



# — Telangana's Cool Roof Policy: Pilot Demonstration to Policy Implementation



**Government:** Government of Telangana, India

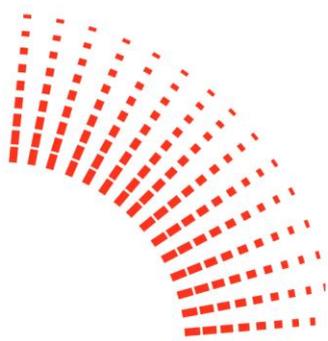
**Region:** India

**Sector(s):** Climate Change, Heat Waves, Thermal Comfort, Sustainable Cooling, Energy Efficiency, Resilience, Climate Change Adaptation

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Workers build a cool roof at the premises of ASCI, Hyderabad City, Telangana.



## India's first state-led Cool Roof Policy has been developed and notified by the Government of Telangana

### Summary

Telangana an **Under2 Coalition** signatory state is India's third-most urbanised state with 47 percent of its population living in urban areas. As a result of increasing urbanisation, there is a pressing need for affordable and climate-friendly cooling solutions to help communities cope with heat stress and reduce the urban heat island effect. In 2023, Telangana took a pioneering step towards mitigating extreme heat, reducing energy consumption, and lowering carbon emissions by introducing its innovative Cool Roof Policy 2023-28.

Cool roofs are one of the simplest and most cost-effective ways to fight heat. The roof is an important component of the building as it directly impacts energy needs and thermal comfort of occupants. Built from materials that retain less heat, cool roofs function by reflecting back more sunlight than a regular roof surface. Cool roofs can help keep indoor air temperatures lower by as much as 2.1°C to 4.3°C as compared to traditional roofs.

Led by Municipal Administration and Urban Development (MA&UD) and Greater Hyderabad Municipal Corporation (GHMC), the state initiated a pilot programme in 2017. Natural Resources Defense Council (NRDC), Administrative Staff College of India (ASCI), International Institute of Information Technology- Hyderabad (IIIT-H) and Plaksha University were knowledge partners in the programme which involved developing citizen awareness on cooling technology and cool roof installation in low-income areas. This evolved into developing a comprehensive state-wide policy, reflecting years of progress and scaling efforts from the initial pilot in Hyderabad city.

Telangana's Cool Roof Policy has four key objectives:

- Driving widespread adoption of cool roofs across the state.
- Establishing a robust institutional framework for policy implementation.
- Identifying financing mechanisms and conducting awareness campaigns.
- Supporting workforce development and training for cool roof installations.

The policy mandates cool roofs for all the government, non-residential, and commercial buildings. Residential buildings with a plot area of 600 sq. yds. or more are also required to have cool roofs, while smaller residential buildings have the option to voluntarily build them. To ensure compliance, the government has integrated building of cool roofs into the Telangana State Building Permission Approval and Self-Certification System (TS-bPASS). As part of the this, the respective Urban Local Body has to ensure cool roof installation in a building before issuing an occupancy certificate.

**300 sq. km**  
of cool roof area targeted by  
2028

“With this policy, we aim to be an  
eco-friendly state with reduced  
dependence on energy  
consumption for cooling”.

**Shri K.T. Rama Rao**  
Former  
Minister for MA&UD, Government of  
Telangana

## Results and next steps

- The Telangana Cool Roof Policy is applicable for a period of 5 years i.e. 2023-28. Projected savings are of 600 million Units (GWh) of electricity annually after five years. One-time carbon offset of 30 million tonnes of CO<sub>2</sub> is also expected.
- The policy also contributes to India's commitment to reduce its cooling demand by 25 per cent by 2037-38, as outlined in the India Cooling Action Plan.
- The policy sets ambitious targets for the integration of cool roofing across the state's urban and suburban areas. By 2024-25, 20 sq. km of cool roofing is aimed for Hyderabad city limits and an additional 10 sq. km for the rest of the state. By 2028, the policy aims to cover a substantial 300 sq. km of cool roofing where 200 sq. km is to be within the city of Hyderabad and an impressive 100 sq.km outside.
- The policy paves the way for energy efficiency and environmental sustainability. It is an inspiring example for other states and regions to develop similar policies to mitigate the impacts of climate change and rising temperatures.

