Report | June 2026

What Drives Rooftop Solar Installation Decisions in Indian Homes?

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Understanding Household Decision-making through a Pan-India Survey

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Cover image: CEEW/Emotive Lens. Rooftop solar panels installed on a residential building, with family members standing alongside the system.

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Understanding Household Decision-making through a Pan-India Survey

Report | June 2026

Megha Chaudhary, Saakshi Purohit,
Manas Vijayan, and Bhawna Tyagi

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Ministry of New and Renewable Energy

FOREWORD

India's energy transition has witnessed significant progress over the past decade. The country has built one of the world's largest renewable energy programmes and set ambitious renewable energy targets to guide its long-term development pathway with a vision that clean energy and development are complementary priorities. As we look to the decade ahead, with our commitment to Net Zero by 2070 and our vision of *Viksit Bharat* by 2047, the task before us is to ensure that this transition reaches every corner of the country and every segment of the society.

Residential rooftop solar is central to that aspiration. Through the *Pradhan Mantri Surya Ghar: Muft Bijli Yojana*, the Government of India has created a policy architecture that is transforming rooftop solar from an aspiration into an accessible reality for millions of households. The scheme's progress to date has been remarkable. What is equally encouraging is the growing consumer interest in rooftop solar adoption; a large number of Indian households are aware of rooftop solar and are willing to adopt it. The opportunity before us is vast, and the foundation to build upon is strong.

To seize this opportunity, it will be important to continue strengthening consumer-centric approaches in programme design and delivery. It is in this spirit that I warmly welcome this report by the Council on Energy, Environment and Water (CEEW). Based on the most comprehensive consumer-side survey of residential rooftop solar since PMSGY's launch, the report builds a robust evidence base on household perspectives and adoption behaviour. It offers a strong foundation for the upcoming phase of programme design and stakeholder action.

I am confident that this report will be of significant value to policymakers at the national and state level, to financial institutions and industry partners, and to the wider community of researchers and civil society organisations (CSOs) committed to India's clean energy mission. I congratulate CEEW on this important contribution and look forward to seeing its recommendations shape the path ahead.

(Santosh Sarangi)

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J.V.N. SUBRAMANYAM, IAS

संयुक्त सचिव
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MINISTRY OF NEW AND RENEWABLE ENERGY

FOREWORD

India today stands among the world's leading renewable energy economies. Our solar energy capacity has crossed 150 GW, and through the *Pradhan Mantri Surya Ghar: Muft Bijli Yojana*, we are now bringing the benefits of this transformation directly to the doorstep of Indian households. In less than two years, the scheme has solarised nearly four million homes, reflecting the scale and momentum of the programme, and a testament to what determined policy action can accomplish.

Rooftop solar is an opportunity for every Indian household to become a prosumer, to reduce its electricity bills, and to participate meaningfully in the nation's journey toward energy security and Net Zero. The *Pradhan Mantri Surya Ghar: Muft Bijli Yojana* was built on this vision, and the focus now is on expanding access and enabling wider adoption across households.

As the programme continues to expand, a deeper understanding of the factors shaping household behaviour, trust, and adoption decisions will further strengthen implementation efforts. This timely report by Council on Energy, Environment and Water (CEEW), grounded in a 22-state pan-India survey, delivers exactly those insights. It charts the consumer journey from awareness to installation and identifies the targeted interventions that can accelerate adoption at every stage. I am confident that this evidence will strengthen the design and delivery of the programme as we move toward our goal of 10 million solarised households.

I encourage state nodal agencies, distribution companies, financial institutions, industry partners, and civil society organisations (CSOs) to engage deeply with this report. Together, we have the opportunity to make rooftop solar a defining feature of India's energy future and to ensure that no willing household is left behind.

(JVN Subramanyam)

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RTS installation on a residential terrace in Bhopal, MP. The state is strategically aiming to unlock RTS demand through statewide information, education and communication (IEC) initiatives.

Image: CEEW/Emotive Lens

About CEEW

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The Council on Energy, Environment and Water (CEEW)—**a homegrown institution** with headquarters in New Delhi—is **among the world's leading climate think tanks.** We use **data, integrated analysis, and strategic outreach** to support public policy, transform markets, shape technology, and nudge behaviour. CEEW seeks to explain—and change—the use, reuse and misuse of resources. The Council addresses pressing global challenges through an **integrated** and **internationally focused** approach. It prides itself on the independence of its high-quality research and strives to **impact sustainable development at scale.**

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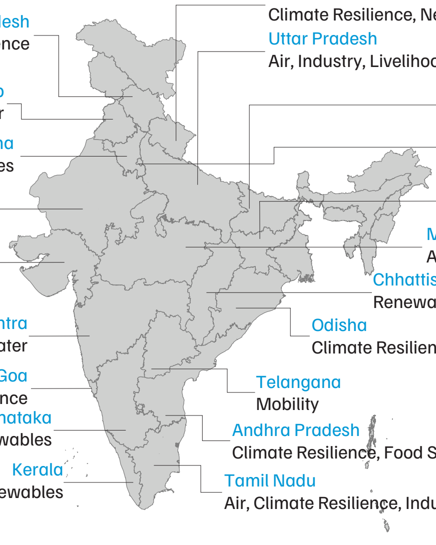
2019 | Climate Vulnerability Index
2021 | Net Zero by 2070
2022 | Mission LiFE
2022 | National Bioenergy Programme
2022 | E-waste (Management) Rules
2023 | G20 Green Development Pact
2023 | National Green Hydrogen Mission
2024 | Green Steel Taxonomy
2024 | PMSGY Yojana
2025 | National Critical Mineral Mission
2025 | Rajya Sabha guidelines on crop residue burning
2025 | National Adaptation Plan

STATE
2022 | Rajasthan Organic Farming Mission
2022 | Jharkhand Solar Policy
2022 | Uttar Pradesh Vidyut Sakhi programme
2023 | Rajasthan Green Hydrogen Policy
2023 | Uttarakhand Solar Policy
2024 | Net-zero roadmaps for Bihar & Tamil Nadu
2025 | Green Odisha Initiative
2025 | Maharashtra Climate Action Plan 2.0
2025 | 50 Heat Action Plans (GJ, OD, MH, TN)
2025 | Delhi Clean Air Action Plan
2025 | Delhi EV Policy 2.0

20 STATES SUPPORTED



An RTS system powering daily activities at a home in Uttarakhand, highlighting the growing integration of clean energy into routine household living.

Image: CEEW/Emotive Lens

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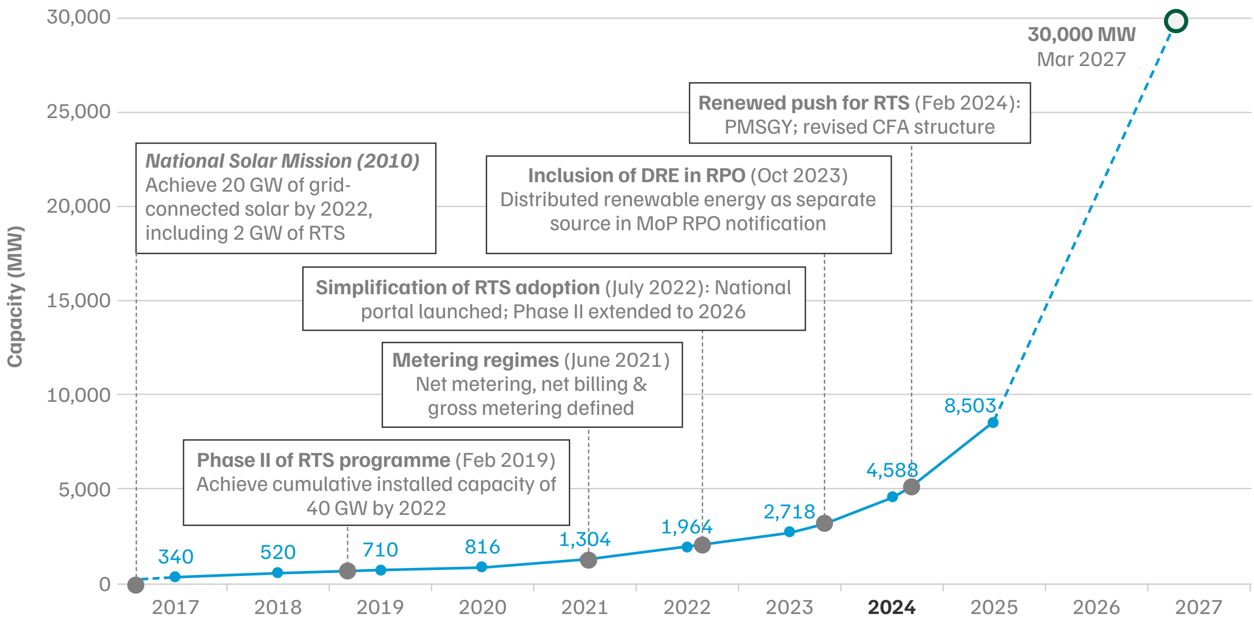
Executive summary

On 21 May 2026, India witnessed an all-time high peak electricity demand of 270.7 GW at 3.47 p.m., but the country's renewable energy push helped it tide over the surge comfortably. Solar energy, including rooftop solar (RTS), alone helped tackle 22 per cent of the demand (National Power Portal 2026), highlighting its importance as a key pivot of India's energy transition efforts. Within this sector, residential RTS is a significant focus area for the government in the pursuit of its Net Zero goal.

India's journey in residential RTS adoption is at an inflection point. The launch of a dedicated scheme, *Pradhan Mantri Surya Ghar: Muft Bijli Yojana* (PMSGY), in February 2024 marked a decisive policy shift. It has helped nearly double the sector's growth rate from a CAGR of 45 per cent in 2017-2023 to 85 per cent in 2024-2026 (Bridge to India 2024). As of 31 May 2026, PMSGY has received 6.9 million applications and 4 million households have been covered under the scheme. Currently 11.9 GW of capacity has been installed-nearly doubling the entire residential RTS capacity built over the preceding decade.

In absolute terms, the number of households solarised in India (4 million [National Power Portal 2026]), are also now comparable to Australia, a pioneer in residential RTS installation where 4.3 million households solarised over a span of 15 years (Australian Government 2026), even though Australia continues to lead in per capita RTS installations with approximately one in three equipped with RTS (Australian bureau of statistics 2025). To reach the 10 million mark by March 2027, India needs to sustain its current momentum to solarise 0.6 million households per month between June 2026 to March 2027 to reach the 10 million mark. At the same time, there can be an increased effort to diversify the adoption beyond the five states-Gujarat, Maharashtra, Rajasthan, Uttar Pradesh and Kerala, accounting for more than 71 per cent of national installed capacity.

Figure ES1. PM Surya Ghar Yojana nearly doubled the residential RTS growth rate



Source: Authors' compilation from Bridge to India. 2024. India Solar Rooftop Map.

Note: The figure shows year end data (June) from 2017 to 2025.

Nearly two-third of the households applying for RTS proceed to installation, showcasing that the PMSGY is performing well among those who start the journey (Ministry of New and Renewable Energy 2026). The priority now should be to widen the pipeline by reducing the drop outs occurring at every stage of the RTS adoption journey. Our analysis suggests that the dropouts occur in households facing information, procedural, and financial challenges.

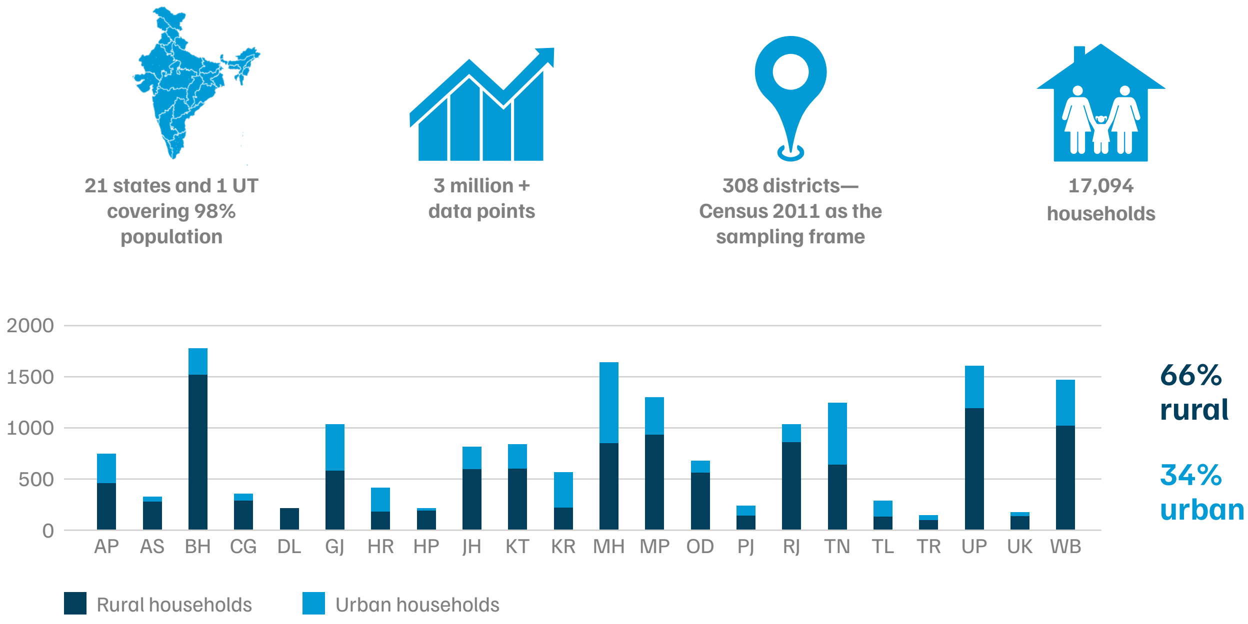
This report-the first-ever national consumer-side survey on residential RTS since PMSGY launch, is an attempt to understand the bottlenecks currently hobbling its expansion and suggest ways to overcome the challenges. Based on a survey of 17,094 households across 21 states and 1 union territory (UT), it set out to answer four questions:

- How aware are households about RTS in light of PMSGY, and what is their perception about it?
- What are the factors impacting willingness to adopt and installation decisions across household categories?
- At which stage of the consumer journey does conversion face the greatest challenges?
- What actionable pathways can be designed to support implementation and improve in-process conversion?

To answer these questions, the study adopts a consumer journey framework, tracing the path from need recognition through perception, accessibility, and affordability, and to post-installation experience. The findings help frame stage-specific targeted interventions to reduce attrition rate.

> Policy and regulatory reforms steadily strengthened the RTS ecosystem, while PMSGY unlocked unprecedented momentum in residential RTS adoption.

Figure ES2. Survey highlights-21 states and 1 UT, 3 million+ data points



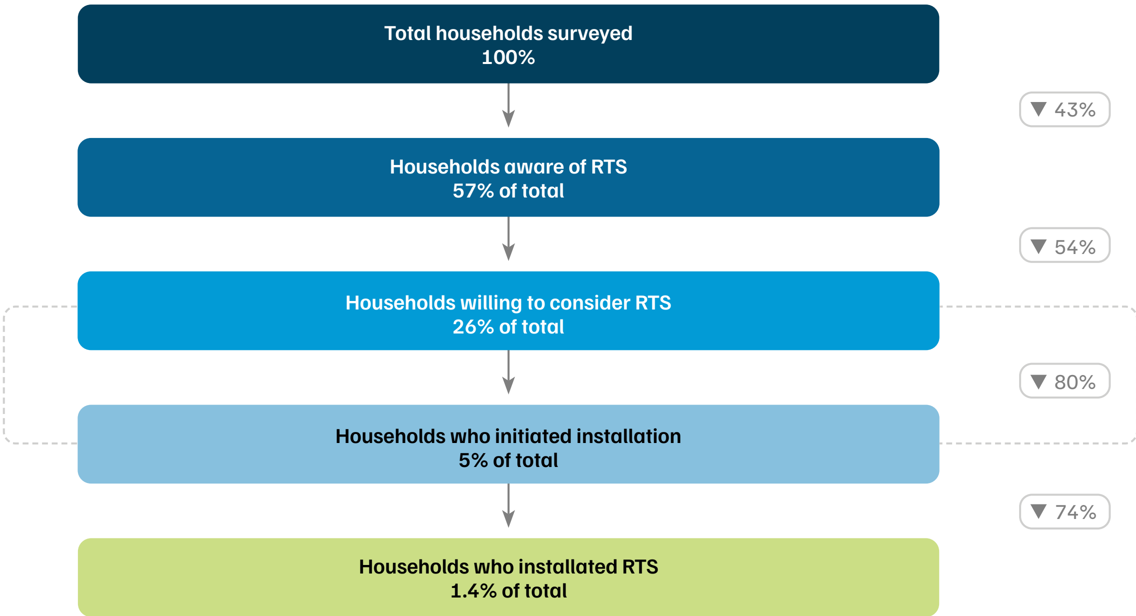
Source: Authors' analysis.

Note: AP: Andhra Pradesh; AS: Assam; BH: Bihar; CG: Chhattisgarh; DL: NCT of Delhi; GJ: Gujarat; HR: Haryana; HP: Himachal Pradesh; JH: Jharkhand; KT: Karnataka; KR: Kerala; MP: Madhya Pradesh; MH: Maharashtra; OD: Odisha; PJ: Punjab; RJ: Rajasthan; TL: Telangana; TN: Tamil Nadu; TR: Tripura; UP: Uttar Pradesh; UK: Uttarakhand, and WB: West Bengal.

Key findings from the survey

The findings of our survey suggest that the greatest opportunity in India's RTS programme lies not in creating demand but in enabling action. The survey found that out of the 57 per cent who are aware of RTS, half (26%) were willing to consider RTS, 5 per cent initiated installation, with 1.4 per cent completing the process (Figure ES3). The drop between the journey of willingness to action reveals that insights and nudges from trusted sources can ensure continued momentum and adoption. The survey shows that awareness has significantly improved over the years but more targeted interventions can convert the intent into action.

