India Microgrid Market Assessment, By Type [AC Microgrid, DC Microgrid, Hybrid Microgrid], By Operating Mode [Off-Grid Connected, Grid Connected], By End-user [Utility, Residential, Commercial and Institutional, Industrial, Others], By Region, Opportunities and Forecast, FY2019-FY2033F

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Report description:

India microgrid market is projected to witness a CAGR of 14.56% during the forecast period FY2026- FY2033F, growing from USD 2.12 billion in FY2025 to USD 6.29 billion in FY2033. India microgrid market has witnessed major growth due to increasing energy demands from urbanization and industrialization. The country is highly focused on the immediate requirement for dependable and sustainable power solutions or equipment, such as a microgrid, which will result in a strong rate of growth during the forecast period. Currently, the country is confronting the drawbacks of the centralized grid, like regular outages and transmission losses in rural and remote areas. Microgrids can conquer the issues as equipment provides a decentralized solution to energy production and distribution, thus fueling its demand in the market. Microgrids reduce the risks of grid instability and provide uninterrupted operations during interruptions, propelling demand in industrial and critical infrastructure sectors. Several utility companies are investing in new renewable energy generation projects, which drive the demand for microgrids on the market.
For instance, in May 2025, GAIL (India) Limited and the Government of Karnataka signed a memorandum of understanding (MoU) to explore setting up renewable energy projects of up to 1 gigawatt (GW) in the state. The growing renewable energy production in the country will drive the demand for microgrids for power integration and distribution to end-users, which will drive the demand for microgrids in the market.
Furthermore, declining renewable energy sources and an increasing focus on decarbonization and ecological sustainability hold immense opportunities for market growth for the forecast period. Further, technological development, including the integration of smart grids, superior control systems, and affordable energy storage, is driving the demand for microgrids in the market. Furthermore, government policies, promoting renewable energy adoption, such as the National Smart Grid Mission and targeted rural electrification programs, have further accelerated the deployment of microgrids across the country.

Rapid Urbanization and Industrialization Augmenting the Market Growth

With the expansion of cities and new industrial hubs, the demand for uninterrupted power supply contributes to the rising demand for microgrids in the market. Traditional grid infrastructure often struggles to keep pace with the rapid increase in energy consumption and the complexity of distribution in densely populated urban and industrial areas. Microgrids offer a decentralized solution, providing localized power generation and distribution that could operate independently or in tandem with the main grid. This flexibility is particularly valuable for commercial and industrial sectors, which drive its demand in the market.

The country is highly inclined towards power infrastructure investment to fulfill the rising demand for power in different sectors. Additionally, the growing interest in renewable energy sources necessitates the installation of microgrids for integrating renewable sources into the existing grid. Moreover, the utility sector is focusing on urban development strategies, including the creation of smart cities and buildings, which require modern and efficient smart power grids that drive the demand for advanced microgrids in the market. As the country continues to urbanize and industrialize, the microgrid market is poised for robust expansion, playing a pivotal role in shaping the country's future energy landscape.

For instance, in December 2024, Serentica Renewables India Private Limited announced its plans to invest around USD 5.8 billion to develop 10,000 MW of renewable energy capacity in Rajasthan. This development highlights the state's growth potential and rising investment opportunities in renewable power production, which drives the microgrid demand in the region. Currently, the company has 3,000 MWp of renewable energy capacity under construction in the state. In another instance, in September 2023, the government of Assam approved a USD 624.4 million project to modernize the state's power distribution system. The approved project funded under the revamped distribution sector program (RDSS), seeks to augment the distribution system by March 31, 2026, and is expected to benefit around 6.7 million electricity consumers across Assam. With the rising investment in the power distribution systems drive the demand for microgrids in the India market in forecast period.

Government Support and Investment in Power Infrastructure Creates Market Opportunity

Government programs pushing for universal electrification in the rural residential sector have accelerated the need for decentralized power solutions such as microgrids in the market. Microgrids are able to manage voltage fluctuation which results in the supply of safe and efficient power to residential and commercial sectors. The Indian government is prioritizing reliable electricity supply, investing in grid expansion, modernization, and renewable energy integration which creates opportunities for the microgrids market growth in the coming years. Initiatives such as Saubhagya Yojana and Deendayal Upadhyaya Gram Jyoti Yojana (DDUGJY) aim to provide last-mile connectivity, making microgrids a viable alternative in the market.

