India Renewable Energy Market Size and Share Outlook - Forecast Trends and Growth Analysis Report (2025-2034)

Market Report | 2025-06-28 | 121 pages | EMR Inc.

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Report description:

The India renewable energy market attained a volume of 19.40 Gigawatt in 2024. The industry is expected to grow at a CAGR of 8.60% during the forecast period of 2025-2034. Government schemes such as the Production Linked Incentive (PLI) scheme and other initiatives to build solar parks and hybrid energy projects are major drivers, bolstering private investment and enhancing India's renewable energy capacity. This in turn is expected to push the market ahead to attain 44.27 Gigawatt by 2034.

India Renewable Energy Market Report Summary

Description

Value

Base Year

Gigawatt

2024

Historical Period

Gigawatt

2018-2024

Forecast Period

Gigawatt

2025-2034

Market Size 2024

Gigawatt

19.40

Market Size 2034

Gigawatt

44.27

CAGR 2018-2024

Percentage

XX%

CAGR 2025-2034

Percentage

8.60%

CAGR 2025-2034 - Market by Region

West India

10.2%

CAGR 2025-2034 - Market by Region

South India

9.2%

CAGR 2025-2034 - Market by Source

Bioenergy

10.3%

CAGR 2025-2034 - Market by End Users

Residential

9.8%

2024 Market Share by Region

West India

32.5%

India Renewable Energy Market Overview

India's renewable energy industry is expected to grow substantially in 2025 based on its present electricity generation capacity of 452.69 GIGAWATT, with a large portion coming from renewable energy. The country's pledge to the "Panchamrit" commitment at COP26 reflects its commitment to reach 500 GIGAWATT of non-fossil electricity capacity and lower emissions by 1 billion tonnes by 2030, thus propelling the India renewable energy market development. This development is driven by advancements in green hydrogen projects, various strong public-private partnerships, and the usage of battery energy storage systems. Key players are optimistic towards a greener future in India and are focusing on the need for quality implementation and enabling policies to maintain this momentum.

India Renewable Energy Market Growth

The renewable energy market in India is being driven by two main factors, namely, advancements in technology and growing energy demands in rural zones. Advances in battery storage, smart grids, and efficient solar panels are making performance better while reducing costs. Adani Green Energy, for example, is deploying digital monitoring systems across solar and wind projects to maximize yields, thus augmenting the India renewable energy market expansion. At the same time, rural electrification programs and increasing demand for clean power in underserved areas are opening enormous opportunities. For example, Husk Power Systems, a microgrid firm, is scaling up hybrid renewable mini-grids throughout rural India, combating energy poverty while helping enable decentralized and sustainable access to power.

Key Trends and Recent Developments

India's growth in renewable energy is spurred by hybrid projects, increasing private investment, domestic manufacturing drive, and strategic mineral procurement efforts, thus shaping the India renewable energy market dynamics and trends.

April 2025

India and Sri Lanka co-launched a 50 MW solar power facility in Sampoor, Trincomalee. Trincomalee Power Company Limited, a 50:50 joint venture between NTPC Limited and the Ceylon Electricity Board, developed the project, which is an investment worth $100 million and will be expanded to 120 MW.

April 2025

The Government of India India has ambitious plans, with a target to reach 500 GIGAWATT of renewable energy capacity by 2030.

Large-scale projects such as the Gujarat Hybrid Renewable Energy Park and the Bhadla Solar Park are a testament to this expansion, adding heavily to the national grid.

March 2025

Waaree Energy has introduced an advanced 5.4 GIGAWATT solar cell manufacturing plant in Chikhli, Gujarat, a landmark moment in India's renewable energy journey. This country's biggest such facility is set to hugely enhance domestic solar manufacturing capacity, lower import dependence, and enable India's clean energy ambitions.

February 2025

Amazon has made investments in three new wind farms in India that have a capacity of 379 MW. They are a 100 MW wind farm at CleanMax Koppal in the state of Karnataka, a 99 MW wind farm at BluPine Solapur in the state of Maharashtra, and a 180 MW wind farm at JSW Energy Dharapuram in the state of Tamil Nadu.

Surge in Hybrid Projects

India is observing a growth in hybrid renewable energy projects integrating solar and wind energy, supporting grid efficiency and stability. Projects such as ReNew Power's hybrid energy park in Gujarat are an example of this trend, supported by pro-hybrid policies of hybrid auctions and storage integration, thereby bolstering the India renewable energy market growth.

Increased Private Investments

Private investments are fuelling renewable growth, with companies such as Adani Green and Tata Power investing billions of dollars in solar and wind farms. Green bonds and foreign direct investment have risen sharply, reflecting the interest of investors in India's policy support, and clean energy initiatives.