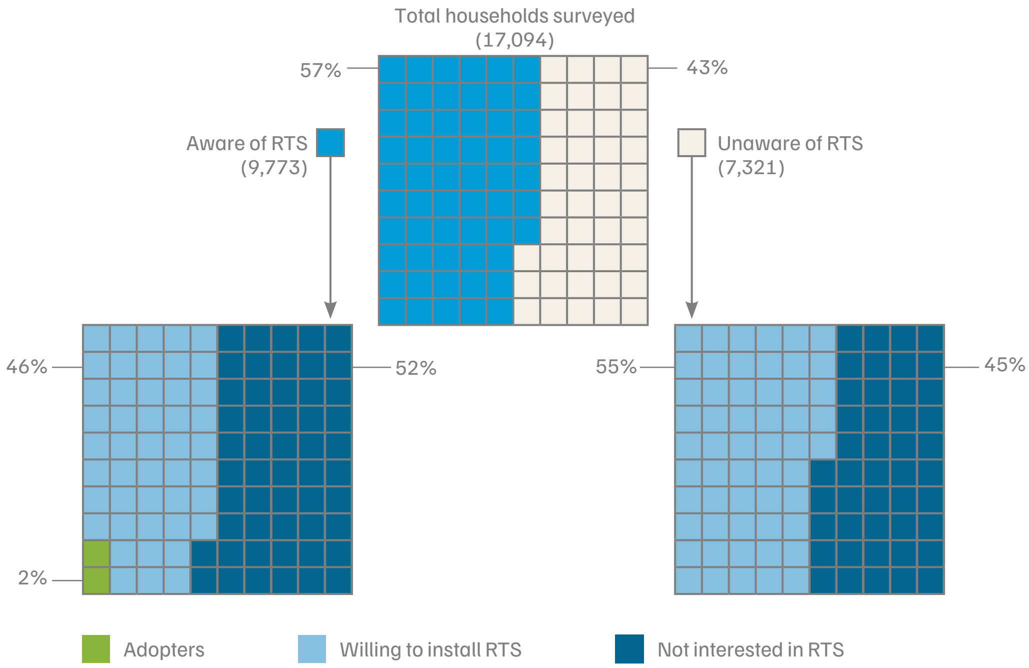
Figure ES3. The willingness is high and the opportunity now lies in enabling action



Source: Authors' analysis.

- **Rising awareness is creating a strong foundation for adoption.** Among the households surveyed, 57 per cent reported specific awareness about RTS i.e. how solar can be leveraged to power their homes. General awareness about solar technology has grown significantly since the launch of PMSGY in 2024; from 50 per cent in 2020 to 90 per cent in 2026 (Zachariah et al. 2023). Higher awareness level is one of the key factors defining the higher willingness to adopt as seen at the national level. As shown in Figure ES4, we see that once imparted scheme information, even 55 per cent of the unaware were willing to adopt. At the regional level, distinct adoption patterns emerge. Tamil Nadu and Odisha stand out with above-average awareness translating into stronger intent. In contrast, Delhi and Kerala, despite relatively high awareness, willingness to adopt, was limited, indicating a conversion gap. Meanwhile, Maharashtra, a pioneer in RTS deployment, reflects a more mature market, with both awareness and intent significantly higher than the national average.

Figure ES4. Among households that were previously unaware, 55% reported being willing to adopt RTS



Source: Authors' analysis.

Note: All percentages are post-weighted to ensure representativeness.

- **Trusted actors and in-person channels are essential to convert visibility into recognised need.** We estimate a 66 GW[1] theoretical convertible demand can be unlocked if awareness gaps are bridged, increasing potential adoption by 24 percentage points among currently unaware households willing to adopt RTS. Nearly 71 per cent of the households surveyed reported trust in government departments and officials as credible sources of information on new government schemes, and preference towards in-person visits as the primary mode of communication. Additionally, trust needs to be complemented by depth of engagement to ensure outcomes. Adopters reported twice the exposure to targeted, experience-based interventions, such as solar-specific events, radio ads, print ads compared to non-adopters. This confirms that the quality and specificity of information received, not merely its reach, are also important to convert trust into action.
- **Accessibility barriers are concentrated at the point of initiation and can be eased through targeted process support.** Among aware and willing households, 71 per cent have not yet taken the first step in their RTS journey. The main reason for this non-initiation is the absence of accessible and trusted guidance on the formal adoption process. Among households who initiated the process, nearly half (43 per cent) reported a smooth end-to-end experience and for those who encountered friction, the barriers were concentrated at specific, identifiable stages such as application submission, vendor selection, and net metering approvals, each of which are addressable through targeted process support. Some barriers, such as inadequate roof space and roof ownership constraints, are more structural in nature and are especially relevant in urban settings.

[1] Note: We are assuming that every unaware-interested household will install a RTS of at least 1 kW capacity.

- **Affordability concerns are often linked to limited awareness of financing options, not cost alone.** The affordability barrier is largely recoverable, as 73 per cent of households that perceive RTS as expensive are unaware of available financing options. Among households that are aware of financing, upfront cost concerns are expressed mainly among those with low electricity consumption, pointing to a weaker economic value proposition for adoption in this segment. Addressing affordability barriers of households that are aware, and not interested in RTS, through suitable financing options could translate into a theoretical convertible demand of 22.7 GW[2].

- **Satisfied adopters are a significant and underutilised conversion asset.** At present, adoption is concentrated among high-income urban households with a high electricity consumption (electricity bills 51 per cent higher than non-adopters). More than 90 per cent adopters reported a positive post-installation experience, especially with bill savings and system performance, and 87 per cent were willing to recommend their solar vendors to others-an untapped feedback mechanism and peer-learning exercise with significant potential to scale RTS adoption.

Image: CEEW/Emotive Lens

Encouraging the next generation of clean energy champions through a painting competition at Solar Fair Uttarakhand, organised by CEEW in partnership with the Uttarakhand Energy Department.

[2] Note: We are assuming that each household overcoming affordability-related barriers will install a RTS of at least 1 kW capacity.

Recommendations to scale RTS adoption under PMSGY

To sustain PMSGY's momentum and convert demand into action, we structured targeted interventions around the five stages of consumer journey:

- **Adopt a phased and targeted outreach strategy.** A phased approach needs to be adopted based on each state's level of awareness and RTS maturity. Mass media and peer channels should establish the initial visibility that makes direct outreach effective. This needs to be followed by hyper-local digital engagement through WhatsApp and community platforms. Direct-to-home outreach anchored by government officials and discoms should then convert this visibility into recognised need. Institutional outreach will be most productive when households already have a point of reference.

- **Lead consumer communication with financial value and address misconceptions early.** All consumer communications should lead with the potential for electricity bill savings as this is the most effective pitch to translate intent into adoption. Second, preempt misconceptions about backup power in communications to prevent dissatisfaction-driven negative word-of-mouth that undermines adoption. The knowledge gap with respect to the PMSGY process can be overcome entirely through targeted, call-to-action-focused communication.

- **Reduce first-step and procedural friction at scale.** Handholding of consumers should be embedded at every potential friction point such as automated nudges linking to empanelled vendor lists, guidance on documentation and approvals. The next step in the application process should always be visible and one click away.

- **Expand financing awareness and design segment-specific products.** A significant share of affordability-related demand is recoverable if financing products are accessible and awareness is created. Capacity building for frontline bank staff is a necessary condition for financing awareness to deliver results. Active communication on financing literacy (EMI structures, collateral-free loans, payback periods) must be integrated into initial outreach. Segment-specific interventions will help to unlock the potential. For example, rural households need zero or low upfront seasonal EMI-based products delivered through self-help groups and NABARD (India's apex development bank for rural development), while low-consumption households need bundled messaging on financing literacy (EMI structures, payback periods relative to tariff savings) paired with lifecycle cost comparisons to demonstrate long-term affordability

- **Activate adopters as structured conversion assets; protect their experience.** Before activating adopters as promoters, an operation and maintenance (O&M) briefing must be embedded as a mandatory installation handover step to close the O&M awareness gap. It needs to be reinforced through automated service reminders over the system's 25-year lifespan. After establishing a durable experience base, structured solar open house events can be organised within gram sabhas and resident welfare association (RWA) meetings-where adopters can present before-and-after bill data, describe vendor selection, and walk through financing steps-to directly address first-step friction and financing information gaps through peer testimony that no campaign can replicate.

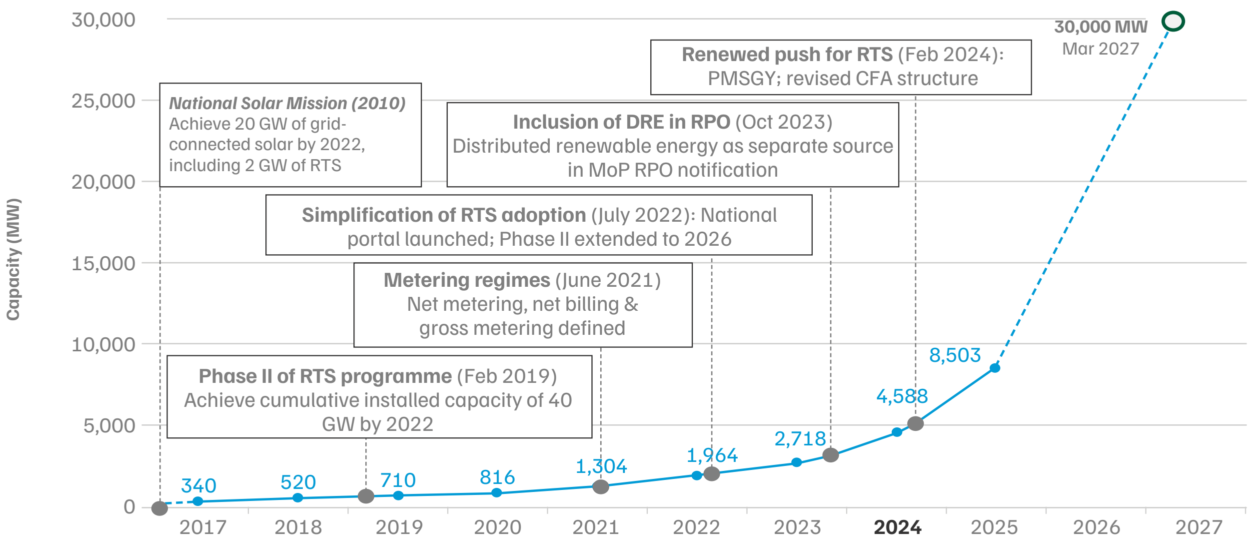
1. India needs to install RTS in 0.6 million households every month to meet its March 2027 target

With electricity demand in India rising steadily, the country recorded its highest-ever peak of 270.7 GW on 21 May 2026, underscoring the growing stress on the power system and the need to scale distributed clean energy solutions (National Power Portal 2026). Solar energy, including RTS, proved critical to meeting this demand, contributing 22 per cent to the peak-a testament to its essential role in India's energy security. Within this context, residential RTS is a key focus area for India's energy transition and Net Zero objectives.

India's renewable energy capacity has expanded rapidly, reaching 275 GW as of March 2026, with solar contributing 154 GW (Ministry of New and Renewable Energy 2026). Residential RTS capacity increased significantly in the last two years to 11.9 GW and holds an immense potential for the country's energy security (installed capacity is 10 per cent of the estimated technical potential) (Zachariah et al. 2023). Nationwide RTS deployment has faced significant challenges including high upfront cost, limited financing options, insufficient awareness among the consumers and a complicated application process (Gupta et al. 2022).

Against this backdrop, the launch of the *Pradhan Mantri Surya Ghar: Muft Bijli Yojana* (PMSGY) in February 2024 marked a decisive policy attempt to

Figure 1. India needs 4.2x growth rate per month to achieve its RTS deployment target



Source: Authors' compilation from Bridge to India. 2024. India Solar Rooftop Map.

Note: The figure shows year end data (June) from 2017 to 2025.

democratise clean energy. With targeted interventions like a subsidy of up to INR 78,000 for a 3-kilowatt (kW) RTS system, collateral-free loans, digitised application process, and a dedicated fund for awareness activities, the scheme aims to install RTS on 1 crore households by March 2027. Figure 1 illustrates how successive policy interventions, ranging from metering reforms to process simplification, have progressively enabled RTS adoption since 2010. The sharp acceleration after 2024 underscores the role of PMSGY in driving a step change in deployment, moving the sector from gradual growth to rapid scale-up.

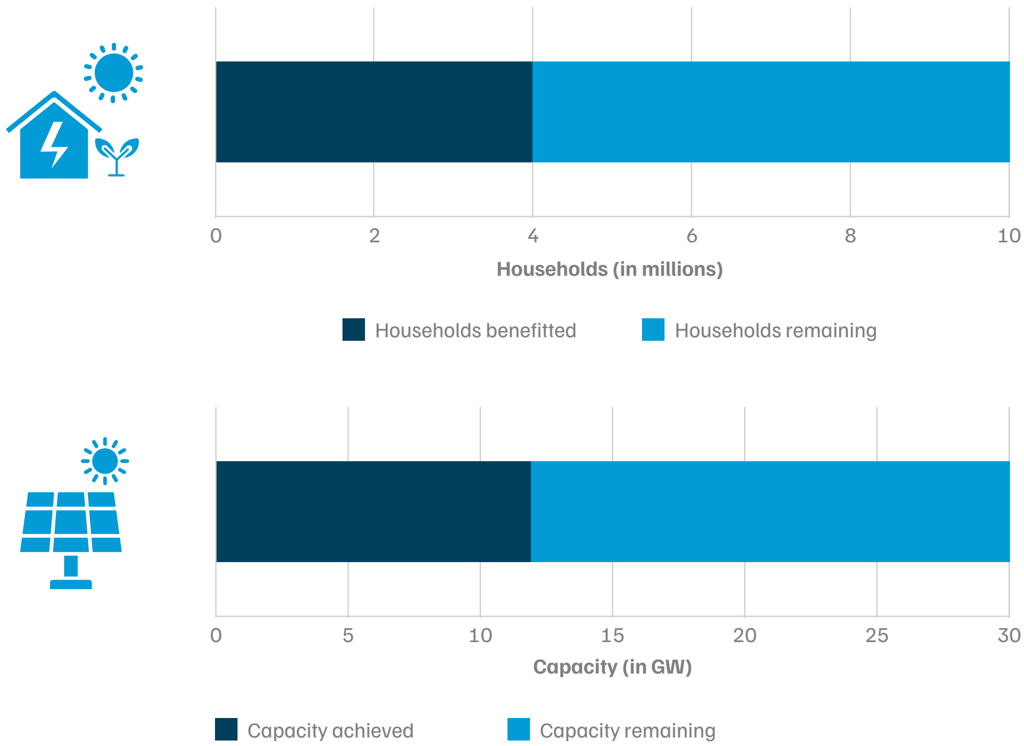
> Policy and regulatory reforms steadily strengthened the RTS ecosystem, while PMSGY unlocked unprecedented momentum in residential RTS adoption.

The scheme has already begun to transform the pace of deployment, nearly doubling the sector's growth rate from a CAGR of 45 per cent (2017-24) to 85 per cent (2024-25). As of 31 May 2026, 11.9 GW of RTS capacity has been installed across 4 million households, accounting for about 40 per cent of the PMSGY's target. Leveraging this momentum, India needs to solarise nearly 0.6 million households every month to meet PMSGY's 2027 target (Figure 2).

Residential RTS deployment holds significant untapped potential at both the state and national levels. India's technical potential for residential RTS based on consumption is 118 GW (Zachariah et al. 2023). Maharashtra and Uttar Pradesh show the highest potential (Figure 3), while Gujarat has the highest number of installations currently. Similarly, Tamil Nadu, Madhya Pradesh and Rajasthan have a lot more potential, but the adoption remains limited.

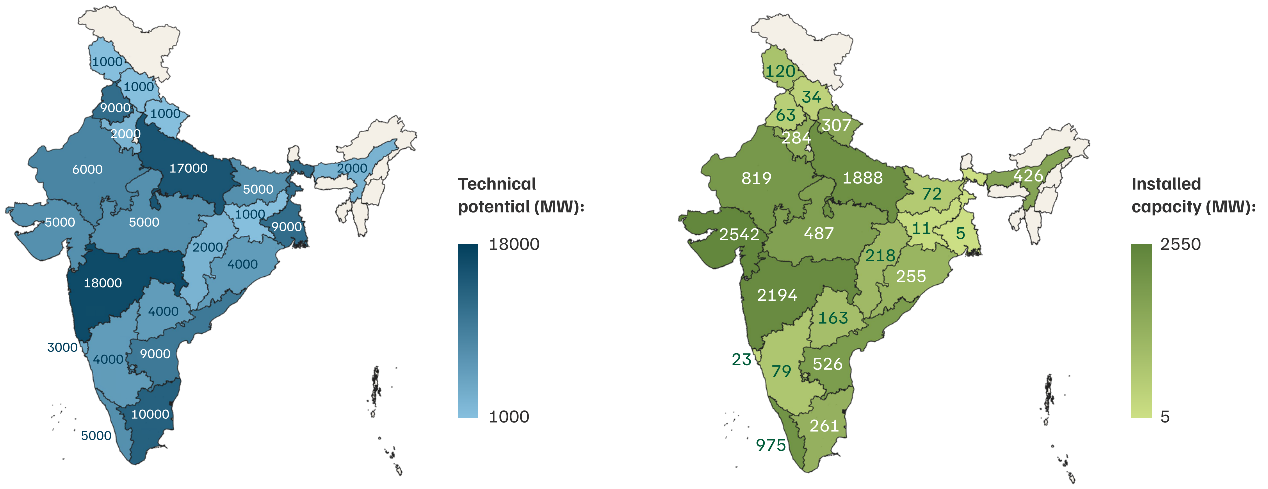
The question arises as to what factors can be an effective trigger for higher adoption. Consumer decision is locked in by multiple factors, from psychological drivers, to economic incentives and technology's perception (Davis 1989; Rogers 1983). Unlike utility-scale deployment, consumer behaviour forms the backbone of RTS adoption complemented by other institutional factors.

