PREPAREDNESS & RESPONSE THROUGH PASSIVE INFRASTRUCTURE

COOL ROOFS IN HEAT ACTION PLANS

NCDC-WHO Capacity Building Workshop on Health sector action plan for preparedness and response to heat wave || 15th July 2021

Building extreme heat resilience: issues and challenges

- Action on extreme heat restricted to heat season – reactionary, short term

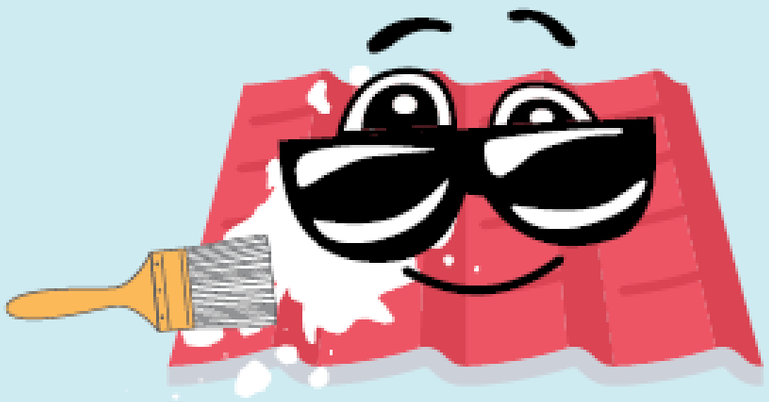
- Many state and city leaders/administrators have not yet come to see the link between environment and health. The connection between climate change and rising temperatures and heat-related illnesses not well understood

- No or small environmental health dept in municipality, district, state or national level – not prioritized

- Focus on medium and long term action – preventive and mitigative action missing

- Town planning and civil engineering / architects not yet fully on board for infrastructural interventions – active and passive

What Are Cool Roofs?



Painted with solar reflective paint, covered in white tiles, or with white membrane, cool roofs are an easy and cost-effective way to help fight climate change by mitigating the urban head island effect and reducing cooling demand.

Benefits of Cool Roofs:

COOLER HOMES

Cool roofs can help keep indoor temperatures

2 to 5˚C

lower than households with traditional roofs.

LOWER COSTS

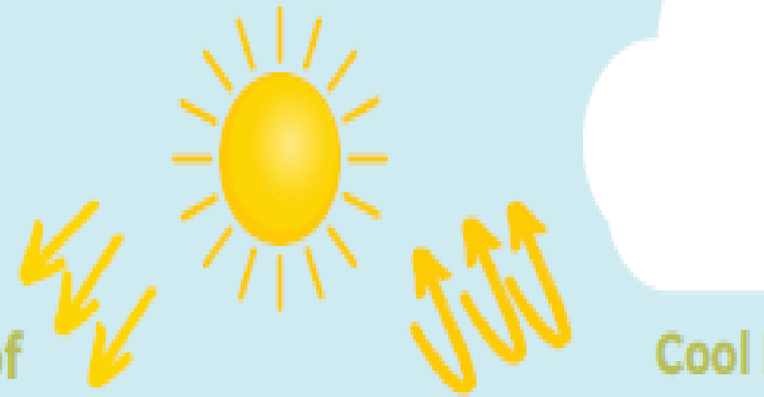
Cools roofs need limited maintenance, can save

20%

in energy costs, and can increase the longevity of the roof beneath them.

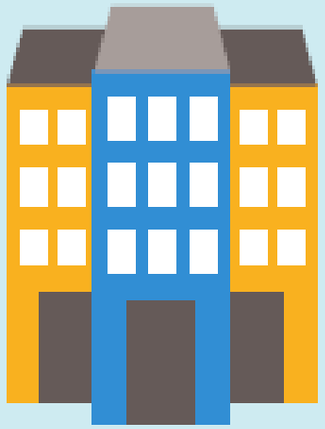
How Does It Work?

A cool roof takes in less heat from the sun than regular roofs. It stays cool in the sun by reflecting sunlight to (minimize solar absorption) and emitting thermal radiation (to help dissipate solar heat gain). Cool Roofs reflect around 80% of sunlight as compared with 20% from regular roofs. Thus, buildings with cool roofs stay significantly cooler.



