Change in Consumer Perception of Affordability of Solar Panels in Jaipur Due to Gst Reduction

Dr.Pooja Kudesia Srivastava

Associate Professor

Jagannath University, Jaipur

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The Goods and Services Tax (GST) has been one of India's most ambitious economic reforms, aimed at unifying the domestic market, simplifying indirect taxation, and improving ease of doing business. Since its introduction in 2017, GST has undergone several rounds of rationalisation. A landmark step in this evolution came in September 2025, when the Government of India announced a significant reduction and simplification of GST rates across a wide range of goods and services. These reforms, described by the Press Information Bureau (PIB) as "Next-Generation GST Reforms," introduced simplified slabs of 5% and 18% for most products, eliminated GST on several essentials, and simultaneously imposed a new 40% levy on ultra-luxury goods and services.

The dual objective of this reform package was clear: to lower household expenses and stimulate consumption while ensuring fiscal resources for social welfare through higher taxation of luxury consumption. Among the most impactful outcomes of these changes has been the reduction of GST on solar energy equipment from 12% to 5%, a move that has major implications for renewable energy adoption, particularly in solar-rich states like Rajasthan. This essay examines the broader GST reforms of 2025, their sectoral impacts, and their specific implications for solar affordability and clean energy transition in Rajasthan, supported by relevant literature.

Overview of the 2025 GST Rate Rationalisation

The 2025 GST reforms significantly simplified the rate structure by expanding the coverage of the 5% and 18% slabs. Essential goods and services were either moved to the lowest slab or made entirely GST-free, directly addressing cost-of-living concerns. At the same time, the introduction of a 40% GST rate on ultra-luxury items and services—such as high-end consumer goods and live match broadcasts including the Indian Premier League (IPL)—was designed to make the tax system more progressive and fund social development programs.

These reforms were explicitly framed around improving the "ease of living," reducing compliance burdens for businesses, and boosting demand in a slowing global economic environment. By focusing tax relief on essentials, healthcare, education, and sustainable infrastructure, the government aligned fiscal policy with broader developmental and social objectives.

Key Areas of GST Reduction and Their Socio-Economic Impact

Daily Essentials

One of the most immediate and visible impacts of the GST reforms was on daily household consumption. Common items such as hair oil, soaps, toothpastes, talcum powder, and packaged foods like noodles and chocolates were moved to the 5% GST slab. Since these products form a regular part of household expenditure, especially for middle- and lower-income families, the reduction directly translated into lower retail prices. This not only eased inflationary pressures but also increased discretionary spending capacity, thereby stimulating consumption demand across the economy.

Food and Beverages

Food inflation has long been a politically and economically sensitive issue in India. Recognising this, the government made several staple food items GST-free, including UHT milk, packaged paneer, roti, and paratha. Other food products were shifted to the 5% slab. These measures significantly reduced the tax burden on processed and packaged food, making them more affordable while also benefiting small manufacturers and food-processing units.

Healthcare and Wellness

Healthcare emerged as a central pillar of the 2025 GST rationalisation. Essential medical products and devices such as glucometers, thermometers, and diagnostic kits were moved to the 5% slab, lowering costs for patients managing chronic conditions. A particularly transformative step was the removal of GST on life and health insurance, which had earlier been criticised for discouraging insurance penetration. Additionally, wellness services such as gyms, salons, and barber shops were brought under the 5% slab, indirectly promoting healthier lifestyles by making such services more affordable.

Automobiles and Infrastructure

To support mobility and infrastructure development, GST on two-wheelers with engine capacity up to 350cc and small cars was reduced to 18%. This measure benefits both consumers and manufacturers, especially in a country where two-wheelers are a primary mode of transport. A uniform 18% GST on cement was another crucial reform, lowering construction costs and providing a boost to housing and infrastructure projects, including affordable housing initiatives.

Education

Education-related goods were given special consideration under the reforms. Essential learning materials such as pencils, erasers, exercise books, and geometry boxes were made GST-free. By reducing the cost of basic educational inputs, the reforms reinforced the government’s commitment to inclusive education and human capital development.