Figure 2. Nearly half of India's residential RTS target has been achieved



Source: Authors' compilation from Ministry of New and Renewable Energy. 2026. "National Portal for Rooftop Solar."

Figure 3. Gujarat tops residential RTS installations, Maharashtra and UP catching up to potential



Source: Authors' compilation from Zachariah, Sachin, Bhawna Tyagi, and Neeraj Kuldeep. 2023. Mapping India's Residential Rooftop Solar Potential; and the National Portal for RTS (Ministry of New and Renewable Energy, 2026).

1.1. Where is the progress getting bottlenecked?

Nearly seven million residential electricity consumers in the country have initiated their RTS journey through the PMSGY portal. Encouragingly, 58.4 per cent of them had progressed to installation as of 31 May 2026, demonstrating strong conversion among engaged consumers (Ministry of New and Renewable Energy 2026). While these numbers reflect growing momentum in residential RTS adoption, they also highlight significant opportunities to scale adoption by strengthening consumer support across each stage of the adoption pathway-through targeted interventions, improved guidance, and streamlined processes.

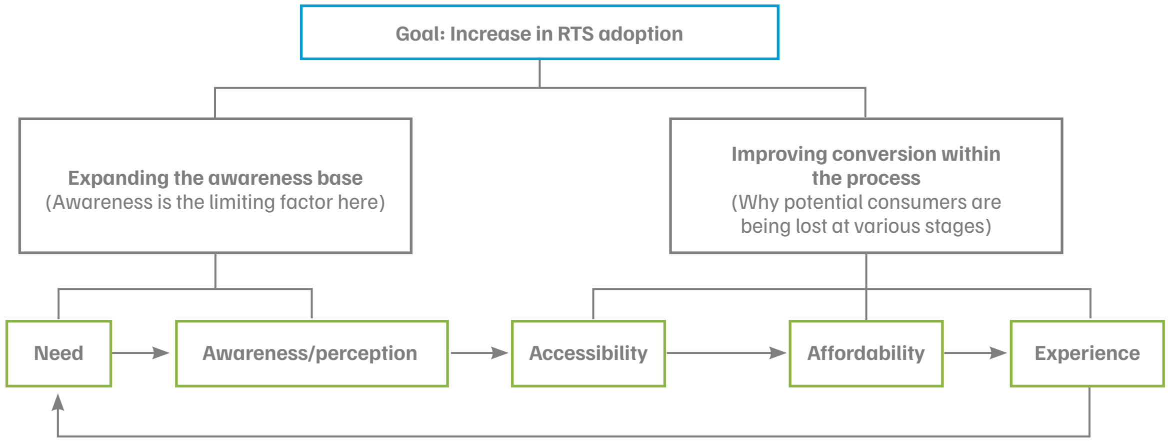
Against this backdrop, the study is the first ever national consumer side survey on RTS since PMSGY. It intends to address the following questions:

- How aware are households about RTS in light of PMSGY, and what is their understanding about it?
- What are the factors impacting willingness to adopt and installation decisions across household categories?
- At which stage of the consumer journey does conversion face the greatest challenges?
- What actionable pathways can be designed to support implementation and improve in-process conversion?

To answer these questions, the study adopts a consumer journey framework, tracing the path from need recognition through perception, accessibility, and affordability, and to post-installation experience as illustrated in Figure 4. The findings help frame stage-specific targeted interventions to reduce attrition rate.

- Beginning with assessing awareness gaps among completely uninformed individuals, and those with limited familiarity with RTS, in order to shape positive perceptions.
- Estimating the drop-offs through the accessibility and affordability stages driven by financial and other constraints.
- Understanding post-installation satisfaction to sustain long term adoption and advocacy.

Figure 4. The consumer journey exhibits two broad challenges – awareness and conversion



Source: Authors' analysis.

1.2. Methodology

To strengthen the RTS installation pipeline at every stage and chart out actionable pathways, the team conducted a pan-India telephonic-survey covering 17,255 households across 23 states and 1 union territory (UT) from January-April 2026. The final sample was post-weighted to ensure state-level representation in the analysis. A multi-stage sampling approach is adopted to select districts and households to ensure that the sample is representative of 98 per cent of population based on Census 2011. It is state wise urban-rural representative, hence capturing intra-state population heterogeneity. The survey design was based on a two-pronged approach: first, population-proportional allocation of districts using Census data to support broad national, state-level, and urban-rural coverage; second, population-balanced stratification to ensure within-state coverage across large and medium districts.

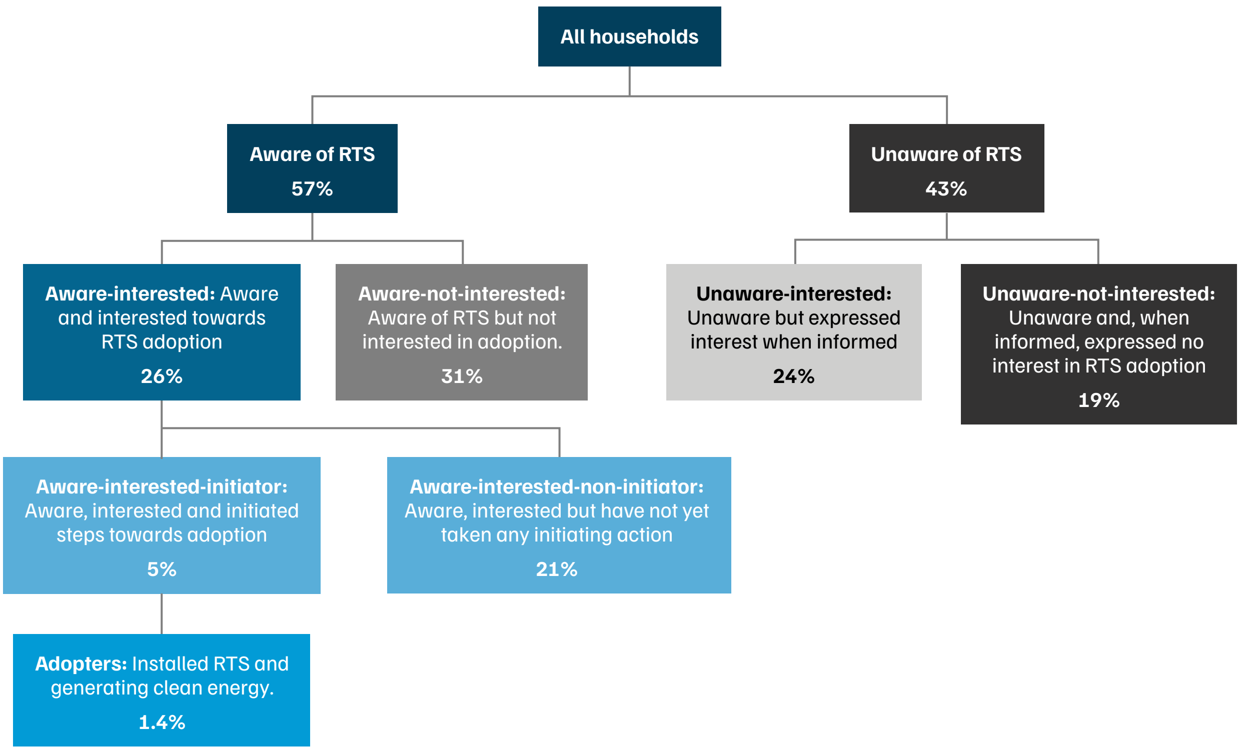
However, due to data inadequacy, the states of Nagaland and Mizoram are not considered for the analysis in this report. Based on the approach, a total of 308 districts across 21 states and 1 UT were covered, yielding a final sample of 17,094 households (Figure 6). The survey was piloted for 625 households which are excluded in the total achieved sample. The questionnaire was also modified based on our primary understanding of the household awareness on solar panels, sanctioned load and interest expressed by the unaware households in installation. The survey was administered through computer-assisted telephonic interviews (CATI) by trained enumerators, who were trained through in-person training sessions conducted by the CEEW team. Quality assurance protocols were incorporated including enumerator retraining, real-time monitoring, automated skip logic and range checks, and random back-checks. Data quality was also maintained through routine audio recording verification. To ensure analytical consistency across the study, respondents were segmented into mutually exclusive household (respondent) categories based on two primary dimensions: awareness of RTS, and their stage in the adoption journey (Figure 5).

> The survey framework combines state representation with urban-rural diversity to capture nuanced consumer perceptions on RTS.

Image: CEEW

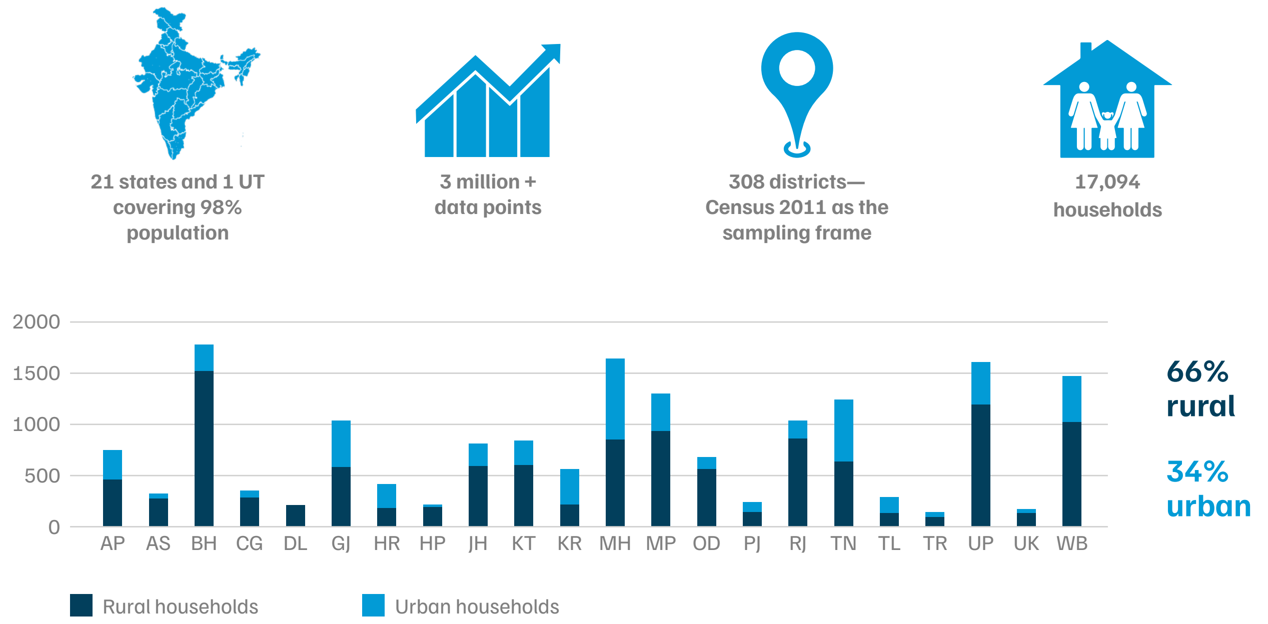
An in-person enumerator training conducted at the CEEW office in December 2025, ensuring standardised northern region survey implementation.

Figure 5. Households classified into mutually exclusive categories based on awareness and adoption



Source: Authors' analysis.

Figure 6. The sampling description of the pan India telephonic survey across 21 states and 1 UT



Source: Authors' analysis.

Note: AP: Andhra Pradesh; AS: Assam; BH: Bihar; CG: Chhattisgarh; DL: NCT of Delhi; GJ: Gujarat; HR: Haryana; HP: Himachal Pradesh; JH: Jharkhand; KT: Karnataka; KR: Kerala; MP: Madhya Pradesh; MH: Maharashtra; OD: Odisha; PJ: Punjab; RJ: Rajasthan; TL: Telangana; TN: Tamil Nadu; TR: Tripura; UP: Uttar Pradesh; UK: Uttarakhand, and WB: West Bengal.

The questionnaire includes a mix of qualitative and quantitative questions covering household socio-economic characteristics, dwelling type, electricity connection details, rooftop characteristics, awareness of government schemes, adoption status, and household experiences with RTS systems.

Building on this evidence base, the next section examines how awareness and perception are shaping household level willingness to adopt RTS in India.

Data limitations

There are two data limitations encountered in the study as mentioned below:

- The survey was conducted using a telephonic (CATI) approach, while mobile phone penetration in India is at ~77 per cent (Kemp 2025), this method may still under-represent households without reliable phone access or those less likely to respond to unknown calls, introducing a potential selection bias.
- Additionally, the sample was restricted to households residing in self-owned dwellings and to primary decision makers, which may over-represent more stable and financially empowered households relative to the broader population. As a result, the findings may not fully capture the perspective of renters, non-decision makers, or more transient and digitally excluded populations. The findings should be interpreted with this limitation in mind.

2. Residential RTS awareness increases to 57%, translating into high willingness to adopt

RTS is not merely a technical transition-it is a behavioural shift for consumers. The technology acceptance model (TAM) and the diffusion of innovations (DOI) frameworks offer a useful lens for understanding why awareness is needed to nudge consumers into action but at the same time, cannot solely drive adoption (Davis 1989; Rogers 1983). The DOI framework emphasises that for new technologies to scale beyond early adopters it is important that consumers can observe or try them. This reduces their perceived risk of adoption. The TAM framework suggests that financial savings alone (perceived usefulness) are not enough if the product doesn't offer a seamless user experience (perceived ease of use) (ibid). In India, as trial before adoption is not possible for RTS, peer validation and trusted sources of information will have to play a prominent role in highlighting perceived usefulness as India looks to widen solarisation. Hence, a dedicated awareness campaign has also been a crucial feature of leading RTS countries, including India (Tyagi et al. 2024).

Image: CEEW/Emotive Lens

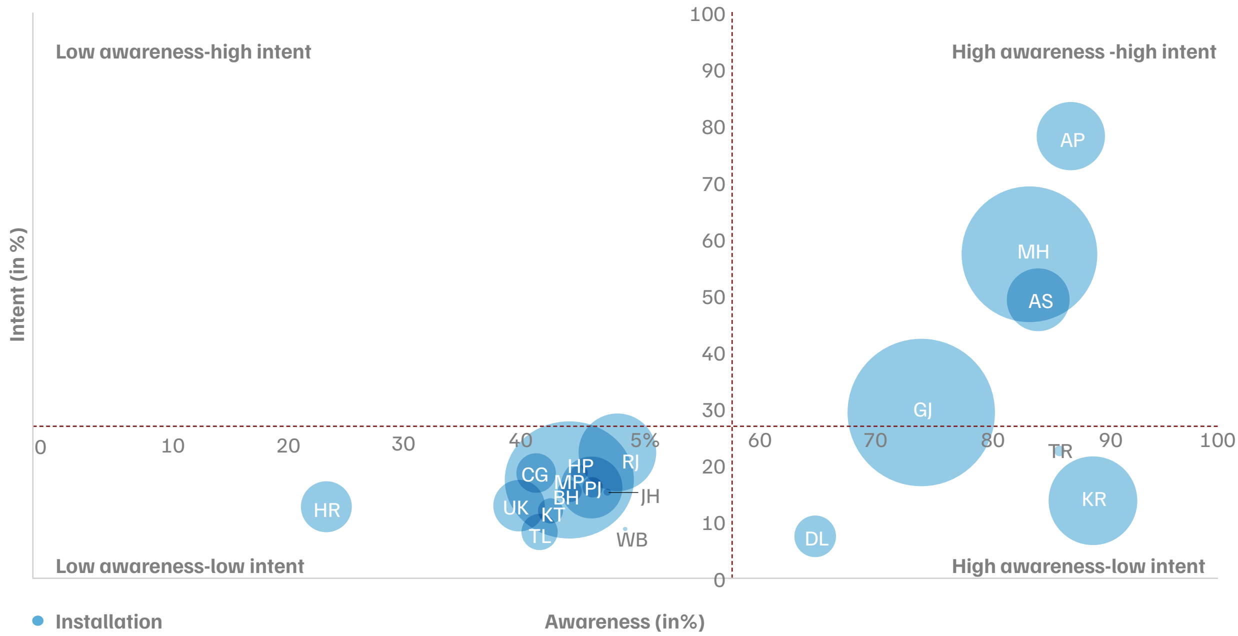
RTS adoption expanding across diverse geographies fueled by growing public awareness.

2.1. Establishing the need, awareness tends to have a positive but non linear impact on the willingness

Consumer RTS journey starts with establishing the need for RTS as relevant to their household energy decisions. At national level, consumer awareness of solar among households has risen from below 50 per cent in 2020 (Zachariah et al. 2023) to 90 per cent, according to the findings of the survey, with 57 per cent households being aware of its use for household electricity generation. This increase was observed in the rural and urban segments too. Rural awareness stands at 53 per cent of the rural households, up from earlier 42 per cent (Zachariah et al. 2023), still lagging behind urban awareness levels. Urban awareness has shown a significant increase to 67 per cent of the urban households, an increase from 48 per cent as per CEEW, 2020 study. The shift is driven significantly by PMSGY information, education, and communication (IEC) activities. However, high solar familiarity has not automatically translated into RTS need recognition, pointing to a gap between general technology visibility and consumer realisation about its relevance for their household.

Distilling the information at the state level shows that there is a positive correlation of 0.63, or a direct association between awareness and willingness to adopt as shown in Figure 7. This confirms that building awareness is a foundational requirement for generating intent. States trailing the national average on both dimensions, such as Haryana, West Bengal, Karnataka are clustered in the third quadrant. These markets appear to be constrained by limited information making awareness a prerequisite to unlock latent demand in these regions. A different pattern emerges in the first quadrant of Figure 7. States such as Tamil Nadu, Assam, and Odisha exhibit above-average awareness and willingness to adopt, yet adoptions remain relatively low. This gap is particularly notable given that several of these states also possess strong solar potential. These states represent an intent bottleneck, where the adoption journey is stalling at the perception or accessibility stage rather than the awareness stage.