## Enabling conditions

- The Cool Roof Policy, led by MA&UD, involves coordinated efforts from state and city agencies, technical groups, real estate associations, residential welfare associations, research institutions, NGOs, and private companies. A **Cool Roofs Committee**, comprising various departments and stakeholders, oversees policy design and implementation. The MA&UD has appointed three nodal agencies that direct programme execution, enforce cool roof mandates, and fund implementation. Hyderabad city level and Hyderabad Urban Agglomeration (HUA) level implementation falls to Urban Local Bodies (ULBs) such as Greater Hyderabad Municipal Corporation (GHMC) and Hyderabad Metropolitan Development Authority (HMDA) respectively. The Directorate of Town and Country Planning (DTCP) is responsible for the rest of the state. ULBs engage with knowledge and community partners, city departments, and residents to ensure effective policy enforcement and to implement awareness campaigns.
- While the Cool Roof Policy marks a significant achievement, the focus is now shifting to effective implementation. The adoption of cool roofs in government low-cost housing, including existing structures, could be financed through government budgets and incentive mechanisms and can also be integrated into procurement criteria. Similarly, the implementation of cool roofs in low-income community residences could be jointly funded by government budgets and Corporate Social Responsibility (CSR) initiatives, aligning with the country's CSR regulations.

## Challenges

- **Availability of materials, vendors and skilled manpower:** The roofing industry's readiness to produce and install cool roofing materials on a large scale is challenging. Cool roof technologies require careful consideration of material type, reflectivity, thermal emittance, solar reflective index and colour. There are different types of tiles, membranes and coatings available. Determining the correct material for a building can be complex and may necessitate technical expertise and guidance. Training and capacity building is required to ensure a skilled workforce that is capable of implementing these technologies. Most cool roof paint manufacturers provide implementation services along with the product ensuring the proper

application and its effectiveness, but there is still a need for wider manpower skill development and training.

- **Locally available testing facilities:** Ensuring cool roof policies achieve their intended goals requires ongoing monitoring and evaluation. This could involve measuring changes in indoor temperatures, energy consumption and other relevant metrics. Currently, there are limited testing facilities on the performance of cool roofing materials. Manufacturers need to get their products tested by labs in other states.
- **Unavailability of data on the aged performance of materials after natural exposure:** Cool roofing materials may have different wear and tear patterns, which affect their lifespan and maintenance requirements. Ensuring the long-term durability and reliability of cool roofing solutions is crucial through standard testing protocols.
- **Lack of incentives for the urban poor:** Cool roofing materials and technologies are more expensive upfront than traditional roofing options. This can deter building owners, especially the urban poor, from adopting cool roofs due to limited budgets. There is a need to develop solutions to make these options financially feasible, such as incentives and subsidies.

## Key lessons

- **General awareness of cool roofing benefits:** Many property owners and construction professionals may not be aware of the benefits (such as energy cost savings and comfort improvement) and options available with cool roofing technologies. Effective public outreach and awareness campaigns are essential to encourage adoption.
- **Certifying agencies and compliance with the policy:** Zoning regulations, building codes and other local policies may only sometimes accommodate or incentivise cool roofing. Overcoming regulatory barriers to their adoption will require collaboration between policymakers, industry stakeholders and relevant agencies.
- **Existing building stock:** Retrofitting existing buildings with cool roofs is more challenging and expensive than implementing cool roofing in new construction. Policies should consider incentivising or mandating the installation of cool roofs on existing structures.

## More information

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<https://www.nrdc.org/bio/prima-madan/telangana-announces-groundbreaking-cool-roof-policy>