LODHA
NET ZERO URBAN ACCELERATOR

RMI INDIA FOUNDATION

Scaling Cool Roofs in India

KEY WEBINAR TAKEAWAYS | AUGUST 12, 2025

LODHA
NET ZERO URBAN
ACCELERATOR

With a vision of 'Building a Better Life', Lodha is committed to reducing emissions significantly to ensure we leave a net positive impact on the environment. To achieve this goal, in partnership with RMI India Foundation, we launched the Lodha Net Zero Urban Accelerator in July 2022. It is a pioneering initiative with a goal to make netzero the new normal for the built environment, thereby accelerating and maximising the building sector's contribution to India's 2070 net-zero emissions target.

RMI
INDIA
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RMI Energy Solutions India Foundation ("RMI India Foundation")'s mission is to support the transformation of India's economy into a clean, thriving, and inclusive energy future. This mission is in line with the country's bold ambition to achieve a net-zero emissions economy by 2070. We aim to drive impact on the ground through deep research and rigorous analysis, which informs the development of sustainable clean energy policies and programmes across the country to enhance the lives and livelihoods of all Indians.

Context

On August 12, 2025, RMI India Foundation and the Lodha Net Zero Urban Accelerator co-hosted a webinar on *Scaling Cool Roofs in India: Overcoming Barriers and Unlocking Opportunities*. The session convened policy experts, industry practitioners, and community leaders to discuss mainstreaming cool roofs at scale across India's built environment. The webinar focused on mapping the current market landscape, examining barriers and opportunities, and identifying actionable policy, finance, and technology pathways to accelerate the adoption of cool roofs in Indian cities and communities.

The panel, moderated by **Ms. Sukanya Paciorek**, managing director, Carbon Free Buildings, RMI, brought together **Mr. Dev Bhise**, director, Q Gen-Next Sustainable Technology Pvt. Ltd., a materials scientist developing advanced passive daytime radiative coatings; **Ms. Bijal Brahmbhatt**, executive director of the Mahila Housing Trust, a leading community-based organisation in India; and **Mr. Aun Abdullah**, vice president and head of ESG at Lodha, one of India's largest real estate developer. Their discussion offered a 360-degree view of cool roofs — from technological innovation and grassroots adoption to developer-led strategies — and engaged a wide audience of policymakers, developers, architects, researchers, NGOs, and international organisations, reflecting the growing momentum for mainstreaming cool roofs in India.

Background

India's cities are rapidly urbanising and heating up, with dense concrete and asphalt surfaces intensifying the urban heat island (UHI) effect. Urban areas can be 1–5°C hotter than their rural surroundings.[1] By 2036, Indian cities will host about 600 million people (around 40% of the population) and contribute nearly 70% of the country's GDP.[2] This combination of growth and rising temperatures poses significant risks — extreme heat could cause productivity losses equivalent to 34 million jobs by 2030.[3] The urgency for scalable cooling solutions is apparent.

Cool roofs, i.e., roofs treated with light-reflective coatings or materials, offer a simple, affordable intervention to curb urban heat. Studies conducted globally show cool roofs can help reduce roof surface temperatures by 12–31°C and bring down indoor temperatures by 2–4°C.[4] A cool roofs pilot conducted by RMI in an affordable housing complex in Chennai showed a reduction in roof surface temperature of 4.5–12°C and an indoor temperature reduction of around 1.5°C. This translated into 20% less heat stress for occupants.

Over the long term, widespread adoption between 2025 and 2050 could save 2,000 TWh of electricity and nearly a gigaton of CO_2 emissions as per RMI's *Build Right the First Time* report, while also reducing the overall UHI effect. Thus, cool roofs are a high-impact, low-cost climate resilience strategy with multifaceted benefits, from lowering indoor heat exposure and power consumption to mitigating extreme citywide heat.

Against this backdrop, the webinar was organised to deliberate on how cool roofs can move from pilots to mainstream adoption. The discussions went beyond just technical performance and aimed to uncover systemic barriers — from supply chain constraints and financing gaps to behavioural and aspirational drivers of adoption — while also surfacing opportunities for innovation, collaboration, and policy support. The following key takeaways distil the most critical insights and action points emerging from the session.