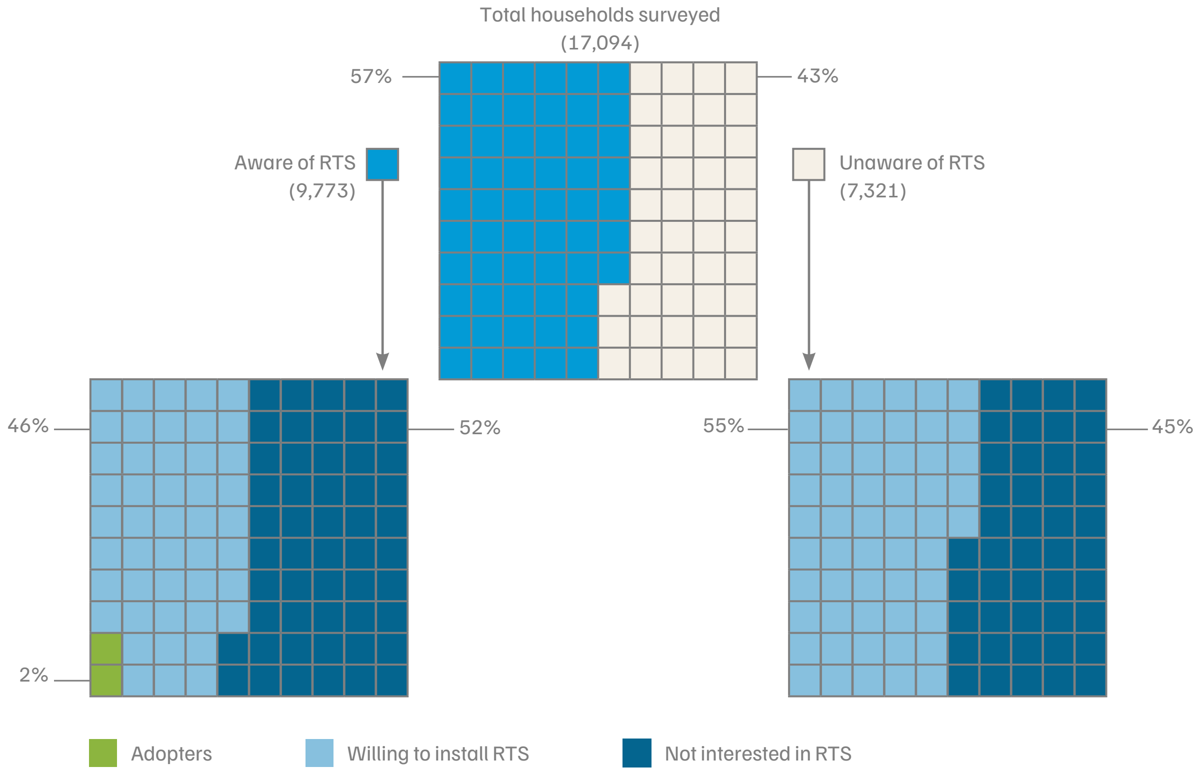
Figure 7. Positive correlation of 0.63 shows direct association between awareness and willingness to adopt RTS



Source: Authors' analysis.

Note: Figure 7 shows surveyed states with awareness on the x-axis and willingness to adopt on the y-axis. The bubble size represents the national installation numbers. The line dividing the quadrants is the national average line for both awareness and willingness.

Figure 8. Among households that were previously unaware, 55% reported being willing to adopt RTS



Source: Authors' analysis.

Note: All percentages are post-weighted to ensure representativeness.

Interestingly, as shown in Figure 8, among the pool of unaware households, 55 per cent are still interested in knowing more and potentially installing RTS in the future. This convertible demand shows that there is a potential to increase uptake even among unaware households through targeted outreach efforts through right channels and trusted intermediaries. This convertible demand theoretically translates to additional 66 GW[3] of RTS capacity.

The findings present the need to adopt differentiated approaches across household categories: expanding information reach in states where awareness and intent remain low, and diagnosing conversion barriers in states where awareness exists but is not translating into adoption.

2.2. Reaching the unaware: Trust pathways in early-stage awareness to emphasise need of RTS

State-wise adoption patterns and regional enablers at the macro level are shaped by the aggregation of individual consumer behaviour. Variations in how households perceive, evaluate, and act upon RTS opportunities necessitate a more granular lens. Accordingly, in the survey, the households are segmented broadly into three types-aware, unaware and adopters, enabling a clearer understanding of distinct pathways through which adoption can be accelerated.

[3] Note: We are assuming that every unaware-interested household will install a RTS of at least 1 kW capacity.

The first step in the consumer journey is to establish the ‘need’ among individuals-the point at which consumers recognise the technology as relevant to their household energy decision. DOI framework suggests that engagement with unfamiliar technologies needs to move beyond just imparting information. It needs to come from trusted intermediaries to reduce uncertainty and legitimise new choices (OECD 2017; Rogers 1983).

Social media and peer dominates as ‘general diffusion of information’ across all household categories.

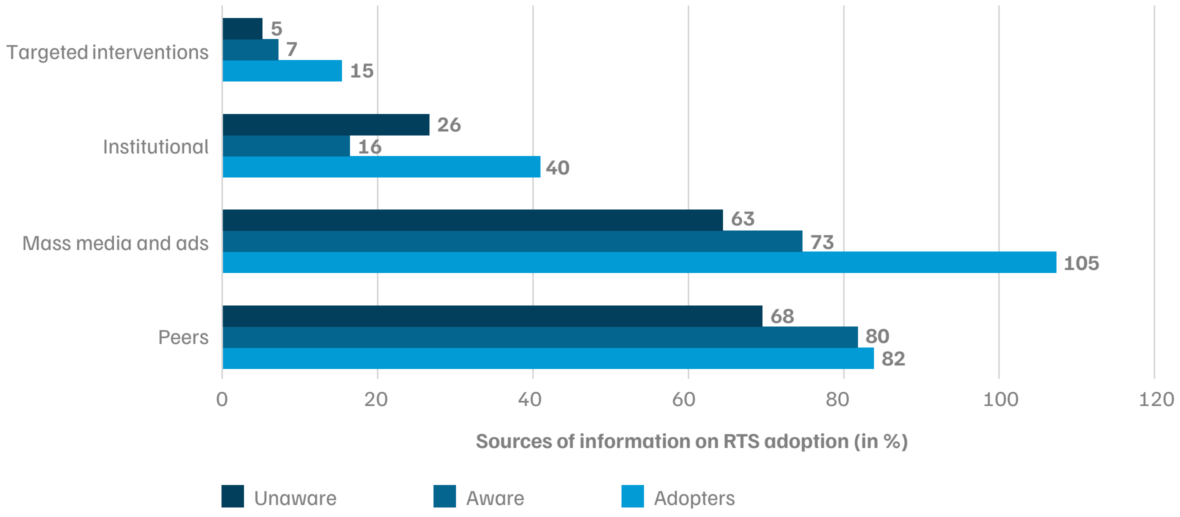
There’s a striking homogeneity across all three household categories (unaware, aware, and adopters) with respect to channels of information about government schemes, with social media and peers emerging as the most prevalent source of exposure, as shown in Figure 9.

Moreover, adopters’ exposure to the targeted interventions (such as radio ad, print ad, RTS focused events) is twice that of other households who have not adopted RTS as shown in Figure 9. This is also consistent with TAM’s framework that consumers sought authoritative and experience based validation to reduce perceived financial and technological risk associated with adoption. This also highlights that a household’s transition from awareness to adoption is not determined solely by mode of communication but also the depth and quality of information received through them.

Institutional actors command the highest trust among unaware households

For the 43 per cent of unaware households, the findings reveal a clear hierarchy of trust. Institutional actors emerge as the most credible sources of information regarding new government schemes, with nearly 71 per cent of unaware households as shown in Figure 10, indicating trust in government departments or officials, followed by local governance institutions. Community based actors-peers, non-governmental organisations (NGOs) and resident welfare associations (RWAs)-also demonstrate influence on household decisions comparable to local institutions. Similar findings were observed during the Solarise campaign piloted in Delhi, where households responded positively to information shared by discom in electricity bills (Gupta et al. 2022). These findings reinforce the role of social and authoritative validation critical at the early-stage of technology diffusion.

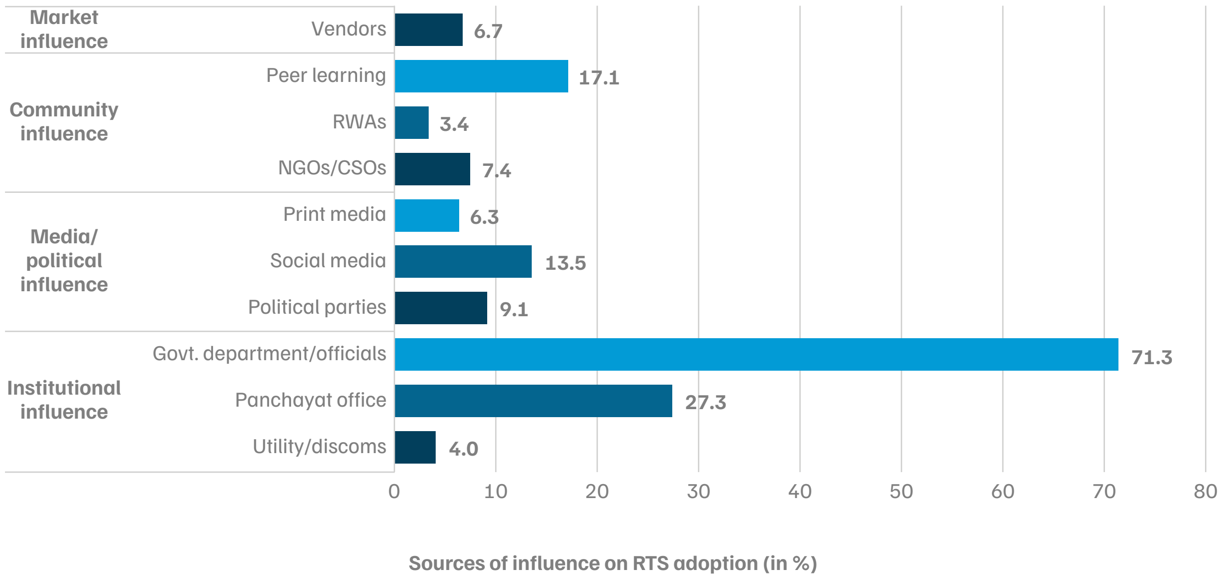
Figure 9. Mass media and peers are the most common sources of information for households



Source: Authors’ analysis.

Note: 1. Targeted interventions include ads, and other solar specific events like workshops, solar fair.
2. Institutions in the context of RTS include the PM Surya Ghar portal (for awareness), state government websites, DISCOM flyers and websites, and banks.
3. Multiple responses allowed; percentages may not sum to 100%.

Figure 10. Institutional influence can help unlock the RTS potential among unaware households



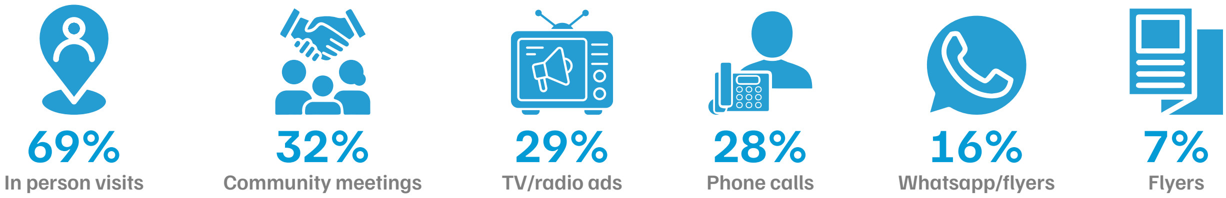
Source: Authors' analysis.

Note: Multiple responses allowed; percentages may not sum to 100%
Civil Society Organisations (CSOs).

Distilling the information further on preferred mode of communication, in-person visits (70 per cent) are preferred by unaware households when it comes to knowing about the new government scheme (Figure 11). This is followed by the community meetings (24 per cent), TV/radio (23 per cent) and phone calls (22 per cent).

As much as 66 GW of theoretical convertible demand can be unlocked if these awareness gaps are bridged, increasing potential adoption by 24 percentage points among currently unaware households willing to adopt RTS. In order to realise this demand, chronology of awareness touchpoints in the RTS adoption pathway will be critical in designing the IEC campaigns. Broad reach channels such as mass media and peer conversations play an essential role in generating visibility and initiating consumer interest. However, it is insufficient alone to drive adoption. In order to legitimise information and transform it into results, the combination of the most trusted actor and the most preferred channel should be leveraged. For instance, in-person workshops or events led by government officials are the most effective strategy. Similarly, community meetings held and mediated by the Panchayat office will be impactful in forming perceptions.

Figure 11. ~70% unaware households prefer in person visits as the channel of communication for government schemes



Source: Authors' analysis.

Note: Multiple responses allowed; percentages may not sum to 100%.

2.3. Shaping 'perception' from need recognition to informed intent

After establishing the need, the next step in the consumer journey is internalising the 'perceived usefulness' as per the TAM framework to make an informed decision. Awareness creates the opportunity but perception determines what action households take with it. The focus of the section will be on what households believe and whether those beliefs are currently falling short to make a decision.

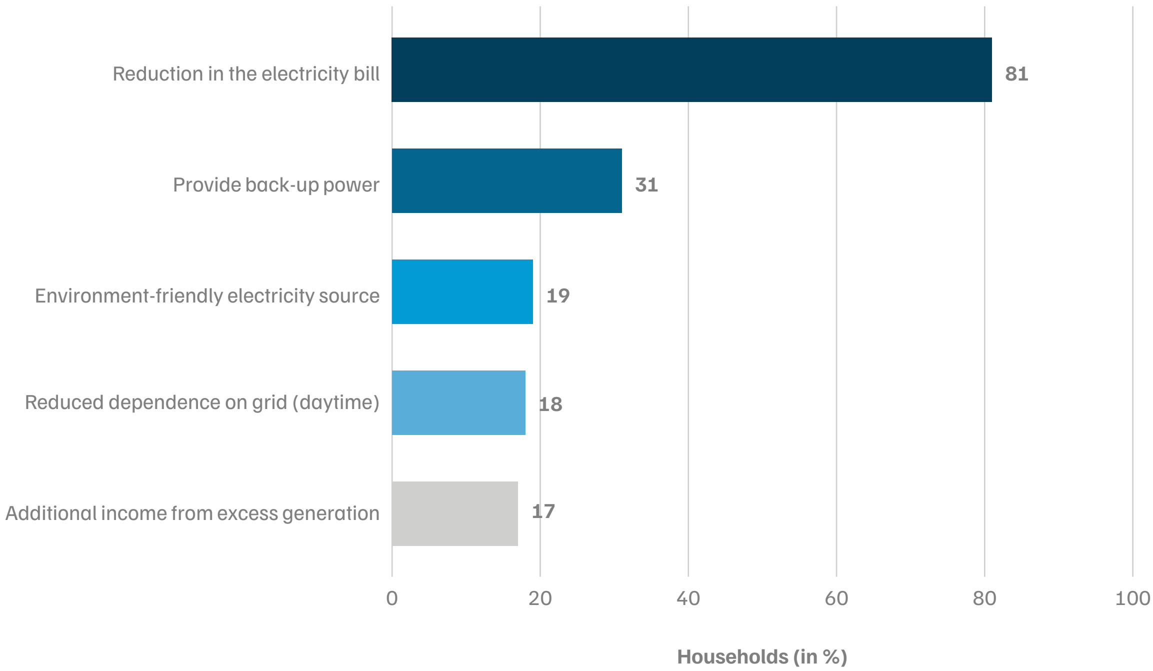
Economic benefits are the most effective measures to convince people to adopt RTS

In terms of perceived usefulness, ~81 per cent of the aware households highlighted electricity bill reduction as the primary motivator for adoption. This further validates that the primacy of wallet-first messaging for both the willing and the hesitant (Figure 12). On the other hand, environmental considerations are cited by only 19 per cent, suggesting that green messaging does not function as a primary conversion lever for most households, and may be leveraged as a secondary hook for already-motivated households.

The data also points to a potential risk of perception problem, as 3 in 10 households cited 'power backup' as a primary benefit. However, standard grid-connected RTS systems do not provide power backup without battery storage, which is also typically not covered under the PMSGY subsidy. This represents a critical information asymmetry among the aware households, where the intent is formed on the basis of an incorrect expectation. They are likely to experience disappointment post-installation and increases the risk of negative peer-to-peer diffusion. Therefore, it becomes critical to correct this perception gap to ensure organic growth and protect the long-term trust infrastructure that the sector is building.

Hence, the transition from aware household to adopter is not a linear progression but a complex negotiation between economic incentives and trust on technology.

Figure 12. Reduction in electricity bills will convince 81% of the households to consider RTS installation



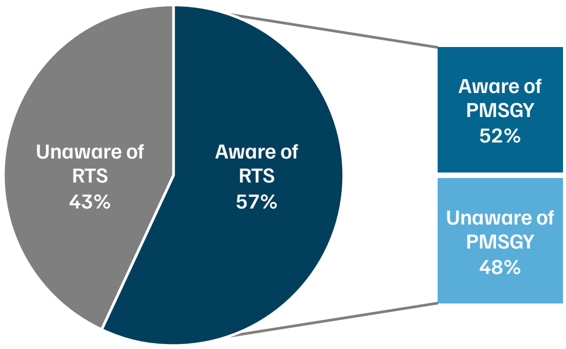
Source: Authors' analysis.

Note: Multiple responses allowed; percentages may not sum to 100%.