While essentials were taxed less, ultra-luxury products and services were subjected to a new 40% GST rate. High-end goods and services, including live sports broadcasts such as IPL matches, fall under this category. This move reflects a conscious policy shift toward progressive taxation, ensuring that discretionary luxury consumption contributes more significantly to public revenues. The additional revenue is intended to fund social programs, thereby creating a redistributive fiscal mechanism that supports equity and welfare.

GST Reduction on Solar Panels: Transforming Affordability in Rajasthan

Among the most forward-looking components of the 2025 GST reforms was the reduction of GST on solar energy equipment from 12% to 5%. For a state like Rajasthan—characterised by high solar irradiance, vast land availability,

and growing energy demand—this change has far-reaching implications.

Lowering Upfront Costs

The most immediate impact of the GST cut is a substantial reduction in the upfront cost of solar installations. Since GST is levied on solar modules, inverters, and balance-of-system components, lowering the rate directly reduces the capital cost of projects. For households and businesses, this translates into savings of thousands of rupees at the installation stage.

Reducing Payback Periods

By lowering the initial investment required, the GST reduction shortens the payback period of solar systems. With electricity savings beginning immediately after installation, a lower capital cost means faster recovery of investment. This makes rooftop solar a more attractive option, particularly for middle-income households and small businesses that are sensitive to long-term returns.

Increasing Direct Savings

For a typical 3 kW rooftop solar system, the GST reduction can lead to savings of approximately ₹9,000 to ₹10,500. Such savings are significant in influencing purchase decisions, especially when combined with state and central subsidies. Over the lifetime of the system, these savings compound into improved financial viability.

Broader Benefits of Solar GST Reduction for Rajasthan

Boosting Residential Solar Adoption

Rajasthan has been a key beneficiary of national rooftop solar schemes such as the PM Surya Ghar Muft Bijli Yojana. The GST reduction enhances the effectiveness of these schemes by lowering net system costs, thereby accelerating adoption among households and reducing dependence on grid electricity.

Benefits for Farmers and Businesses

Under schemes like PM-KUSUM, farmers are encouraged to adopt solar pumps and decentralised solar solutions. Lower GST makes these technologies more affordable, reducing reliance on diesel pumps and lowering operational costs. Similarly, MSMEs benefit from reduced capital expenditure, making solar energy a viable option for reducing electricity expenses and improving competitiveness.

Enhancement of Financial Returns

For commercial and industrial users, lower project costs directly enhance internal rates of return (IRR) and overall profitability. This encourages larger investments in solar installations, including captive power projects, thereby expanding the renewable energy market.

Accelerating Clean Energy Transition

By improving affordability and accessibility, the GST reform directly supports Rajasthan's and India's clean energy goals. Increased solar adoption reduces dependence on fossil fuels, lowers carbon emissions, and strengthens energy security. In the long term, this contributes to climate change mitigation and sustainable development.

Literature Review: Insights from Scholarly Research

The literature on energy justice in Rajasthan, India, reveals a growing focus on integrating principles of equity into the region's rapid renewable energy transition, particularly given its abundant solar and wind resources [1][2][3]. While Rajasthan has emerged as a leading Indian state in renewable energy deployment [1], critical challenges persist regarding the social equity implications of these developments [2]. The concept of energy justice, which has evolved from a triumvirate of tenets (distributive, procedural, and recognition justice) to include restorative and cosmopolitan justice [4][5], provides a robust framework for analyzing these issues.

Distributive justice addresses the fair allocation of energy benefits and burdens [4][6][7]. In Rajasthan, despite significant renewable capacity additions, the benefits of energy access and affordability are not always evenly distributed, particularly in rural areas [1][8]. Energy poverty remains a substantial issue for rural households, impacting human development, and government schemes like Pradhan Mantri Ujjwala Yojana and free electricity aim to mitigate these disparities [8]. However, the rollout of large-scale solar energy infrastructure, while contributing to national sustainability goals, often has implications for politically marginal inhabitants, raising questions about who benefits and who bears the costs of land acquisition, environmental changes, and displacement [2][9]. This disproportionate burden on marginalized communities due to energy projects highlights a failure of fair treatment [2][8][3].