Key Takeaways

Barriers to scaling up cool roofs in India

The panel then examined why, despite clear benefits, cool roofs haven't achieved mass adoption in India. These are categorised into economic, technical, policy, and social challenges:

POLICY AND REGULATORY GAPS

Fragmented governance and non-binding measures

India's cool roof adoption is constrained by fragmented and largely voluntary policies — although some states have heat action plans or reflective roof provisions, they remain inconsistently implemented and lack enforceability. Panellists emphasised that adoption will remain limited without integration into mainstream housing programmes (e.g., PMAY) and support through financing or incentives. They also stressed that mandates must go hand-in-hand with enabling mechanisms to build confidence and scale.

Weak integration in codes and certifications

While ECBC and ENS include provisions for roof SRI (typically 78) and energy efficiency, their enforcement depends on state-level adoption. At the national level, these codes are not uniformly mandatory, leading to variability in implementation. Some states have begun mandating them, but uptake remains uneven. Similarly, green building rating systems often treat reflective materials as optional credits rather than core compliance requirements.

Exclusion from housing and urban programmes

In public/affordable housing, strict cost ceilings and tender norms can discourage inclusion of cool roofs unless specs are graded and budget neutral. While some programmes reference heat resilience, cool roofs are not consistently required, and adoption varies by state/local guidance. Framing cool roofs as lifecycle, cost-neutral measures can improve uptake.

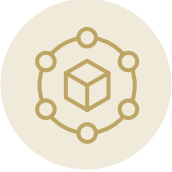
TECHNICAL AND CAPACITY BARRIERS

Performance durability

In practice, the solar reflectance index (SRI) of cool roof materials often declines within 3–4 years due to dust accumulation, weathering, and material degradation. While Indian building codes such as ECBC and ENS specify a minimum benchmark of SRI 78 at installation (with roofs under 20° slope requiring ≥0.70 initial solar reflectance and ≥0.75 thermal emittance), these standards currently emphasise initial performance benchmarks and provide limited clarity on long-term requirements. In practice, the absence of detailed durability criteria has contributed to market variation, where some products may not sustain their rated SRI over time. This has resulted in inconsistent performance, which can affect confidence in the technology among developers and consumers.

Maintenance issues

Low-sloped roofs are particularly prone to dust and debris accumulation, which reduces the effectiveness of reflective surfaces. Without routine cleaning and upkeep, the performance of cool roofs degrades faster, limiting their long-term impact.



Supply chain and installation limitations

Constraints in the supply chain and availability of skilled installers, particularly in Tier 2 and 3 cities, restrict broader deployment.

ECONOMIC AND AFFORDABILITY BARRIERS

Higher initial cost

Reflective cool roof coatings are an added cost compared to conventional paints, particularly for affordable housing projects and self-built individual homes in low-income groups, where even marginal cost increases are usually prohibitive.

Lifecycle value proposition

Lack of understanding of long-term savings from extended roof life, reduced cooling loads, and energy consumption, obscures the comprehensive value proposition of cool roofs.

Financing gaps

Absence of accessible financing options (subsidies, low-interest loans) limits adoption.

AWARENESS AND SOCIAL BARRIERS

Low awareness

Many households remain unaware of the full lifecycle benefits of cool roofs — such as durability, roof life extension, and improved comfort — while higher-income groups often dismiss them as unnecessary or unattractive.

Aspiration vs. affordability

Low-income families tend to prefer permanent or aspirational roofing products over cheaper reflective paints, even if this requires loans, limiting adoption of simpler, low-cost options.

Informal sector exclusion

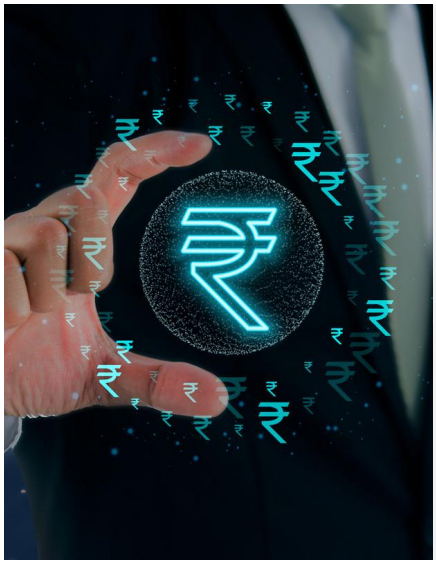
Informal housing and rental markets, where heat risks are greatest, are often overlooked in climate and housing programmes, reducing the reach and equity of cool roof initiatives.