Deepening the knowledge from RTS to PMSGY process awareness

Perception is not only limited to whether households find RTS attractive but also on how to act on that interest. The data presents that there is a profound procedural information deficit. Nearly half of the aware households remain oblivious to the PMSGY scheme, which is the primary vehicle for subsidised RTS adoption as shown in Figure 13.

Figure 13. Unlocking potential among ~48% of the aware households requires delivering PMSGY specific information



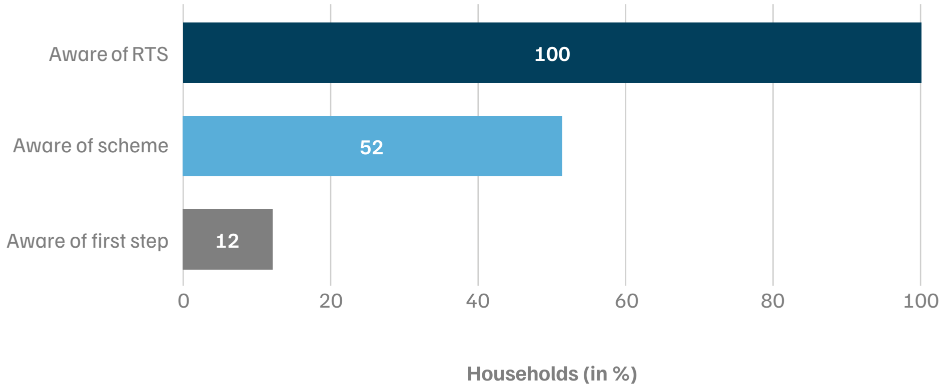
Source: Authors' analysis.

The drop off deepens sharply, as not all PMSGY aware households know the application process through the portal. Nearly 40 per cent of the PMSGY aware households are unaware of how to start the process, as shown in Figure 14. This highlights the disconnect between awareness of the scheme and procedural understanding with only 12 per cent of aware households being aware of the first step of the process, i.e. registration.

Households which are willing to adopt but cannot navigate the application process represent a conversion loss that is entirely recoverable through targeted, process-oriented communication through right channels and sources. This evidence suggests that moving households from awareness to action necessitates deeper engagement with consumer behaviour, supported by targeted nudges that simplify decision-making. This highlights the need for carefully designed, region-specific awareness strategies that are not only informative but also actionable and user-oriented.

Awareness, as the preceding analysis suggests, is not merely information dissemination. It is an ecosystem of trusted stakeholders, channels and reinforcing information-the effectiveness of this trust ecology determines whether households translate awareness into informed action. As positive perceptions are formed, the adoption journey moves into more tangible considerations of affordability and accessibility. At this stage, household level intent is tested against practical constraints, which play a decisive role in determining whether initial interest translates into actual installation. The following section analyses how financial and procedural barriers shape household decision-making and influence adoption outcomes.

Figure 14. Around 12% of the RTS aware households know the first step towards RTS adoption



Source: Authors' analysis.

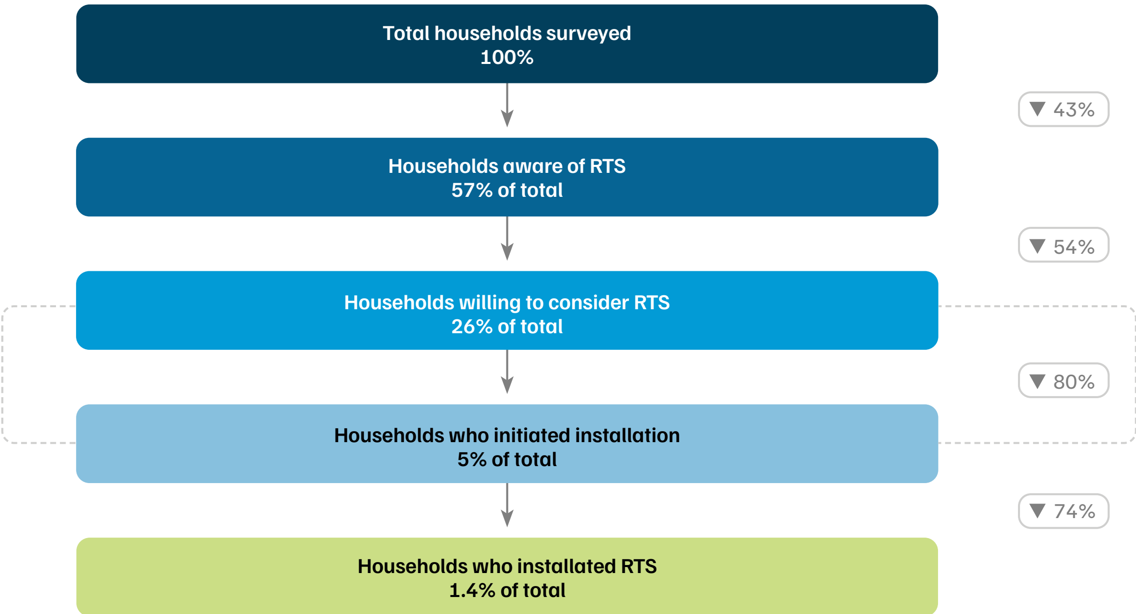
3. Closing the conversion gap, when 4 in 5 willing households don't act

Household-level awareness about RTS has improved over the years as discussed in Chapter 2, satisfying the foundational condition for RTS adoption at scale. However, a conversion gap persists from willingness to adoption (Figure 15). Chapter 3 seeks to identify these gaps and close the loop to enable action. Willing households, our survey finds, are held back by challenges that emerge at each successive stage of the adoption pipeline. While 26 per cent of the households showed willingness to install RTS, 5 per cent had taken any concrete steps towards adoption (Figure 15).

Figure 15 illustrates a clear, stepwise decline across the adoption funnel. Out of the total households, 1.4 per cent complete installation. While the previous chapter discussed how to close the gaps occurring in the first two steps, the funnel highlights that the more binding challenge lies beyond these stages: of every 10 households willing to consider RTS, eight never initiate installation. The conversion challenge does not end there. Evidence shows that even among households who initiate the adoption journey, a significant share doesn't complete the process.

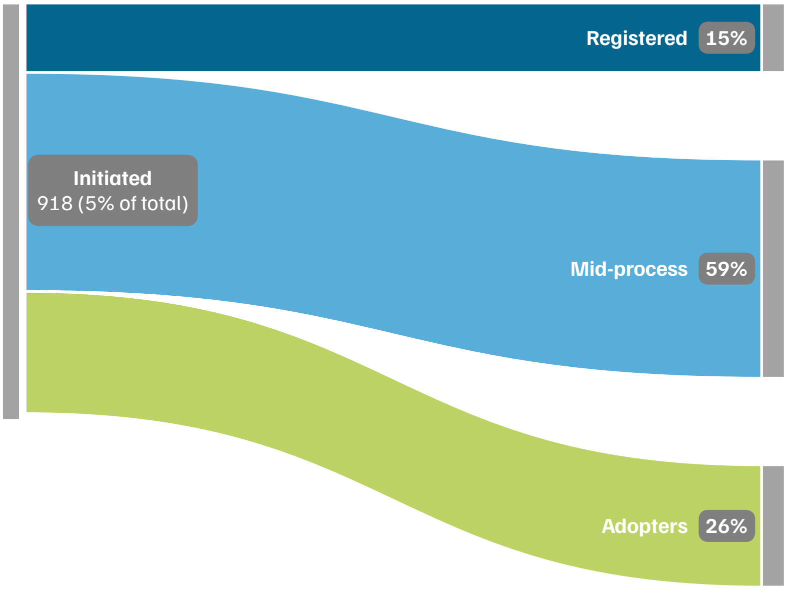
> 46% of RTS-aware households are willing to adopt, indicating that targeted procedural interventions can unlock adoption.

Figure 15. The willingness is high and the opportunity now lies in enabling action



Source: Authors' analysis.

Figure 16. 59% of initiators are ‘in the installation process’, revealing a conversion opportunity

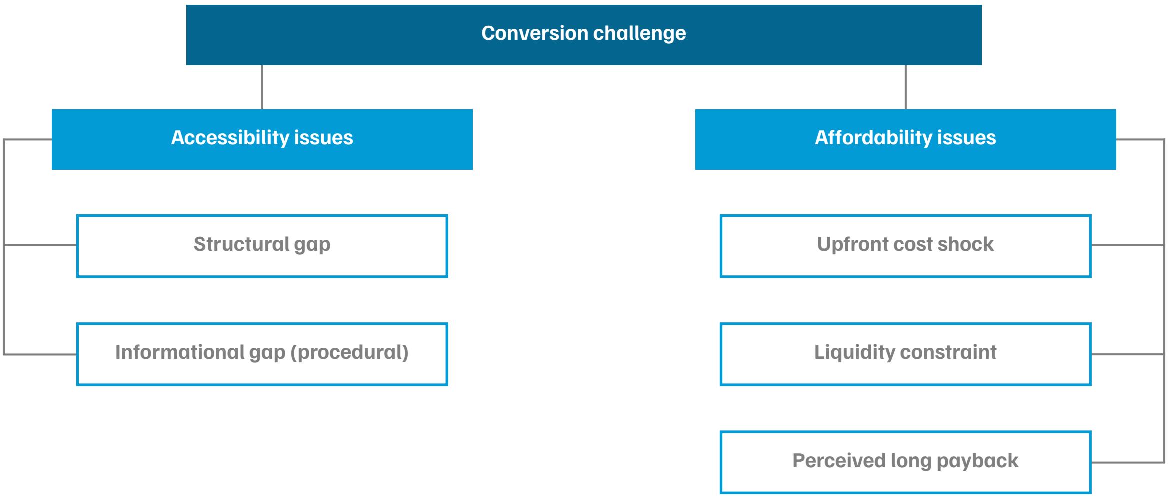


Source: Authors’ analysis.

As many as 59 per cent of households who initiate the RTS installation process get held up at intermediate stages (Figure 16) like application, selection of vendor, net metering, etc. The persistence of friction beyond initiation suggests that entering the adoption pipeline is not sufficient. Households must be able to navigate it with predictability and trust. These findings suggest that conversion losses are not confined to a single stage but distributed across the journey, with different barriers becoming salient at different points.

Drawing from the Chapter 2 discussion for the TAM framework, this study utilises the “perceived-ease-of-use” lens to diagnose conversion hurdles like “can I actually do this”, and “can I afford it?”. Consequently the survey findings categorise these challenges into two primary dimensions, i.e. accessibility and affordability (Figure 17). At a high level, households face either affordability-related barriers, like cost perception and liquidity constraints, or accessibility related barriers arising from structural limitations and procedural complexity (Figure 17).

Figure 17. Conversion challenges can be systematically grouped into two broad categories



Source: Authors analysis.

3.1. Accessibility constraints are dominant barriers as consumers begin their RTS journey

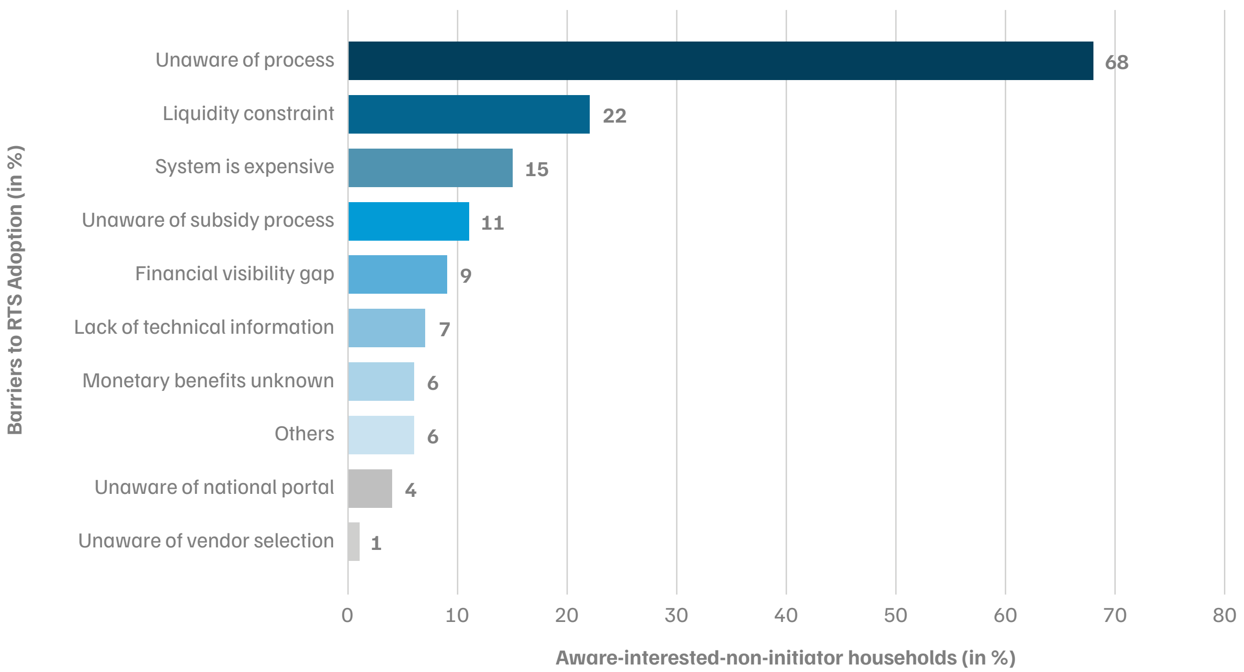
In the RTS adoption pathway, we define accessibility as the ease with which households can understand, initiate, and navigate the installation process, as well as their physical ability to adopt the system. Our survey findings reveal that information and procedural issues are the most dominant barriers in the initial stages of the RTS journey: 68 per cent of aware-interested non-initiator households reported that they do not know how to begin or what steps to follow (Figure 18). This 'first-step' friction effectively stalls willing households, presenting the largest loss of potential adopters before the process even begins. In TAM terms, the perceived ease of use has collapsed entirely for this group. This reflects a breakdown in actionable awareness, households understand the benefits of RTS but lack clarity on how to access them. Apart from this, households also face liquidity constraints and negative financial perceptions, which ultimately prevent them from moving forward in the adoption pipeline. These findings indicate that households face significant barriers in entering the system even when intent exists.

Evidence from literature supports this finding. Studies show that incomplete or asymmetric information alone can materially affect adoption decisions, with targeted information interventions improving uptake (Mahadevan et al. 2023). Similarly, complex application procedures, low transparency, and limited trust in vendors or institutions act as key frictions in urban RTS markets (Dutt 2020).

While informational barriers dominate at the entry stage, a smaller but non-trivial share of households face structural barriers related to physical feasibility constraints such as roof ownership and space issues concentrated particularly in urban settings (10 per cent reported inadequate roof space and 4 per cent reported a lack of roof ownership).

> Nearly 7 in 10 willing households do not take the first step because they do not know how to begin the process.

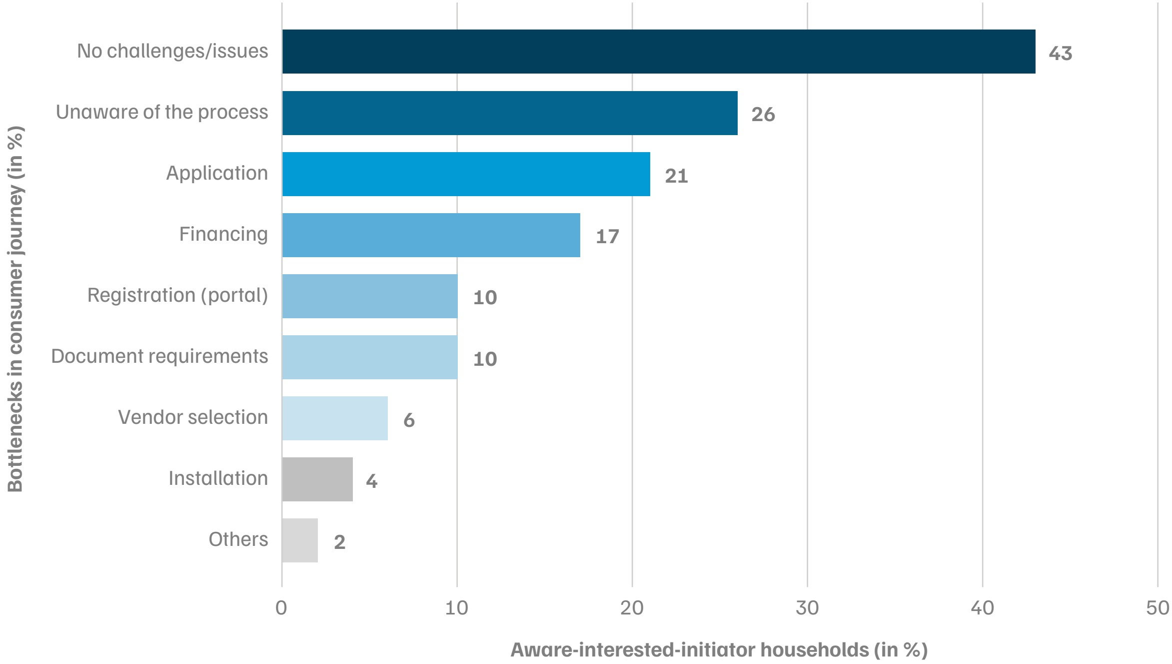
Figure 18. Process uncertainty, followed by affordability barrier leads to steep decline in action



Source: Authors' analysis.

Note: Multiple responses allowed; percentages may not sum to 100%.

Fig 19. Simplifying the consumer journey can improve conversion, as 57% of initiators report process-related challenges



Source: Authors' analysis.

Note: Multiple responses allowed; percentages may not sum to 100%.