Regular Roof

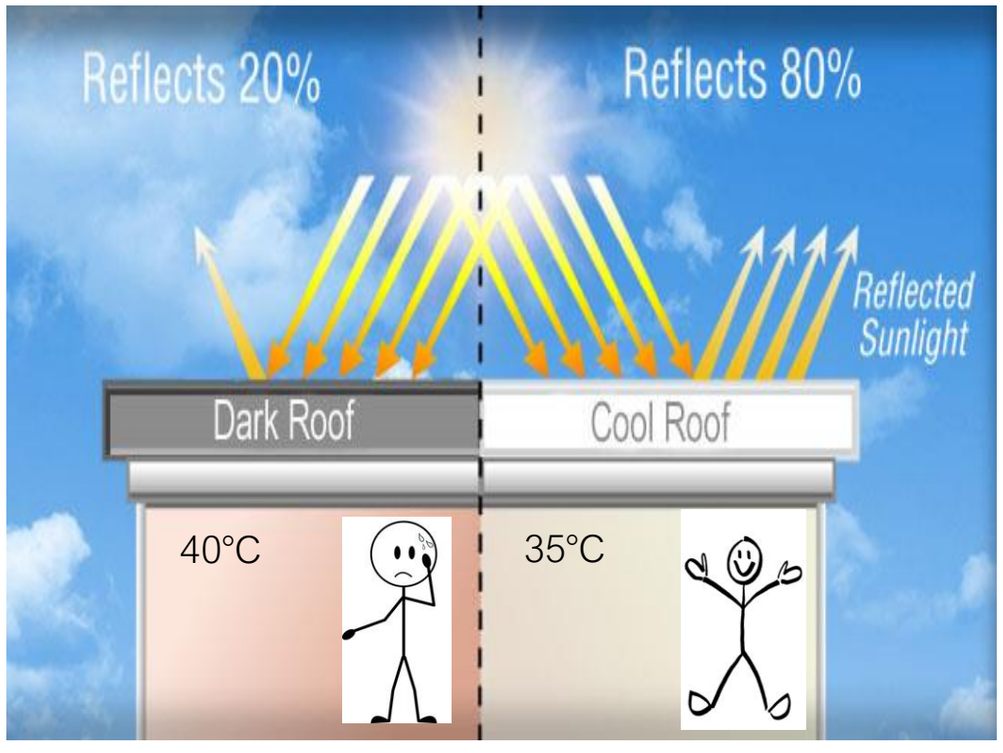
Cool Roof



Reducing Heat Exposure through Cool Roofs

- Simple and cost-effective solution to urbanization challenges

- A roof that stays cool in the sun by reflecting sunlight to (minimize solar absorption) and emitting thermal radiation (to help dissipate solar heat gain)



Source:www.coolcalifornia.org

Benefits

- Provides thermal comfort by reducing indoor temperature, protects vulnerable people
- Improves comfort for homes, schools, hospitals, and public buildings. Enhances productivity
- Extended roof life and reduced roof maintenance
- In air-conditioned buildings, improves comfort, reduces cooling demand, money and energy savings
- Implemented on a large scale, works to reduce urban heat island effect (UHI)

Types of Cool Roof Materials

Cool roof materials are available for all types of steep-sloped and low-sloped (nearly horizontal) roofs

- Coated roofs: *incl whitewash (lime based), acrylic resin coating*
- Membranes: *pre-fabricated materials, tarp-like plastic material*
- Tiled roofs: *such as white China mosaic tiles*
- Other coatings *(modified resin, PU, silicone)*

Increasing COST and DURABILITY

Indicative Costs and Payback

S.No	Material	Cost per sq.ft (in rupees)	Payback
1	Coatings	20-40	20-30 kWh/m2/Year -2 years
2	Cool tiles	50-100	25-40 kWh/m2/Year - 2 years
3	Membranes	20-55	20-30 kWh/m2/Year -2.5 years

Source: IIIT-H market survey

Indian cities are leading the way: Cool Roofs in Ahmedabad and Hyderabad

- Pilot cool roof programs in 2017 and 2018 in Ahmedabad and Hyderabad.
- In Hyderabad, MAUD and GHMC pilot focused on 25 low-income households.
- In Ahmedabad, AMC unveiled a cool roofs initiative as a part of the updated Ahmedabad Heat Action Plan 2017
  - Converted 3000 homes to cool roofs with lime paint
  - Company manufacturing heat reflective paint donated to paint 10-15 pilot households,
  - Dedicated IEC materials on cool roofs developed to increase community awareness

- In 2019, Telangana circulated draft cool roof policy: target- kick start with 11,000 sq ft in 2021. Policy to be released
- Ahmedabad through the HAP announced 2020 target to cool roof 15,000 slum roofs and 1000 AMC building roofs. To be completed in 2021

New Cool Roofs Demonstrations in Four Cities

- In 2020, NRDC and IIPH-G in partnership with Mahila Housing Trust (MHT) painted roofs of selected slum households with solar reflective paint, as demonstration pilot projects, in four cities

- Objective of the demonstrations:
  - Reducing heat stress
  - Outreach on cool roofs as heat mitigation technology
  - Skill development of households

- Demonstrations covered 140385 sqft of roofs covering 426 households across the four cities

Jodhpur

Surat

Ahmedabad

Bhopal

Call for 2021 Heat Season - Cool Roofs Challenge

Setting up action by national, state and city leaders for implementing cool roofs for the heat season 2021

Objective: scale and institutionalize implementation of cool roofs

Who

- National: NDMA, MOEFCC and MOHUA
- State: SDMA, State housing department
- City: Municipal Corporations through the HAPs

When: start implementation in heat season 2021

What: cities can announce targets for cool roofs implementation starting 2021

Thank You

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Natural Resources Defense Council (NRDC)

Other FAQs on Cool Roofs