Infrastructure investments in smart grids, green energy corridors, and smart metering complement the deployment of the microgrid market in the forecast period. Programs like the Smart Cities Mission integrate urban microgrids for backup power and renewable energy use, while defense and disaster-resilience projects drive demand in critical sectors. In addition, the government participates in investments which include significant upgrades to distribution networks which contribute to rising demand for microgrid market growth in the coming years. Large companies are investing in the renewable energy sector which drive the demand for the microgrids in the market.

For instance, in February 2025, during the Global Investors Summit held in Bhopal, NTPC Limited, alongside its subsidiary NTPC Green Energy Ltd (NGEL), formalized several strategic memoranda of understanding with the Government of Madhya Pradesh. These agreements outline substantial investments in renewable power generation, encompassing solar, wind, pumped hydro, and other carbon-neutral energy sources within the state. The total announced investment is around USD 23 billion.

AC Microgrid Dominate the Indian Market

The demand for AC microgrids is increasing in the market due to rising investments in existing power infrastructure. The AC microgrids are highly compatible with the existing power infrastructure and able to maintain a reliable power supply in different areas which drives its demand in the market. In India, the majority of the electrical devices, commercial appliances, and industrial equipment are set to work using AC power, so AC microgrids hold the market share on a wider scale. In addition, a nation experiences a rise in the use of electricity fueled by accelerating urbanization, industrial growth which increases the need for microgrids in the market.

In addition, AC microgrids are able to meet the growing demand for localized resilient energy systems, which would be capable of functioning independently and providing uninterrupted operations even during grid failures, thus increasing its demand in the market. In addition, the growing use of renewable energy sources is frequently integrated into AC microgrid architectures, which

is driving their implementation in the country. Government policies and supporting initiatives are leading to technological improvements in control systems and energy storage devices, which further make the AC microgrids efficient and reliable in operation, driving the segment to lead the market.

For instance, in December 2024, Power Grid Corporation of India announced to establish a solar powered green hydrogen plant and fuel cell based microgrid system at 400/220 KV Neemrana substation, Rajasthan.

North Region to Register Significant Growth in the Microgrid Market

The North region is expected to register rapid growth. The region is focusing on urban development and smart cities, which positions the region as the leading market in the coming years. The rising government initiatives, significant investments in grid systems to enhance energy access and reliability, which make the dominance of region in the market. Rural areas in the regions are looking to overcome the challenges related to unreliable energy access, which drives the demand for microgrids in the market. Moreover, state and central governments have launched ambitious programs to promote decentralized renewable energy systems, including microgrids.

The Ministry of New and Renewable Energy's Decentralized Renewable Energy (DRE) scheme further accelerates microgrid adoption by supporting off-grid initiatives. These efforts are complemented by the region's participation in national missions aimed at boosting renewable energy integration and grid resilience. Companies are increasing the investment in renewable power production and transmission, which drives the demand for microgrids in the market.

For instance, In August 2024, in Jammu and Kashmir, a grid connected rural micro grid project incorporating solar and water treatment, was sanctioned. The main objective of the project is to develop efficient power management and distribution network and to provide clean drinking water via solar-powered treatment.

Future Market Scenario (FY2026 – FY2033F)

- Government policies aimed at promoting infrastructure development and electrification are set to boost the demand for microgrids in the country.
- Integration of renewable energy sources in large-scale industrial applications creates the opportunity for microgrid market growth in the coming years.
- Microgrids align with government goals regarding energy efficiency and sustainability; furthermore, the ongoing energy policies are driving its market in the forecast period.

Key Players Landscape and Outlook

Microgrid manufacturers are implementing a range of strategic measures to strengthen their market position in the industry. Manufacturers are heavily investing in research and development to enhance energy storage systems, smart grid technologies, and the seamless integration of renewable energy sources, ensuring their solutions meet evolving customer needs and regulatory standards. Manufacturers are also focusing on developing cost-effective, modular, and scalable microgrid products which could be tailored for diverse applications. Product launches, agreements, business expansions, collaborations, and developing technologies are projected to increase competition in the fast-paced market.

For instance, in March 2025, Tata Power Renewable Microgrid Limited (TPRMG), a wholly owned subsidiary of the Tata Power Company (TPC), a prominent player in India's Solar rural microgrid sector, has signed a memorandum of understanding (MoU) with ESAF Small Finance Bank to drive the adoption of clean and efficient energy solutions in rural India. The company is taking initiative to increase the rural electrification which drive the demand for microgrids in the coming years.

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