Accessibility barriers persist beyond initiation

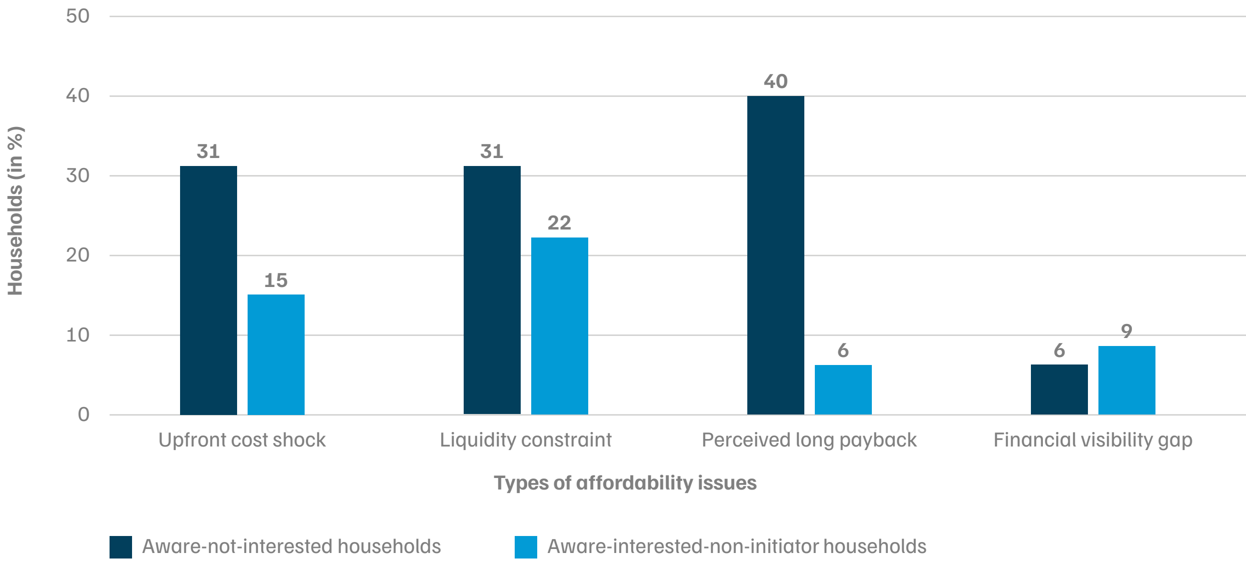
Accessibility barriers do not disappear once households enter the pipeline. For households who initiate the process, the nature of barriers shifts. Instead of uncertainty about steps for adoption, they encounter procedural delays and institutional frictions. Out of all the households surveyed, only 43 per cent reported a smooth process interaction, while the majority encountered frictions at different stages. Procedural accessibility challenges (Figure 19) emerge immediately after initiation and persist throughout the process.

The evidence suggests that informational and procedural accessibility barriers present a strong case for targeted, stage-specific interventions. Simplifying the journey into clear steps, improving visibility of the application process, and providing guided support can significantly reduce first-step friction and dropouts during progression. On the other hand, households facing structural barriers are unlikely to convert through improved information or financing alone and require alternative delivery models such as shared solar, community solar, or third-party ownership structures.

3.2. Focusing on affordability is a crucial thread in unlocking adoption

Among households, affordability emerges as the second most binding constraint, influencing both willingness and adoption after accessibility constraints are overcome. In the survey, 44 per cent of aware-interested-non-initiator households and 29 per cent of aware-not-interested households cited at least one affordability-related issue that stops them from adopting RTS. Liquidity constraint is a dominant factor in this context among the interested and non-interested alike, followed by upfront capital shock (Figure 20). This suggests that even interested households are unable to translate intent into action without clarity on affordability. Interestingly, concerns regarding the perceived long payback period of an RTS system drop significantly-from 40 per cent to just 6 per cent-as households shift from being not interested in adoption to interested.

Figure 20. Willingness to adopt makes perceived long payback much less of a barrier



Source: Authors' analysis.

Note: Multiple responses allowed; percentages may not sum to 100%.

Among aware-not-interested households, affordability also emerges as one of the top three reasons to disengage from the adoption journey. Among the aware-interested households, 31 per cent shared that they face a liquidity crunch and think RTS system is expensive. Similarly for non-initiators, process ambiguity is followed by affordability constraints such as a liquidity crunch and the shock of upfront costs (Figure 18).

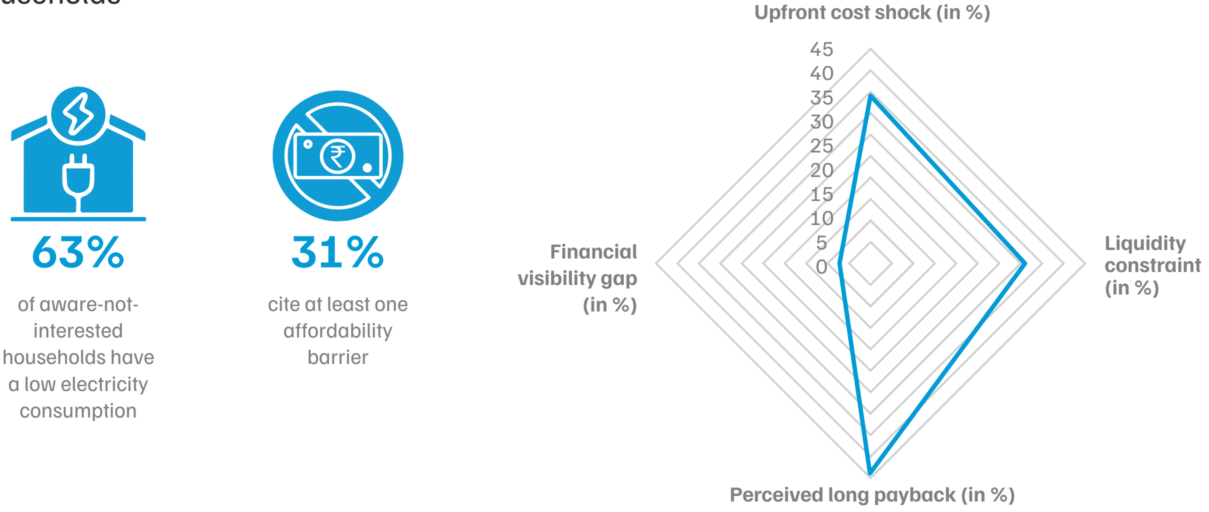
Affordability constraints are not uniform, they are concentrated among specific segments

Affordability barriers in RTS adoption are not evenly distributed across specific segments. They can be shaped by underlying heterogeneity in consumption levels. The type of affordability issue can vary by sectoral diversity as well. Survey data reveals that 63 per cent of aware-not-interested households lie in the low electricity-consumption category[4] (Figure 21). Within this group of households 31 per cent report at least one affordability-related barrier, indicating that affordability concerns are present but not pervasive. This suggests that disengagement among these households is not an information failure; it reflects an economic mismatch between the cost of installation and expected benefits. For low-consumption households, the economic proposition of RTS appears less compelling due to the lower potential for absolute savings and relatively longer perceived payback periods. As a result, even when financially viable in technical terms, RTS may not align with their immediate financial priorities.

Further, the nature of affordability constraints is multidimensional. As seen in Figure 21, concerns such as upfront cost, liquidity constraint and payback periods dominate for households in the low-electricity-consumption bracket. Importantly, these barriers interact with limited awareness of financing, which can amplify perceived cost burdens, especially for households already uncertain about benefits.

[4] Any household having less than 2 kW sanctioned load.

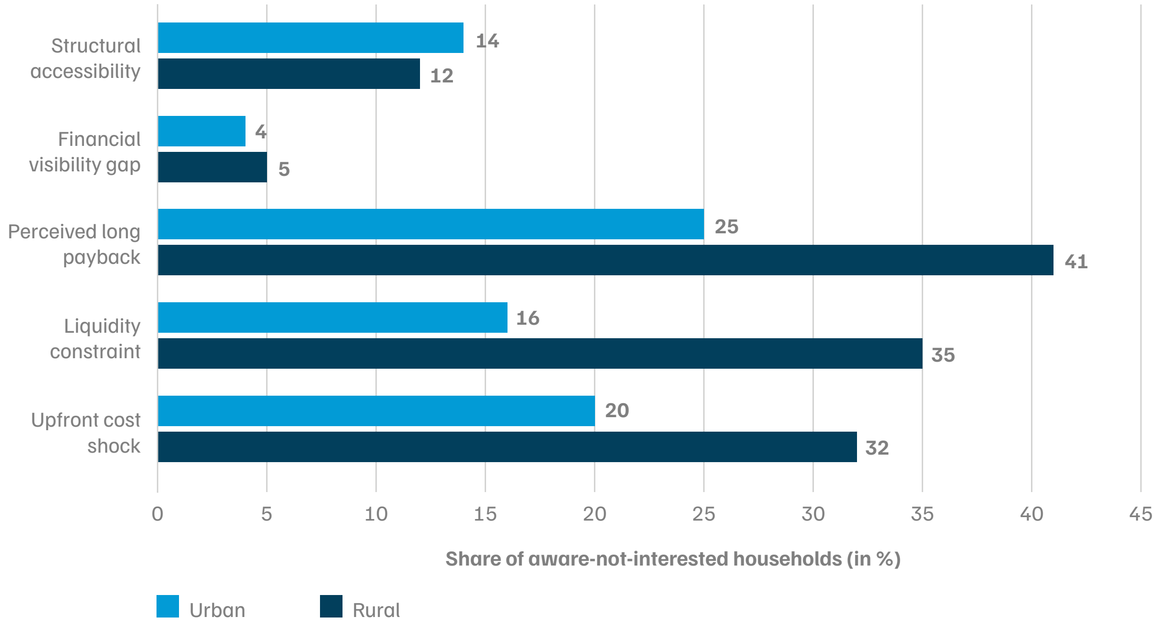
Figure 21. Affordability barriers are more concentrated among low electricity-consumption households



Source: Authors' analysis.

The geographic dimension of affordability also requires differentiated responses. While the broad categories of financial barriers remain similar across rural and urban areas, the share of households reporting these barriers differs. Rural households face stronger liquidity-related constraints, with 32 to 35 per cent citing upfront cost concerns and saying "financial position does not allow" adoption (Figure 22). Perceived long payback remains a prominent barrier across geography, but is reported more frequently among rural households than urban. This reflects not only gaps in savings communication but also the impact of low electricity bills, which are often driven by subsidised tariffs. Urban households, while facing similar financial concerns, report comparatively higher structural barriers alongside them, particularly inadequate roof space.

Figure 22. Liquidity-related constraints more prominent barrier in RTS adoption among rural households



Source: Authors' analysis.

Note: Multiple responses allowed; percentages may not sum to 100%.

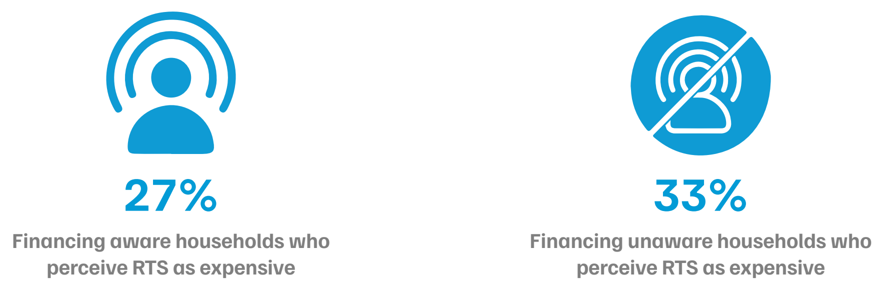
Financing awareness shapes how affordability is perceived

Affordability is not only a function of income or system cost, it is also shaped by how households understand and evaluate the financing options available (Sharma and Gupta 2025). Survey findings suggest that perceptions of cost are closely linked to gaps in financing awareness, which influence how households interpret the affordability of RTS.

Among aware-not-interested households who perceive RTS as expensive, 73 per cent are not aware of solar financing options. This indicated that cost concerns are disproportionately concentrated among financially unaware households. Financing awareness also affects the likelihood of perceiving RTS as expensive. Among aware-not-interested households, those unaware of financing options are more likely to perceive RTS as expensive (33 per cent) than those aware of financing (27 per cent). This 6-percentage-point difference suggests that lack of financing awareness amplifies cost perception (Figure 23). However, cost concerns persist even among financing-aware households, pointing to real financial constraints beyond information gaps alone.

Financing awareness also increased progressively along the adoption pathway shown in Table 1. While this does not imply causality, it suggests that understanding financing options helps households better interpret affordability and navigate financial constraints as they move forward.

Figure 23. Likelihood of perceiving RTS expensive, increases with lack of financing awareness



Source: Authors' analysis.

Table 1. Financing awareness is closely associated with progression along the adoption journey

31%	59%	82%
not-interested households are aware of financing	non-initiator households are aware of financing	in-process households are aware of financing

Source: Authors' analysis.

Financing can unlock latent demand

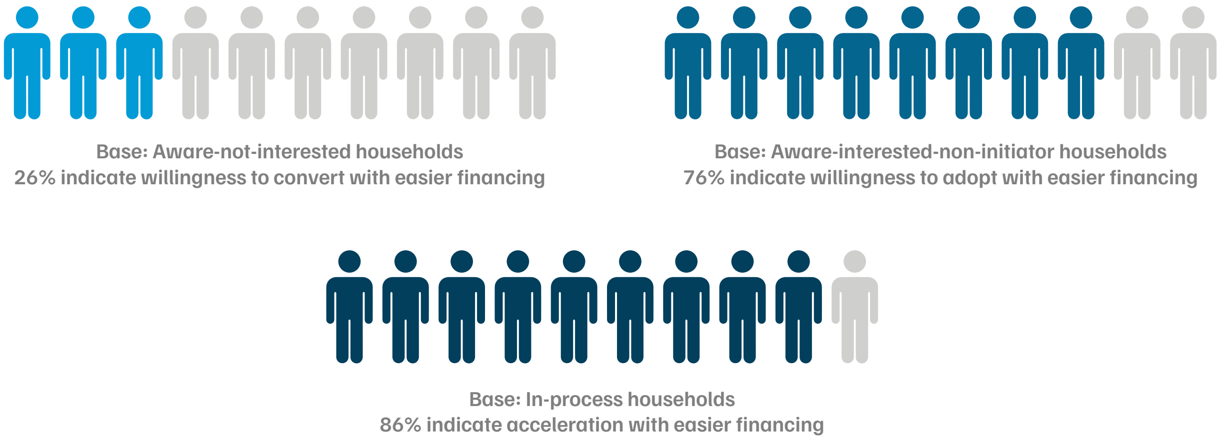
Many households are not fundamentally opposed to RTS, but are constrained by the absence of financial pathways that feel accessible and affordable. Among aware-not-interested households, 26 per cent indicate that they will reconsider adoption if offered solar loans with easier terms like concessional interest rate, longer tenure, and no collateral. These households are potentially convertible, pointing to a large pool of latent demand that remains untapped. This translates to adding 22.7 GW[5] of RTS capacity.

Conversion potential also increases along the adoption pathway. The impact of easy financing becomes more pronounced as households move closer to adoption. As shown in Figure 24, this progression highlights that financing plays a different role at different stages. At early stages, it helps activate latent demand. At later stages, it helps sustain momentum and prevent dropouts.

Affordability in RTS adoption is not purely an economic constraint. It is also shaped by how costs are perceived. Financing awareness plays a critical role in shaping these perceptions by reducing the salience of upfront costs. However, awareness alone is not sufficient. It must be accompanied by accessible, credible, and easy-to-use financing options to meaningfully shift household decisions.

Closing the gap between intent and actual installation requires solving for systemic inefficiencies. A large share of aware-interested households drop out due to process ambiguity, affordability concerns, and accessibility constraints that are identifiable, addressable, and in many cases recoverable through targeted interventions. However, to fully tap into the potential requires going beyond fixing individual bottlenecks to solving for structural constraints, offering affordable financing options, among others. The most effective response is therefore layered: process simplification and targeted IEC for information barriers, innovative business models for structural barriers, and financing design calibrated to segment-specific constraints for affordability barriers.

Figure 24. Conversion potential via financing increases along the adoption journey



Source: Authors' analysis.

[5] Note: We are assuming that each household overcoming affordability-related barriers will install a RTS of at least 1 kW capacity.

4. Leveraging adopter experience to accelerate RTS uptake

The preceding chapters traced the path from unawareness to installation and reasons for dropouts at each stage. To derive actionable insights and interventions and close the loop, examining the lived experiences of adopters is also critical.

Out of the 17,094 surveyed households, 242 have installed RTS, representing 1.4 per cent of the sample. Although modest in size, this subset is analytically meaningful, closely mirroring the national RTS adoption rate of approximately 1.21 per cent among metered residential consumers. However, the distribution of adopters across the 21 states and 1 UT surveyed, is uneven, as illustrated in Figure 7. While this skew reflects underlying differences in state-level adoption patterns, it also leads to the overrepresentation of a small number of states within the sample. Consequently, given the limited number of adopters, the inferences derived from this group should be interpreted as indicative rather than statistically representative.

This chapter examines the adopter experience with two complementary angles. First, a detailed examination of the adoption journey-who adopted, what converted them, and how satisfied they are. This will help in the better framing of existing policies and awareness campaigns, and strengthening processes. Second, exploring how the adopter experience can be systematically leveraged to reduce friction for the households who are yet to initiate RTS adoption journey.

> Satisfied adopters are an untapped asset. Examining their journey is important for both policy-intelligence and outreach intervention.

4.1. Adopters-an untapped yet integral link for scaling RTS

The feedback loop theory (FLT) provides a clear understanding of peer-learning through a feedback mechanism-a structured exchange of information about behaviours, actions, or performance, delivered in a way that promotes reflection, learning, and actionable improvement (Rachmad 2022). Further, the DOI framework discussed in Chapter 2 also emphasises the importance of peer-learning in reducing a household's perceived risk of adoption, and for scaling RTS beyond the early adopters. Adopters have the ability to demystify the process, validate economic benefits, and build peer trust to reduce friction at various stages of RTS journey-making them an integral part of scaling RTS.