Focus on Domestic Manufacturing

India is strongly focussing on the domestic manufacturing of solar panels, inverters, and batteries under initiatives such as PLI (Production Linked Incentive). Waaree's 5.4 GIGAWATT solar cell factory in Gujarat is a prime example of this motion, with a goal to cut down import dependency and build domestic clean tech value chain, thus boosting the India renewable energy demand.

Strategic Mineral Sourcing

India is emphasizing the procurement of key minerals such as lithium and cobalt used in solar and battery technology. Partnerships with nations such as Australia and exploration by KABIL (Khanij Bidesh India Ltd.) enhance the increasing need for efficient energy storage systems.

India Renewable Energy Market Trends

Development of solar parks and setting up affordable transportation across the entire country is a significant trend which will boost the renewable energy industry in India. Under the solar park development initiative, 50 solar parks in 12 states have been approved with capacities of 500 MW and above, thus shaping new trends in the India renewable energy market. Sustainable Alternative Towards Affordable Transportation (SATAT) has been initiated as a mission to establish a compressed biogas (CBG) manufacturing unit and offer CBG in the market for use as a fuel in automobiles. Another one is the 100 Smart City initiative which also involves a mandatory provision of roof-top solar in new development and a 10% renewable energy provision for end-users.

The transition to renewable energy, thus, has an emphasis on the India renewable energy market, which has the capability of generating more jobs and driving the nation towards inclusive growth.

India Renewable Energy Market Opportunities

The renewable energy market in India offers significant investment prospects, with ambitious targets and robust policies pushing the demand for renewable energy. The government is aimed at achieving a target of 500 GIGAWATT of renewable energy capacity by 2030, led by solar, wind, and energy storage solutions, leading to new opportunities in the India renewable energy market. During FY 2023-24, India installed 18.48 GIGAWATT of renewable capacity and attracted foreign direct investment of USD 19.98 billion during April 2020 to September 2024. Government initiatives lie at the forefront of renewable energy development via efforts such as the National Green Hydrogen Mission and the Pradhan Mantri Surya Ghar Muft Bijli Yojana also add to the attractiveness of the sector for investors.

India Renewable Energy Market Restraints

One of the major restraints of the market is the high costs involved during the installation of the entire solar, wind or thermal power. The initial costs of setting up these solar panels, mounting systems, inverters and installation can be burdensome for the consumers at first, thereby leading to significant challenges in the India renewable energy market. These panels too require a substantial amount of space, which can be quite challenging in an urban setup. Solar energy production will get hampered on cloudy and overcast days or even at night unless backup power or energy storage sources are being used. Therefore, this renewable energy depends on the various local climatic conditions and geographic conditions.

India Renewable Energy Industry Segmentation

The EMR?s report titled ?India Renewable Energy Market Report and Forecast 2025-2034? offers a detailed analysis of the market based on the following segments:

Market Breakup by Source

? Wind
? Solar
? Hydro
? Bioenergy
? Others

Market Breakup by End User

? Residential
? Commercial
? Industrial
? Utility

Market Breakup by Region

? North India
? South India
? East India

? West India

India Renewable Energy Market Share

Market Analysis by Source

The India renewable energy market is fueled by different sources of energy like wind, solar, hydro, bioenergy, and other new sources such as tidal and geothermal. Wind power has increased due to supporting policies and high availability of resources in states such as Tamil Nadu and Gujarat. As per India renewable energy market analysis, solar energy continues to grow with large-scale projects and declining costs. Hydropower is gaining traction through small-scale projects, like the Kishtwar Small Hydroelectric Project in Jammu & Kashmir. Bioenergy, driven by rural decentralization and government support, is also increasing. Emerging sources, such as tidal and geothermal, are promising and will be part of India's renewable energy future as they develop and attract investment.

Market Analysis by End User

India's renewable energy sector is augmenting among different end-users. Residential use of rooftop solar panels and solar water heaters is increasing owing to various state government incentives towards energy conservation. The commercial segment is embracing renewable energy for cost savings and sustainability purposes, thereby reducing emission. According to the India renewable energy industry analysis, the industrial sector is shifting to clean energy, led by government incentives and cost advantages. Utility-scale projects, including big solar and wind farms, are at the core of achieving India's renewable energy goals. As costs come down, renewable energy uptake in all sectors is likely to rise, making a major contribution to India's clean energy ambitions.

India Renewable Energy Market Regional Analysis

2024 Market Share by

Region

West India

32.5%

North India

XX%

East India

XX%

South India

XX%

North India Renewable Energy Market

The demand for renewable energy in North India is rising at a significant pace. States like Harynana have witnessed a renewable energy capacity of 2,449.94 MW, a fair increase from 2,207 MW in 2022. This increase is being spurred by the rising use of solar energy (2,025.18 MW), followed by small hydro projects (73.5 MW) and bio-power (292.62 MW). The Haryana government is aimed at increasing the renewable capacity to 4,264 MW, meeting the increasing power demand, which will be more than 13,000 MW. Favorable policies, fiscal incentives, and increasing environmental consciousness are thus driving the North Indian states towards a greener, sustainable energy future.