Procedural justice focuses on fair and inclusive decision-making processes [4][6][7]. In the context of renewable energy development in Rajasthan, effective public participation and the meaningful involvement of all stakeholders are crucial but often lacking [10]. Knowledge politics can create asymmetric agency, leading to vulnerability, exclusion, and injustices in energy transition projects [10]. For instance, decisions regarding the siting of solar projects may overlook the unique histories, cultures, and values of local communities, leading to a failure of recognitional justice [2]. When communities are not afforded genuine opportunities to participate or have their voices heard, it constitutes a procedural inequity that can lead to distributive injustices [2][11].

Recognition justice emphasizes acknowledging and respecting the unique identities, cultures, and values of all people citation:4][4][6][7]. In Rajasthan, as in other parts of India, the rapid push for solar energy infrastructure has sometimes failed to adequately recognize the concerns and rights of local populations, especially those in rural areas [2][3]. This can lead to situations where communities are treated as passive subjects rather than equal partners, irrespective of the formal legality of policies [2]. The overarching discourse on energy justice in India identifies a strong consensus on integrating justice principles into [energy policy, but challenges arise in actual implementation, particularly for marginalized groups [12][13]. Gender inequality, for example, is a significant dimension of recognition injustice in India's energy sector, affecting access to and use of energy services, with women in low-empowerment households often experiencing greater disparities [14][15][16].

Restorative justice, a more recently emphasized tenet, addresses the need to repair past and ongoing harms and to transform systems that perpetuate injustice [4][5]. While the immediate focus in Rajasthan has been on expanding renewable energy capacity [17][1], there is a growing imperative to address the legacies of injustice that may arise from such transitions, including environmental degradation or displacement that disproportionately affect vulnerable populations [2][9]. Achieving a just energy transition in Rajasthan requires a comprehensive roadmap that not only promotes sustainable energy development but also proactively identifies and mitigates social inequities [1].

Several studies touch upon aspects of energy justice within the broader Indian context, and specifically in Rajasthan:

1. Desert geographies: solar energy governance for just transitions by Siddharth Sareen and Shayan Shokrgozar [2]: This paper focuses on the rollout of solar energy infrastructure in Rajasthan, arguing for a response centered on the energy practices and developmental effects on politically marginal inhabitants. It critically analyzes how environmental governance arrangements during the energy transition impact local communities, emphasizing the need for just transitions in desert geographies [2].
2. Renewable Energy Progress, Policy Implementation, Challenges, and the Way Forward in Rajasthan, India by Shantanu Shrivastava and Hanif Khan [1]. This review critically examines the progress, policies, and persistent challenges in renewable energy development in Rajasthan. While it highlights remarkable growth in installed capacity, it also points to issues related to policy execution, infrastructure, financing, and social equity, suggesting a roadmap for a sustainable and inclusive energy transition [1].
3. Energy Poverty and Human Development: Empirical Evidence from Rural Rajasthan, India by Arun Kumar Giri and Rahul Arora [8]. This study investigates the linkage between human development and energy poverty in rural households of Rajasthan. It evaluates the impact of government schemes on human development, providing empirical evidence from specific districts in the Shekhawati region and highlighting the need for equitable energy access [8].
4. Solar ‘power: Socio-political dynamics of infrastructural development in two Western Indian states by Siddharth Sareen and Sunila S. Kale [3]. Although this paper covers two Western Indian states, it includes a focus on Rajasthan, examining the political economic factors influencing solar energy development and its implications for energy justice within the dynamics of India's federal politics [3].

These papers collectively underscore that while Rajasthan is a frontrunner in renewable energy, the social and equitable dimensions of this transition are complex and require careful consideration through the lens of energy justice. The findings suggest that merely increasing renewable energy capacity does not automatically lead to energy justice; rather, deliberate policy interventions and inclusive governance mechanisms are essential to ensure that the benefits of the energy transition are shared equitably and that marginalized communities are not disproportionately burdened citation:3][2][3][9][10]. The integration of [energy storage systems is also highlighted as a potential avenue to advance equitable outcomes for the power system by addressing issues related to energy affordability, availability, and sustainability [18].