Pathways for Change

The webinar underscored that scaling cool roofs in India requires systemic approaches that address multiple barriers simultaneously. Four broad pathways emerged as critical levers. Together, they create a roadmap for shifting cool roofs from niche interventions to a mainstream component of India's urban cooling strategies:

Policy mandates and financial incentives

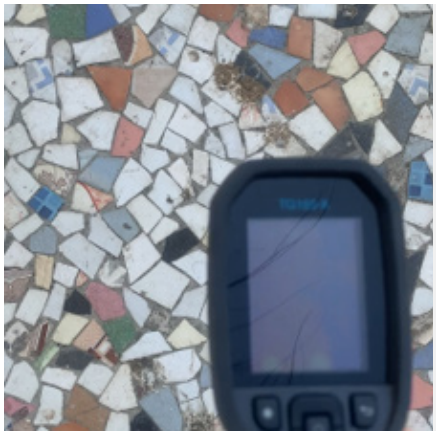
Voluntary adoption alone is insufficient; enforceable frameworks backed by fiscal levers are required to drive large-scale uptake of cool roofs across building types and geographies.



Policy frameworks must evolve from voluntary provisions to legally binding mandates embedded in building bylaws and codes. Cool roof adoption should be explicitly integrated into PMAY, Heat Action Plans, and city master plans, with requirements graded by climate zone and building type. To ensure feasibility, mandates must be paired with fiscal incentives — including subsidies, concessional loans, tax rebates, and innovative blended models such as CSR funds for materials combined with MGNREGA for labour costs in rural areas. Public procurement mandates can further build market demand and normalise adoption. This dual approach — mandatory requirements paired with enabling incentives can help mainstream cool roofs across India.

Strengthening performance standards and delivery capacity

Weak durability standards and limited material and labour availability reduce confidence in cool roofs, making it critical to strengthen performance benchmarks while expanding reliable delivery capacity.



Current codes require minimum SRI benchmarks at installation, but do not account for performance decline after 3–4 years due to dust and weathering. Establishing end-of-life SRI standards, clear application protocols, and third-party certification can address this gap. At the same time, adoption depends on a reliable supply and skilled labour. Thus, strengthening Tier-2/3 supply chains, creating regional hubs, and mainstreaming cool roof applications into MGNREGA and skill missions can scale capacity while generating livelihoods.

Embedding cool roofs in integrated urban cooling strategies

To achieve thermally comfortable cities, cool roofs must be embedded within holistic cooling strategies that integrate nature-based and built-environment solutions.

Cool roofs deliver the greatest value when integrated into a holistic urban cooling framework that also includes urban greening, shaded public spaces, reflective or permeable pavements, and energy-efficient building envelopes. Embedding surface reflectivity targets into city master plans and smart city programmes can institutionalise adoption at scale. Large-scale developments, such as Palava township, can serve as living laboratories, showcasing how integrated interventions deliver cascading benefits — from cooler neighbourhoods to reduced energy demand and improved climate resilience.

Awareness and community engagement for shifting the narrative

Tackling perceptions of high up-front cost and limited understanding of co-benefits requires moving beyond isolated pilots to community-driven, aspirational demonstrations.

Pathway

Cool roofs must be reframed as lifecycle assets that extend roof life, lower cooling loads, improve rooftop solar efficiency, and add waterproofing benefits. This requires localised, accessible campaigns — through storytelling, gamification, and community engagement, where households are directly involved in the execution and post-monitoring process. In addition, township-scale examples such as Palava and pilots in Chennai, illustrate the broader urban benefits and can act as aspirational models.

Social inclusion is also critical

Incentivising landlords, targeting rental markets, and extending adoption into informal settlements ensures equitable benefits where heat risks are most significant.

Conclusion and Way Forward

Throughout the discussion, a common thread was the need for collaboration — between government agencies, the private sector, civil society, and communities — to drive change on a scale. The panellists emphasised that overcoming inertia in building practices requires aligning the interests of all stakeholders around the tangible benefits of cool roofs, from energy cost savings to public health gains. The four pathways discussed during the webinar provide a systemic roadmap for mainstreaming cool roofs in India. By reframing them as lifecycle assets, strengthening performance standards, embedding adoption in enforceable policies with financial support, and situating them within integrated urban cooling strategies, cool roofs can transition from pilot-scale interventions to a cornerstone of India's climate resilience agenda.