The promoter hypothesis is more than just an idea; it is an active and largely untapped asset already present in the communities reached by the scheme. As many as 87 per cent of these RTS adopters indicated that they will recommend their solar vendor to others. This presents a key finding that a satisfied and willing adopter base already exists within the communities the scheme is trying to reach. Examining the adopter journey is, therefore, both a policy-intelligence and a promoter-programme design exercise.

4.2. Who are the primary adopters and what does their profile reveal?

Dissecting the characteristics of the adopter base helps to inform which policy design choices have worked, which segments still remain underserved, and whose social network they can reach. This helps to identify the segments of non-adopters (households that haven't installed RTS) that are most likely to be influenced.

The socio-economic gradient: A structural constraint on organic diffusion

The survey findings reveal a monotonic relationship between adoption rate and income of the households that have installed RTS. Adoption rate is highest amongst the high income households-5.04 per cent, ten times higher than among low-income households, and three times higher than middle-income households (Table 2). While the share of low-income households among all-India RTS installations has grown from 12 per cent in 2024 to 17.3 per cent in 2026, the adoption rate gap remains large, primarily dominated by middle-income households.

The findings have two distinct implications. For policy design, the evidence suggests that the existing scheme boosted overall adoption. However, the adoption among intended beneficiaries, i.e., households consuming up to 300 units, has been limited. Further, 41 per cent of low-income households reside in kutcha or semi-pucca buildings-facing additional structural issues that hamper adoption. Unlocking the potential for this segment requires targeted recalibration of the current subsidy and financing design, metering and installation mechanisms.

Similarly, for promoter programme design, the findings reveal a structural problem for unassisted peer diffusion, where the current adopter base is disproportionately drawn from high income segments. Organic word-of-mouth from the current adopter base will reproduce the existing income distribution of adoption, not close the gap-which will require rethinking of promoter programme routing peer influence across socio-economic boundaries.

Table 2. RTS adoption rate is highest among high-income households

ISEC class	Households in survey (%)	Adopters (%)	Adoption rate (%)	Average installed capacity (kW)	Share of Installations in 2024 (%)	Share of Installations in 2026 (%)
High income (ISEC 1-3)	6.6	26.2	5.18	3.08	16.6	27.0
Middle income (ISEC 4-8)	40.3	54.3	1.77	3.06	49.6	52.4
Low income (ISEC 9-12)	53.1	19.5	0.49	2.53	12.0	17.3

Source: Authors' analysis.

Note: 1. n = 15,912 (1,182 unclassified, unweighted). Nagaland and Mizoram are excluded. All figures are post-stratification weighted.

2. ISEC socio-economic mapping classifies households into 12 categories (ISEC 1-12). The following standard household classification is adopted in this study: high income (ISEC 1-3), middle income (ISEC 4-8), and low income (ISEC 9-12),

Geographic distribution: An uneven base

The distribution of adopters is higher in urban areas (52.4 per cent) compared to rural areas (47.6 per cent). Dissecting the adopter base at local-governance level shows that nagar panchayat-typically the transitional areas (rural to urban) and peri-urban areas-record an adoption rate of 3.29 per cent, compared to 1.01 per cent in rural areas and 2.21 per cent under municipal corporation limits.

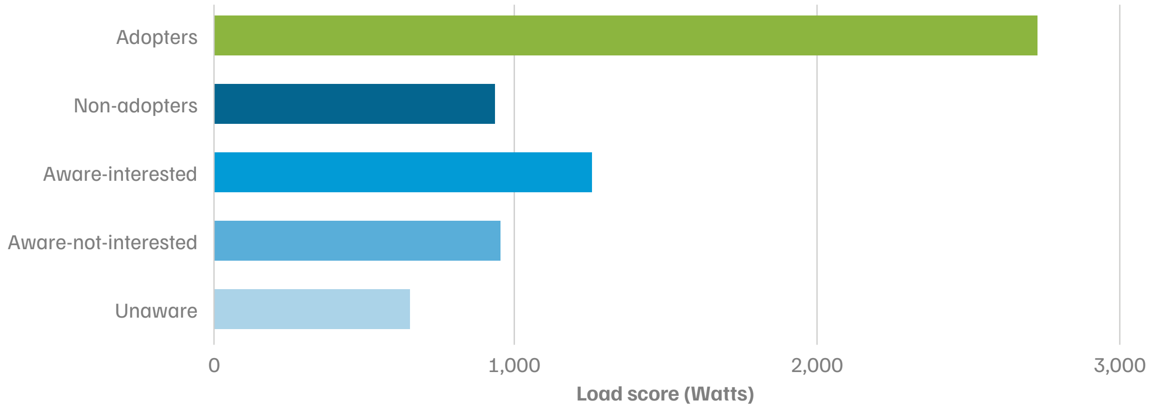
This pattern suggests that peri-urban areas leverage the combination of the high RTS market demand of an urban setting (Sharma and Gupta 2024), with the community familiarity of rural ones-a combination that appears particularly conducive to peer learning and adoption diffusion. This is also similar to the 'Desakota' concept where transitional zones are described by intense intertwining of urban and rural activities-identified as critical to balanced and inclusive growth in India (Mcgee 1991; Alphonso 2025).

Electricity demand and appliance ownership: A reliable targeting proxy

On average, RTS adopters have an average monthly electricity bill of INR 1,728 (51 per cent more than non-adopters)-clearly highlighting high electricity bills as a key driver of adoption. This is further reinforced by a 93.2 per cent satisfaction rate following post-adoption reduction in electricity bills. Further, adopters also diverge sharply from non-adopters in appliance ownership and load score. Load scores of households are derived based on the type and quantity of electricity-intensive appliances they own. Adopters tend to exhibit a higher electricity demand, as reflected in significantly higher load scores-2,734 watts, 66 per cent more than non-adopters (Figure 25). In addition, as highlighted in Chapter 2, high electricity bill is also one of the motivating factors for aware-interested households.

An important nuance emerges when adoption is disaggregated by bill size. Among adopters, 44 per cent have monthly electricity bills below INR 1,000 and realise the lowest post-installation savings-a 53 per cent bill reduction compared to 73 per cent for those with higher monthly bills (above INR 1,000) (Figure 26). This suggests that although the financial case for RTS adoption is more pronounced among households with higher electricity bills, adoption behaviour, particularly among low-consumption households, may not be driven solely by immediate bill savings.

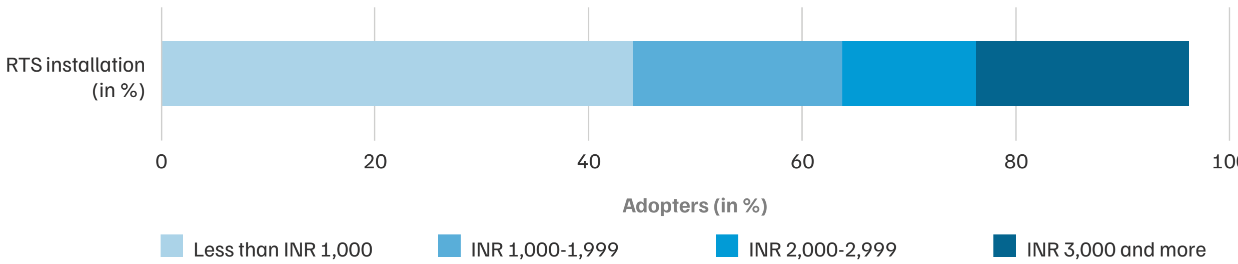
Figure 25. Positive correlation between high load scores and adopters



Source: Authors' analysis.

Note: The household load score is estimated by multiplying the number and type of appliances owned by their average wattage. Assumed wattages are: air conditioner (1,500 W), electric geyser (2,000 W), electric heater (2,000 W), two-wheeler EV (1,000 W), three-wheeler EV (1,500 W), four-wheeler EV (3,300 W), refrigerator (150 W), washing machine (500 W), microwave oven (1,200 W), electric iron (1,000 W), and water pump (750 W).

Figure 26. Among adopters, 44% have monthly electricity bills below INR 1,000



Source: Authors' analysis.

Note: n = 231; excludes 11 adopters who did not respond to the question on electricity bills.

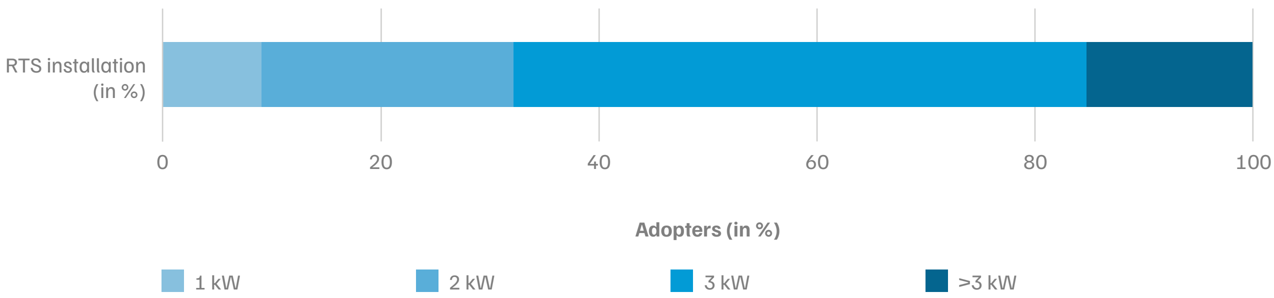
Therefore, to unlock the potential among low-consumption households, it is important to communicate long-term savings trajectories of RTS-not just upfront bill reduction. Peer-to-peer diffusion can be leveraged for households with high electricity bills, and those owning heavy appliances like ACs, geysers, and EVs. They are more likely to install RTS, and have a compelling financial story to share with relatable households at the same load level.

System size preferences: The 3 kW concentration

The majority of adopters-52 per cent-have opted for systems with 3 kW capacity (Figure 27). The average capacity of RTS systems among adopters is evenly spread across households that vary by size of electricity bills, load scores, and socio-economic classification (Table 2). The findings presents that a household's decision on the preferred capacity of an RTS system is shaped by the subsidy structure of the PMSGY (capped at 3 kW).

From a policy design perspective, the subsidy structure appears to function as intended for households with relatively low system capacity requirements, with an average sanctioned load of 1.9 kW among adopters. However, this is also shaping the decision for households requiring higher system capacity based on their current consumption levels, with 76 per cent of adopters having a load score above 3 kW undersizing their system capacity to match the subsidy cap. From a programme design standpoint, this induced homogeneity reduces variability in adopter experiences, resulting in more consistent peer feedback and testimony across participants.

Figure 27. Consumers prefer an average system capacity of 3 kW, aligned with PMSGY's subsidy structure



Source: Authors' analysis.

4.3 What worked in converting intent to adoption-lessons for programme and campaign design

Leveraging an adopter to be a promoter of RTS requires examining the factors that helped them close the loop. The findings are relevant to inform future programme design and for taking the 'stories' that adopters carry as lived experience.

Conversion channels vs awareness channels

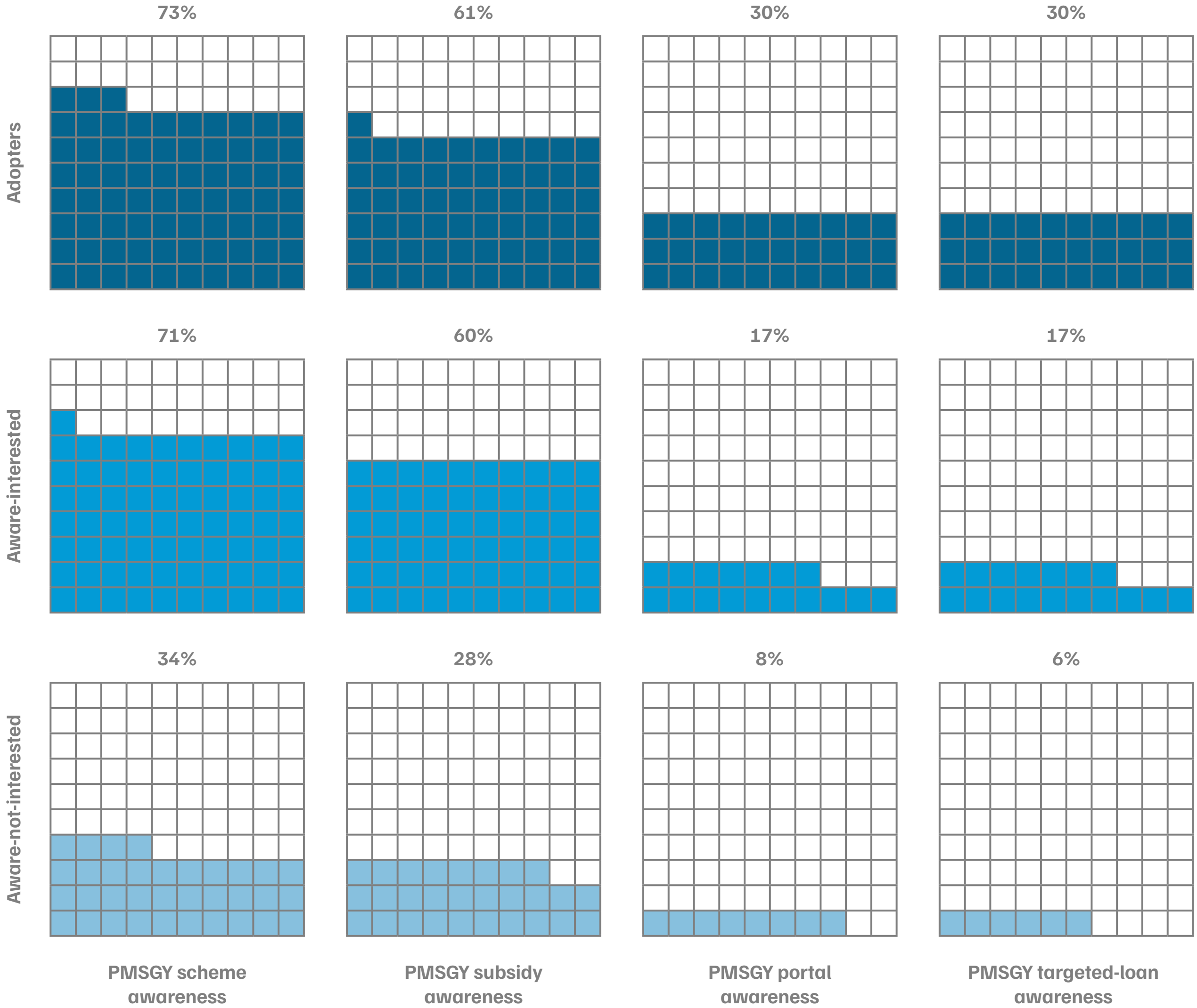
As mentioned in Section 2.2, what distinguishes an adopter from the remaining aware households with respect to information channels is that the former have twice the exposure to targeted interventions. Beyond general information, adopters also exhibit higher exposure to two information channels that function as conversion platforms: vendor advertisements (+12 percentage points more among adopters than aware-interested households that haven't installed RTS), and the PMSGY portal (+7.2 percentage points). This suggests that campaign design should distinguish more deliberately between channels that build awareness and channels that enable action, and invest proportionally in the latter.

Further, adopters demonstrate a more comprehensive knowledge of PMSGY-the subsidy structure, national portal, targeted loan provisions, which distinguishes them from non-adopters (Figure 28). This is consistent with the DOI and TAM framework discussed in Section 2.1 that successful adopters are the ones who moved beyond passive information to seeking decision assurance, and authoritative validation to reduce perceived risk. This highlights that campaign design needs to deepen the procedural information-beyond the scheme awareness and enabling households to move from interest to action.

Financing: A promoter knowledge asset

The findings show that 23 per cent of adopters availed loans for their RTS installation. This reiterates the findings from the previous chapter that affordability is a major barrier inhibiting households from initiating

Figure 28. Procedural awareness regarding PMSGY distinguishes adopters from non-adopters



Source: Authors' analysis.

Note: How to interpret the values: One box represents one per cent.

Image: CEEW/Emotive Lens

An RTS adopter stands proudly in front of their installed system, reflecting confidence in the system's performance.

the adoption journey (Figure 20). Further, 55 per cent of unaware households mentioned that they are willing to initiate the installation process through the collateral-free loans provided through the PMSGY. Those who successfully navigated the collateral-free loan process under PMSGY possess a specific, transferable knowledge-institutions offering loans, their experience and method of selection. As established in Chapter 3, 69 per cent of aware-not-interested households lack awareness of financing options and an adopter who can walk a peer through the loan process step by step addresses a barrier that no awareness campaign can resolve with equivalent credibility.

4.4. The adopter experience: What are the key takeaways?

The credibility of the promoter hypothesis rests entirely on the quality of the adopters' experience. The findings from the survey strongly support this.

Bill reduction-the headline story

The survey data shows a significant pre-to-post average reduction in electricity bills among adopters, as well as average potential savings on electricity bills up to INR 306,097 for an adopter during the life span of an RTS system (25 years).

