed, India has options that many countries can most effectively dream of. Rather than being locked into following a high carbon electricity song, India can lead the way to a lower-carbon, renewable strength path.

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### **BIOGRAPHY**



Dipali Patil has one year of experience in the field of Academic. She obtained her Bachelor's degree in Electrical Engineering from Gokhale Education Society's R. H. Sapat college of engineering Nashik in 2021. She is started her career from Sir. Dr .M.S. Gosavi Polytechnique Nashik. Presently she is working as anAssistant Professor, Dept. of Electrical Engg., at Sir.Dr .M.S. Gosavi Polytechnique Nashik.