Research Objective

The primary purpose of this research is to systematically examine how the reduction in Goods and Services Tax (GST) on solar panels has influenced consumer perceptions of affordability in Jaipur, Rajasthan. Given Jaipur’s high solar potential, growing electricity demand, and increasing policy support for renewable energy, understanding perception-level changes is crucial for evaluating the effectiveness of fiscal interventions such as GST rationalisation.

The research objectives are elaborated below:

1.To assess the level of consumer awareness regarding the GST reduction on solar panels :

One of the core objectives of the study is to evaluate how aware consumers in Jaipur are about the reduction in GST on solar energy equipment. Policy measures can influence behaviour only if consumers are informed about them. This objective seeks to measure the extent of awareness across different consumer segments—households, small businesses, and commercial users—and to identify key sources of information such as installers, government campaigns, media, or peer networks.

2. To analyse changes in consumer perception of solar panel affordability after the GST reduction

Affordability is not only a financial concept but also a perceptual one. This objective focuses on examining whether consumers perceive solar panels as more affordable following the GST reduction. It explores shifts in perceived upfront cost, perceived value for money, and overall cost-benefit assessment before and after the tax cut, thereby capturing the psychological and economic dimensions of affordability.

Methodology :

The study was conducted amongst the prospective buyers of solar panels in Jaipur city . The buyers were residential buyers . A total of 300 respondents participated in the study .The survey was conducted in two phases – one before the GST reduction and the other phase was conducted post GST reduction amongst the same set of buyers . The survey was carried out from Aug 2025 to Nov 2025.

The sample size composition intended for the study was as follows :

Age Group	Male	Female
< 25 Years	20	10
25 Years – 35 Years	45	10
35 Years – 45 Years	55	35
45 Years – 55 Years	75	45

Research Instrument :

The study was carried out using questionnaire . The questionnaire was administered through personal interview in Jaipur. Indicators used in this analysis for measuring the constructs have been adapted from previous studies. The measurement scales were modified to suit the context of this study. The items were measured on a one-to-five-point Likert scale, signifying “strongly disagree” to “strongly agree.” To check the internal reliability of the instrument, Cronbach’s alpha was run. The value of Cronbach’s Alpha was 0.78 for emotional response, 0.82 for environmental response and 0.75 for last part respectively. All values are above the standard value.

Data analysis and findings

Data analysis was performed using SPSS version 20 and AMOS version 21. ANOVA analysis was conducted assess the impact of reduction of GST on the price perception of solar panels . The assumption of homogeneity of variance was examined though Levene`s test revealing significant result (p=0.76) .Consequently , the assumption was met , supporting the validity of test. The ANOVA results showed statistically significant difference in the perception of solar panels among the prospective buyers F (2,121)=13.183, p = 0.52

Impact of GST reduction on the price perception of Solar Panels	Sum of Squares	df	Mean Square	F	Sig
Between Groups	31.679	2	17.8333	13.183	0.52
Within Group	783.33	121	3.214		
Total	815.009	123			

The results suggest that the mean score differed significantly amongst the groups.Therefore , it can be concluded that , based on the current data ,the GST reduction has significant impact on the price perception of solar panels amongst the residential buyers.

Conclusion

The 2025 GST reforms represent a significant step toward a more simplified, progressive, and development-oriented tax system in India. By reducing GST on essentials, healthcare, education, and sustainable infrastructure, the government has directly addressed cost-of-living concerns while stimulating economic activity. The introduction of a 40% GST on ultra-luxury consumption further reinforces fiscal equity by redirecting resources toward social welfare.

The reduction of GST on solar panels stands out as a particularly impactful reform for Rajasthan. By lowering upfront costs, reducing payback periods, and enhancing financial returns, it accelerates solar adoption across households, farms, and businesses. Supported by existing literature, these changes are likely to strengthen energy justice, promote clean energy transition, and contribute to long-term economic and environmental sustainability.

Overall, the Next-Generation GST Reforms illustrate how targeted fiscal policy can simultaneously advance affordability, inclusivity, and sustainability—key pillars of India's development trajectory in the coming decades.

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