Participant list

Sl №	Name	Organisation
1	Aarushi Shah	Nand and Jeet Khemka Foundation
2	Abhiyant Tara Tiwari	NRDC India
3	Aditee Shree	TERI School of Advanced Studies
4	Aditya Chunekar	Prayas Energy Group
5	Aishwarya Joshi	Intellecap
6	Ajit Kulkarni	IIT Bombay
7	Akanksha Agrawal	RMI India Foundation
8	Akhil Singhal	RMI India Foundation
9	Akshaya Ayyangar	Okapi Research and Advisory
10	Anshima Mishra	NEDC
11	Aun Abdullah	Lodha
12	Avani Gupta	NDMA
13	Avinash Jain	Accacia
14	Ayush Mandviya	LEAD Consultancy and Engineering Services
15	Bijal Brahmbhatt	Mahila Housing Trust
16	D.E.V.S. Kiran Kumar	IIT (BHU)
17	Dev Bhise	Q Gen-Next Sustainable Technology Pvt. Ltd.
18	Dhiraj Jehra	Abhishek Millennium Contract Pvt. Ltd.
19	Dr. Shailee Patil	Indian Institute of Public Health Gandhinagar
20	Himanshu Dixit	CEEW
21	Imran Majid	ADRA India
22	Karthika Kumar	The George Institute
23	Khanjan Ravani	H T Parekh Foundation
24	Kim Hor TOH	Surbana Jurong
25	Lakshita Shrivastava	TERI
26	Lakshmy N	EDS
27	Manish Jain	Envint
28	Mayankraj Prajapat	Integrative Design Solutions
29	Mokshika Arora	Khatib and Alami
30	Mrinal Shrivastava	RMI
31	N. Hari Krishna	HelpAge International

Participant list (continued)

Sl №	Name	Organisation
32	Neetu Jain	Panache Greentech Solutions Pvt. Ltd.
33	Om Prakash Singh	CEEW
34	Paramveer Singh	SS Contractor
35	Prakhar Suresh Sharma	STS
36	Prathijna Kodira	IIHS
37	Priyanka Shah	Indian Institute of Public Health
38	R. Magotra	IRADe
39	Radhika Mehta	Environmental Design Solutions
40	Rasika Kaul	TERI SAS
41	Rohan Jain	ADRA India
42	Rohan Mishra	NRDC
43	Roshan Joshi	Truboard
44	Rupa Bhise	Q Gen-Next Sustainable Technology Pvt. Ltd.
45	Shalaka Kumar	SEEDS
46	Shamsh Charania	Sterling Check
47	Siva Barathi A	IIT Madras
48	Sonal Kumar	CEEW
49	Sonia	ADRA India
50	Sreenivas Chigullapalli	Spectrum Impact
51	Sukanya Paciorek	RMI
52	Sumeet Agarwal	SEEDS
53	Sweta Raj	TERI SAS
54	Tanvi Bobhate	EDS
55	Tanya Issar	Intellecap
56	Tarun Garg	RMI India Foundation
57	Tej Chavda	CEPT University
58	Zoya Zakai	RMI India Foundation

Endnotes

1. "CSE study tracks heat wave; exposes dangerous trends in India's biggest cities," Centre for Science and Environment, accessed May 14, 2025, https://www.cseindia.org/cse-study-tracks-heat-wave-exposes-dangerous-trends-in-india-s-biggest-cities-12205.

2. "Gearing up for India's Rapid Urban Transformation," World Bank, accessed February 24, 2025, https://www.worldbank.org/en/news/opinion/2024/01/30/gearing-up-for-india-s-rapid-urban-transformation.

3. "A Greener Cooling Pathway Can Create a $1.6 Trillion Investment Opportunity in India, says World Bank Report," World Bank, accessed August 29, 2025, https://www.worldbank.org/en/news/press-release/2022/11/30/a-greener-cooling-pathway-can-create-a-1-6-trillion-investment-opportunity-in-india-says-world-bank-report.

4. "Really cool roofs: How breakthrough materials can save lives, carbon, and money in a warming world," Third Derivative, accessed August 29, 2025, https://www.third-derivative.org/blog/really-cool-roofs-how-breakthrough-materials-can-save.

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