

India's Rooftop Solar (RTS) Program: Policies, Progress, and Future Goals

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Why in News?

Rooftop solar (RTS) holds significant promise for transforming India's energy sector by providing a sustainable, decentralized, and cost-effective way to address the nation's increasing electricity demand and promoting self-reliance among consumers.

In the fiscal year 2023-2024, India's installed **RTS capacity surged by 2.99 GW**, marking the highest annual growth to date. By March 31, 2024, the total installed **RTS capacity reached 11.87 GW**, according to the Ministry of New and Renewable Energy.

To adequately meet the escalating energy needs, India must intensify its efforts to expand its RTS infrastructure.

What is Rooftop solar (RTS) programme?

- **Jawaharlal Nehru National Solar Mission: A Major Solar Initiative**

- Launched in January 2010, the Jawaharlal Nehru National Solar Mission marked India's first significant effort to boost solar energy production.
- Initially targeting 20 GW of solar energy (including RTS) in three phases (2010-2013, 2013-2017, 2017-2022), the goal was revised in 2015 to 100 GW by 2022, with a 40 GW RTS component.

- **Revised Targets and Achievements**

- By December 2022, India achieved an installed RTS capacity of approximately 7.5 GW. Consequently, the 40 GW target deadline was extended to 2026.

- **Drivers of Growth in RTS Installations**

- Over the years, improvements to the RTS installation numbers have been driven by favourable initiatives.
 - These include:
 - the Sustainable Partnership for RTS Acceleration in Bharat, SUPRABHA, and
 - the Sustainable Rooftop Implementation for Solar Transfiguration of India, SRISTI, schemes,
 - financial incentives, technological advances, awareness campaigns, and training programmes.

- **Untapped Potential and Future Goals**

- Despite progress, India's overall RTS potential remains vast at approximately 796 GW.
- Many States have yet to fully harness this potential.
- To meet the ambitious targets of 500 GW of renewable energy capacity (including 280 GW of solar) by 2030, and net-zero goals by 2070, RTS needs to contribute about 100 GW by 2030.

Leading States in Rooftop Solar (RTS) Installations

- **Gujarat: A Model of Success**

- Installed Capacity: 3,456 MW
- Key Factors: Proactive government policies, efficient approval processes, numerous RTS installers, high consumer awareness
- Notable Achievement: Modhera, India's first solar-powered village with 1,300 RTS systems of 1 kW each

- **Maharashtra: Strong Performance**

- Installed Capacity: 2,072 MW
- Key Factors: Robust solar policies, favorable regulatory environment

- **Rajasthan: High Potential**

- Installed Capacity: 1,154 MW
- Key Factors: Largest state by land area, high solar irradiance, streamlined approvals, financial incentives, public-private partnerships

- **Other Notable Performers**

- Kerala: 675 MW
- Tamil Nadu: 599 MW

- Karnataka: 594 MW
- **States Lagging Behind**
 - Uttar Pradesh, Bihar, Jharkhand
 - Challenges: Bureaucratic hurdles, inadequate infrastructure, lack of public awareness
- **Conclusion**
 - While states like Gujarat, Maharashtra, and Rajasthan are making significant progress in RTS installations, others still face substantial challenges that need to be addressed to fully tap into their solar potential.

Pradhan Mantri Surya Ghar: Muft Bijli Yojana

- **Objective**
 - **Goal:** Equip 1 crore households with rooftop solar (RTS) systems, providing up to 300 units of free electricity per month
 - **Capacity Addition:** 20 GW from 2 kW systems per household
 - The scheme aims to revolutionize India's energy landscape by significantly boosting RTS capacity, ensuring energy equity, and fostering sustainable development.
 - It also aims to train professionals for installing, operating, and maintaining RTS systems, fostering a skilled workforce.
 - **Target:** Rural and urban households, especially in regions with limited electricity access, high solar potential, and vulnerable communities.
 - It aims to ensure equitable distribution of benefits.
- **Financial Outlay**
 - **Total Budget:** Rs 75,021 crore
 - Central Financial Assistance: Rs 65,700 crore
 - Incentives for Distribution Companies: Rs 4,950 crore
 - Other Allocations: Incentives for local bodies, model solar villages, innovative projects, payment security mechanisms, capacity building, awareness, and outreach
- **Technology and Infrastructure**
 - Focus: Advanced solar technologies, energy storage solutions, smart grid infrastructure
 - Goal: Enhance efficiency, reliability, and resilience of RTS installations
- **Streamlined Processes**
 - Intention: Simplify approvals, permits, and regulatory clearances for RTS installations
 - Outcome: Reduce administrative hurdles and promote ease of business

Way forward

- **Awareness**
 - To encourage widespread adoption of RTS technologies, comprehensive awareness campaigns led by distribution companies and local bodies are essential.
 - These campaigns should include grassroots initiatives and door-to-door promotions targeting every administrative level—from wards to districts.

- **Ensure economic viability**

- Economic viability is crucial for RTS adoption. Government subsidies help reduce costs, and expanding low-cost financing options from banks and **non-bank financial companies (NBFCs)** will further facilitate affordability.
- Making RTS loans as accessible as typical vehicle loans will encourage more households to consider solar energy solutions.

- **Research and Development (R&D) in Solar Technology**

- Emphasizing R&D in solar technology, energy storage solutions, and smart-grid infrastructure can reduce costs, enhance performance, and improve reliability of RTS systems.
- Innovative technologies like drone and satellite imagery for shadow analysis, rooftop suitability assessments, and energy consumption patterns can optimize RTS system designs and support achieving adoption targets.

- **Investment in Training and Skill Development**

- Initiatives like the 'Suryamitra' training programme, which has trained over 51,000 solar PV technicians since 2015, illustrate the importance of investing in training, vocational courses, and skill development.
- Accelerating such programmes will help build a skilled workforce necessary for the RTS sector's growth and sustainability.

- **Update and review RTS policies**

- To support the effective implementation of the 'Muft Bijli Yojana' and enhance RTS adoption, there is a need to update and review RTS policies.
 - This includes revising net-metering regulations, grid-integration standards, and building codes to address current challenges.
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Q.1. What are non-bank financial companies (NBFCs)?

Non-Bank Financial Companies (NBFCs) are financial institutions that offer banking services like loans and credit facilities but do not hold a banking license. They provide a range of financial services such as loans and advances, asset management, stock broking, and money market instruments. NBFCs play a crucial role in extending credit to individuals and businesses, especially in sectors underserved by traditional banks.

Q.2. What is SUPRABHA scheme?

The SUPRABHA scheme (Sustainable Partnership for RTS Acceleration in Bharat) aims to accelerate rooftop solar (RTS) adoption in India through partnerships, incentives, and support for sustainable energy initiatives at the grassroots level.

Source: [How well is India tapping its rooftop solar potential? | Explained](#)

Source: <https://vajiramandravi.com/current-affairs/indias-rooftop-solar-rtg-program-policies-progress-and-future-goals/>

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