South India Renewable Energy Market

While South India, particularly, Tamil Nadu has been mostly dependent on fossil fuels to meet its energy demand, wind power generation has always been the only major capacity alternative. But in recent years, the solar energy component has been rising steadily and holds promise for the renewable energy route for Tamil Nadu.

In December 2024, Tamil Nadu's renewable energy capacity reached approximately 11,042.44 MW, with wind energy contributing around 11,409.04 MW, making it the second highest in India after Gujarat. The state has been a pioneer in renewable energy, establishing the Tamil Nadu Energy Development Agency (TEDA) in 1984 to promote sustainable energy sources since then. In July 2024, TEDA merged with the Tamil Nadu Green Energy Corporation Limited to streamline efforts in green energy development. Tamil Nadu's commitment to renewable energy is further evidenced by its ambitious policies targeting 20,000 MW of renewable energy capacity by 2030. These initiatives underscore the state?s promising future in driving renewable energy growth in South India.

East India Renewable Energy Market

The East India renewable energy industry is experiencing immense growth due to huge investments and the untapped potential in the region. For example, AMPIN Energy Transition has signed an investment of INR 3,100 crore for setting up more than 600 MW of renewable energy projects and a solar cell and module plant in West Bengal, Odisha, Bihar, Jharkhand, and Chhattisgarh. In the Northeast region, Arunachal Pradesh is leading the development of hydropower with 35 projects worth 570.75 MW, supported by an investment of INR 7,000 crore, looking to generate 7,500 jobs. These projects reflect East India's dedication to tapping the region's renewable energy resources.

West India Renewable Energy Market

West India, specifically Rajasthan and Gujarat, is leading the India renewable energy industry growth. As of October 2024, Rajasthan dominated the industry with an installed renewable energy capacity of 29,981 MW, followed closely by Gujarat with 29,814.36 MW. Solar power leads the renewable energy ecosystem of Rajasthan with 24.55 GIGAWATT, which makes it a national leader in this sector. Rajasthan's Integrated Clean Energy Policy 2024 strives for a target of 125 GIGAWATT of renewable energy capacity by 2030 with 90 GIGAWATT of solar, 25 GIGAWATT of wind and hybrid power, and 10 GIGAWATT of hydro, pumped storage, and battery energy storage systems. Gujarat, however, has the maximum wind power potential among Indian states at 12,314.48 MW, and a major solar power potential of 15,305.26 MW. The Renewable Energy Policy of the state is for realizing its capacity of 36 GIGAWATT of solar and 143 GIGAWATT of wind capacity within 25 years. ?These factors propel and boosts the role of West India as key to the nation's renewable energy drive.

Competitive Landscape

Key India renewable energy market players are mainly focussed at the seamless setup of renewable energy projects in key areas, which will both ultimately cut costs, reduce emissions and will be in alignment with the various government policies. India

renewable energy companies are adopting advanced storage systems for storing large capacities of energy and also investing and promoting green hydrogen for a better future in India.

Adani Green Energy Limited

Adani Green Energy Limited, founded in 2015 and based in India, is dedicated to utility-scale solar and wind energy initiatives. It has one of the largest renewable portfolios in the world with over 8 GIGAWATT capacity and plans to expand to 45 GIGAWATT by 2030 with rapid growth and green hydrogen projects.

Tata Power Company Limited

Tata Power Company Limited, established in 1919 and headquartered in India, offers solar rooftop solutions, solar pumps, and large-scale renewable power generation. With more than 5 GIGAWATT of renewable capacity, the company is expanding into energy storage, EV infrastructure, and community-based solar projects to enable India's clean energy ambitions.

Azure Power Global Limited

Azure Power Global Limited, founded in 2008 and headquartered in India, is a utility-scale solar power solution company. The company has developed and built more than 2 GIGAWATT of solar assets in Indian states. Azure Power is committed to sustainable power generation and long-term PPAs with government and commercial customers.

NTPC Limited

NTPC Limited, incorporated in 1975 and headquartered in India, is diversifying away from coal to renewable power with increasing solar and wind capacity. It is aimed at achieving more than 60 GIGAWATT of renewable capacity by 2032. NTPC is also testing green hydrogen and energy storage solutions to meet India's net-zero ambitions.

Other key players in the India renewable energy market report are ReNew Power India, Suzlon Energy Limited, JinkoSolar Holding Co. Ltd., First Solar Inc, Vestas Wind Systems A/S, Trina Solar Limited., among others.

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