Table 3. Adopters are experiencing high electricity bill savings post-adoption

INR 1,728 Average electricity bill of adopters before installation	**INR 508** Average electricity bill of adopters after installation	**~71%** Percentage reduction in electricity bills

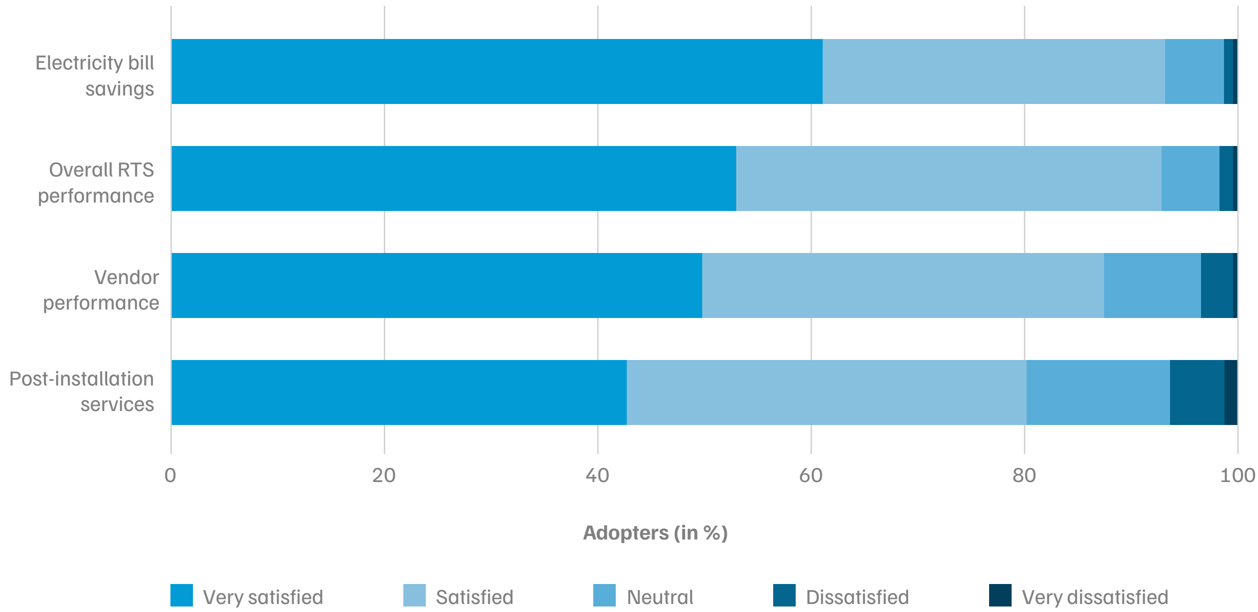
Source: Authors' analysis.

Low maintenance awareness among adopters is a hidden risk to the long-term success of RTS.

The 71 per cent bill reduction figure (Table 3) is the most persuasive element of an adopter's peer story, with very high satisfaction levels amongst adopters-93.2 per cent mentioned they are very satisfied or satisfied with the achieved electricity bill reduction (Figure 29). This is the metric that 81 per cent of aware consumers cited as the perceived benefits of RTS. This alignment between expectation and outcome is the foundation of the promoter case.

Adopters report similarly high levels of satisfaction with other post-installation experiences: 92.9 per cent are satisfied with the overall performance of the RTS system and 87.5 per cent with overall performance of the solar vendor (Figure 29). Regarding post installation services, 6.3 per cent adopters have mentioned dissatisfaction, but only 1 per cent consider that to be a challenge in the adoption journey.

Figure 29. Bill savings just one of several satisfaction factors for adopters



Source: Authors' analysis.

Operation and maintenance: A policy and promoter quality risk

Operation and maintenance (O&M) data introduces the most important qualification to the positive experience of an adopter. This also has implications on the policy design and durability of the promoter asset. The long-term sustainability and performance of a RTS system depend on both the solar vendors-who are responsible for maintenance, warranty briefings, and query resolution-and the adopter-who must monitor performance and clean panels regularly. Adopters report broadly strong vendor performance, citing consistent quarterly maintenance (81 per cent), clear O&M briefings (83 per cent), which likely contributed to 41 per cent of adopters who report not having faced any system issues. However, adopter engagement lags behind-only 63 per cent perform monthly cleaning, and just over half (55 per cent) track system performance regularly. Critical knowledge gaps also persist, with 50 per cent adopters unaware of maintenance contracts and 21 per cent unaware of warranty provisions for their system components (Table 4).

For policy design, the findings highlight the need for embedding O&M awareness during installation, as well as throughout the post-installation journey, to

Table 4. O&M practices reflect information gaps on the adopter side

Solar vendor		Adopter	
81%	Solar vendors who are performing regular maintenance (Quarterly)	50%	Adopters who are aware of maintenance contracts in RTS systems
83%	Adopters who were briefed on the O&M requirements of the system	63%	Adopters who clean the system, at least on a monthly basis
93%	Adopters who receive timely responses from vendors-or who haven't faced any issues yet	79%	Adopters who are aware of the warranty of different RTS system components
87%	Adopters who are willing to recommend their solar vendor based on their experiences	55%	Adopters who track the system performance on a regular basis

Source: Authors' analysis.

ensure the long-term sustainability of the system and a positive adopter experience. The limited awareness about O&M creates potential risk to the adopter's positive experience. The risk is indirect but structural. When systems degrade due to low or no maintenance-these adopters are more likely to become detractors than sustained promoters.

> Embedding O&M awareness is necessary to ensure the long-term sustainability and a positive adopter experience.

4.5. The promoter mechanism: How peer influence operates

Peer networks were identified as the dominant information channel for all consumer categories (Figure 9). However, the socio-economic gradient analysis establishes that unassisted organic peer diffusion has structural limits.

Section 2.1 highlighted that for information to be effective and translate into outcomes, it must combine trusted stakeholders with preferred communication channels. The data points to distinct channel strategies across different governance contexts. In rural areas, the gram sabha emerges as a natural venue for information dissemination and adopter testimonial sessions. The Panchayat's institutional endorsement can reinforce the peer messaging with legitimacy, combining the trusted sources with preferred mode of communication. Similarly, in urban areas, the equivalent mechanisms are area sabhas and community meetings organised by trusted entities such as RWAs and NGOs. In both contexts, the design principle is the same: peer testimony is most effective when delivered in an institutionally endorsed setting, through a channel the target audience already trusts. This mechanism combines the conditions for scaling mentioned in the DOI framework, and providing a platform for structured exchange of information-as mentioned in FLT.

The survey findings point out that the promoter potential of current adopters is real, significant, and largely untapped. However, realising this potential requires strategic interventions beyond organic diffusion alone.

5. Strategic recommendations for scaling residential RTS adoption in India

The pan India survey deep dived into consumer behaviour at various stages of RTS journey to suggest action-oriented recommendations for closing the gap. The findings establish that a significant share of households are aware and willing, but action is stalled at each stage where intent fails to convert. To maintain the momentum under the PMSGY as discussed in Chapter 1, the recommendations are structured around five stages of consumer journey and specify the responsible actor.

5.1. Close the 43% awareness gap by establishing the 'need' of RTS

- **Deploy a phased multi-channel communication strategy.** Social media and peer networks are the dominant information channels uniformly across household categories. This signals broad reach of this form of communication but risk is shallow conversion. A phased strategy should use mass media and social media to generate initial visibility at scale, followed by hyper-local digital engagement through WhatsApp and community platforms (such as Instagram, Facebook, Youtube, etc.) to deepen interest among digitally active households. High-visibility channels (TV, newspaper, social media) should be used to generate initial visibility, followed by hyper local, contextualised digital engagement through WhatsApp, Instagram, and Facebook. The critical design principle validated by the adopter profile data emphasise that channels enabling action must be invested in separately from channels building awareness with both types serving distinct purposes.

  Responsible stakeholders: MNRE, NPIA (national programme implementing agency), and SNAs.

- **Leverage institutional trust to convert visibility into intent.** Mass media and peer channels establish the initial visibility. The effectiveness of direct outreach increases when the household already has a point of reference for what is being discussed. After establishing initial visibility through broad-reach channels, direct-to-home outreach programmes anchored by Government officials, discoms, RWAs and NGOs should therefore serve as the primary vehicle for converting that visibility into recognised need.

  Responsible stakeholders: Government officials (district and block level), discoms, RWAs, NGOs, CSOs, and Panchayati Raj institutions (PRIs).

5.2. Shape 'perception' to generate an informed intent

- **Lead with financial value and correct misconceptions before intent firms up.** Among aware households, 81 per cent cite electricity bill reduction as their primary motivation, confirming that a wallet-first messaging is the most effective conversion lever. Environmental messaging, cited by 19 per cent, should be positioned as a secondary hook for already motivated households. **All awareness materials should lead with specific, verifiable savings figures grounded in local electricity tariff data.**

  A significant perception risk exists among the 31 per cent of aware households. They cited power backup as a primary expected benefit. Households forming intent on an incorrect expectation are likely to become dissatisfied post-installation and generate negative peer diffusion. **Correcting this, among other misconceptions such as solar doesn't function on cloudy days, must be part of all awareness materials before intent hardens. Responsible stakeholders:** MNRE, SNAs, discoms, Solar vendors, NGOs

- **Close the scheme knowledge deficit through process-oriented communication.** Perception is not only about whether households find RTS attractive, it is also about whether they know how to act on that interest. Despite increased general awareness, 48 per cent of aware households remain unaware of PMSGY, and only 12 per cent of aware households know the first step of the installation process (i.e. registration on the national portal). The drop-off between PMSGY awareness and process knowledge is approximately 40 percentage points. This gap is entirely recoverable through targeted, call to action focused communication by translating scheme awareness into step-by-step procedural knowledge and specifying the next action clearly for each household category.

  Responsible stakeholders: MNRE, SNAs, discoms, common service centres (CSCs), NGOs, and PRIs

5.3. Improving informational and structural 'accessibility'

- **Institutionalise end-to-end household handholding at critical friction points.** The 80 per cent drop off happens between aware and willing households but not initiating the process. 68 per cent cite not knowing how to begin or what steps to follow as the primary reason for non-initiation. This 'first-step friction' is the single largest point of conversion loss in the entire adoption funnel. Among those who do initiate, only 43 per cent report a smooth process. The remaining majority encounter procedural barriers around documentation, vendor selection, financing, and approvals, with 59 per cent of initiators stuck in intermediate stages.

  Targeted nudges should be deployed at each identified friction point. For instance, at the vendor selection stage, corroborated by field experiences, an automated prompt linking to the PMSGY empanelled vendor list can reduce uncertainty along with a step-by-step guide for vendor selection. Similarly, for in process households, a chatbot can clarify steps and way forward. The goal is to make the next step always visible and always one click away. Dedicated chatbot-based tools can serve as scalable but low-cost solutions to address information accessibility constraints by streamlining the application process and guiding households through the installation journey, providing timely nudges, and enabling seamless grievance logging for a smooth transition from registration to installation.

  Responsible stakeholders: MNRE, SERCs, and discoms.

- **Address structural barriers through alternative delivery models.** A smaller but binding subset of households face structural constraints, 10 per cent of urban households reported inadequate roof space and 4 per cent reported roof ownership issues. These households cannot be converted through better information or financing design alone. Unlocking the potential in this segment requires innovation in business models such as community solar, shared solar, or third-party ownership, among others along with enabling provisions in policy and regulations to support these models.

  Responsible stakeholders: MNRE, SERCs, SNAs, and discoms.

5.4. Solving 'affordability' problem by imparting financial literacy

- **Integrate financial literacy as a front-end intervention.** ~26 per cent of aware-not-interested households indicate that they would reconsider adoption if offered solar loans with easier terms like concessional interest rate, longer tenure, and collateral-free. Improved financing awareness alone could unlock 16 per cent of those households. At least one affordability-related barrier is cited by 44 per cent of interested non-initiator households and 29 per cent of aware-not-interested households. However, among aware-not-interested households who cite high system cost as a barrier, 73 per cent are unaware of solar financing options. Within this financially unaware group, nearly 30 per cent indicate willingness to adopt if easier financing were available. The perception of RTS as expensive is substantially an information problem, not solely an income problem. Financing literacy, which covers EMI structures, collateral-free loan availability under PMSGY, payback periods, and net savings must therefore be integrated into the initial outreach phase. Moreover, existing bank-vendor collaboration mechanisms are functioning effectively in enabling consumer financing. Vendors along with local bank staff hold a significant potential to raise the financial awareness as they are one of the first touch points.

Responsible stakeholders: MNRE, SNAs, Local bank staff, SLBC, and vendors.

- **Design affordability interventions to match segment-specific constraints.** Affordability barriers are not uniform and require differentiated response.

a. **Rural households** face stronger liquidity constraints, with 32-35 per cent citing ‘financial position does not allow’ and upfront cost concerns. Addressing this requires financing products specifically structured for rural income patterns - zero or very low upfront, seasonal EMI structures aligned to agricultural income cycles and longer loan tenures of 7-10 years to make the monthly payment comparable to existing electricity bills. These need to be delivered through Self-Help Groups, Farmer Producer Organisations, and NABARD-backed rural credit lines to leverage existing rural financial relationships and reduce the institutional friction that currently slows loan disbursement in semi-urban and rural markets.

b. **Urban households** face comparably higher structural barriers alongside financial ones. For households deterred by cost, financing literacy and EMI-based products address the informational barrier. To address structural barriers, there is a need to explore innovative models such as community solar, virtual net metering, and third-party ownership models that solve roof ownership requirements. RWA-led group applications for PMSGY benefits can further simplify the administrative pathway for individual urban households who cannot independently navigate the scheme.

> Affordability barriers vary significantly across consumer segments, requiring tailored financing and delivery approaches.

c. **Low-consumption households**, who comprise 63 per cent of aware-not-interested households, face a more fundamental economic mismatch, where perceived payback periods and absolute savings potential may genuinely not justify installation at current tariff levels.

For this segment, messaging around future tariff trajectories and long-term orientation may be more relevant than near-term bill savings alone.

Alternatively, target these households through alternative models designed with the principle for opt-out rather than opt-in and households receive the benefit without navigating any process, eliminating first-step friction, affordability barriers, and awareness gaps simultaneously. Five models merit piloting are utility-owned community solar with default bill credit allocation, Gram Panchayat-led collective solar with proportional VNM distribution, discom-as-developer models with socialised cost recovery, PM Awas Yojana integration with pre-installed solar, and welfare scheme-linked automatic enrolment using existing beneficiary databases.

Responsible stakeholders: MNRE, RBI, SLBC, NBFCs, and SHGs

- **Building supply side capacity along with demand side financing.** To service the demand, there is a need to build supply side capacity and ensure that household trust erosion doesn’t happen in the process. Capacity building for frontline bank staff on RTS loan appraisal is, therefore, a prerequisite, not a complement to consumer-facing financing awareness campaigns. Standardised appraisal frameworks reduce perceived lending risk and accelerate loan disbursements-particularly in rural and semi-urban markets where bank relationships are the primary financing channel. Lastly, SBI has been a flag bearer in the RTS loan disbursal. A case study of its role and the benefits of the RTS financing product to the bank needs to be highlighted among other banks.

Responsible stakeholders. MNRE, SNAs, RBI, SLBC, NBFCs, and Capacity Building Commission (CBC).

5.5. Leverage adopter experience to scale up RTS

- **Close the O&M gap before activating adopters as promoters.** Long term system performance is determined by actions of both vendors and households. Vendors are responsible for maintenance, warranty briefings, and query resolution; households must monitor performance and clean panels regularly. The findings reveal a concerning consumer-side gap that threatens long-term promoter quality. O&M support must be strengthened for existing adopters to protect the quality and durability of the promoter asset. A satisfied, well-informed adopter is a sustainable promoter.

  O&M awareness must therefore be embedded into the installation process as a mandatory handover step and reinforced through automated reminders at defined intervals, given the 25-year lifespan of RTS systems. Vendors should be required to demonstrate household awareness of cleaning schedules, warranty terms, and performance tracking as a condition of PMSGY empanelment. In addition, O&M should also be part of initial consumer awareness campaigns. Responsible Stakeholders: MNRE, SNAs

- **Promoters must be selected, not just encouraged.** 87 per cent of adopters expressed willingness to become promoters among 1.4 per cent of surveyed households. Alignment between adopters' experience and non-adopters' requirements is the foundation of the promoter case. The adopter base should be identified, segmented by governance boundary, socio-economic profile, and electricity load- to ensure that peer influence reaches the most relevant household segments. Three distinct promoter types should be targeted: high-consumption, high-savings adopters as financial narrators affirming the bill reduction premise; adopters who navigated the PMSGY loan process and can demystify the application pathway; and adopters who used innovative mechanisms such as VNM for consumers facing structural barriers.

  Adopter-led testimonial sessions should be institutionalised within Gram Sabhas, Area Sabhas and RWA meetings for organic increase in adoption. This can be through structured 'Solar open house' events, where adopters present their before and after bill data, describe the vendor selection process, and walk through financing steps and directly address the first step friction and financing information gap that stall the largest share of non-adopters.

  Responsible stakeholders: MNRE, Gram Panchayat, and urban local bodies.

- **Institutionalise a continuous feedback loop from adopter experience to scheme design.** For effective policy design, it is important to systematically collect survey data (such as adopter satisfaction, O&M behaviour, financing navigation, and post-installation outcomes) and feed it back into scheme design on a continuous basis. There is a need to institutionalise a structured iterative feedback mechanism in the PMSGY portal and can be triggered at defined intervals post-installation to identify emerging experience gaps before they snowball and to adjust subsidy design, vendor empanelment criteria, and consumer outreach materials accordingly.

  Responsible stakeholders: MNRE, PMSGY portal team, SNAs, and NGOs.

> Peer influence becomes most powerful when backed by strong consumer experience and reliable post-installation support.

Acronyms

CAGR	compound annual growth rate
CATI	computer-assisted telephonic interviews
CSC	common service centre
CSO	civil society organisation
discom	distribution company
DOI	diffusion of innovations
FLT	feedback loop theory
GW	gigawatt
HCES	household consumer expenditure survey
IEC	information, education and communication
INR	Indian Rupee
ISEC	Indian socio-economic classification
kW	kilowatt
MoP	Ministry of Power
MNRE	Ministry of New and Renewable Energy
MW	megawatt
NABARD	National Bank for Agriculture and Rural Development
NGO	non-governmental organisation
O&M	operation and maintenance
PMSGY	*Pradhan Mantri Surya Ghar: Muft Bijli Yojana*
PRI	Panchayati Raj institution
RPO	renewable purchase obligation
RTS	rooftop solar
RWA	resident welfare association
SHG	self-help group
SNA	state nodal agency
TAM	technology acceptance model
UT	union territory
VNM	virtual net metering

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