

Before the Fan Was Invented

Climate Evidence · Household Action · Collective Change

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2026

Seminar: Cool Ideas for the Hot Earth

One Day Of Extreme Heat Causes 3,400 Excess Deaths Across India, Study Estimates

MEDIA ANALYSIS / HEAT WATCH INDIA

Struck By Heat: Over 40,000 Suspected Heatstroke Cases Documented In 2024-2025

Data Compilation | Heat Watch India

HEATSTROKE MATSTROKE SODILINDICANDOS



^aWest Coast National University, West Valley College, California, U.S.A.

MEDIA COVERAGE COLLAGE: INDIA'S DEADLY HEATWAVE CRISIS (2024-2026)



The Indian EXPRESS
INDIAN EXPRESS GROUP

ALCANTARA, LINDA, DENE SOA

Delhi Records Highest-Ever Temperature Of 52.9°C; Red Alert Issued As Heat Sizzles

June 2024 | Climate Crisis

THE WIRE / NT

Dozens Of Poll Workers Die On Election Duty As Searing Heatwave Grips North India

June 2024 | General Election Impact

Quocle
Gardu nillien
niet too hard

De Santis ha chiesto
dell'attualità del suo libro

Climate Change Experts are Worried of 100-Year
 Ice-free Arctic Ocean
 Scientists are warning that the Arctic Ocean could be ice-free in the summer by the year 2100. This is a significant concern because the Arctic Ocean plays a crucial role in regulating the Earth's climate. The loss of the Arctic's reflective ice cover would lead to a significant increase in global temperatures, potentially triggering a runaway greenhouse effect. The experts are calling for urgent action to reduce greenhouse gas emissions to prevent this scenario from becoming a reality.

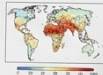
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Figure 1. Schematic diagram showing the relationship between the different variables in the model.

April 2026 | Scientific Attribution Study

* Collage curated from Indian digital news outlets & health research publications (2024-2026). Full slide scale.

Structure of This Talk

Part I

The Evidence

How hot has India become? What does 124 years of data say?

Part II

Household Action

Affordable passive cooling for flats and independent homes

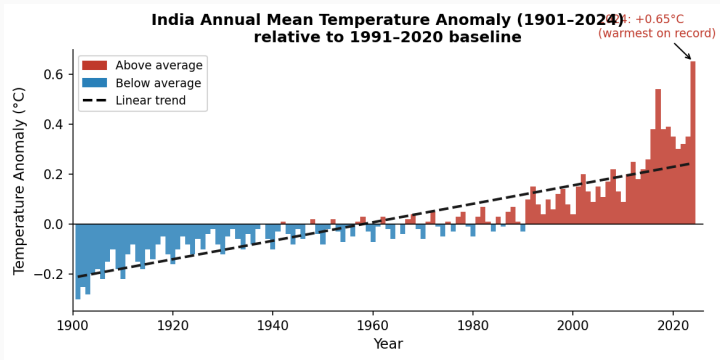
Part III

Collective Campaign

What citizens can organise and demand — and why it changes cities

Core message: Before electricity, Indians survived 45°C summers by outsmarting heat through design. The same physics — and most of the same solutions — work today.

India Is Warming — 124 Years of Data Confirm It



India Meteorological Department (IMD); DataForIndia, Feb 2026; PLOS Climate, Nov 2025

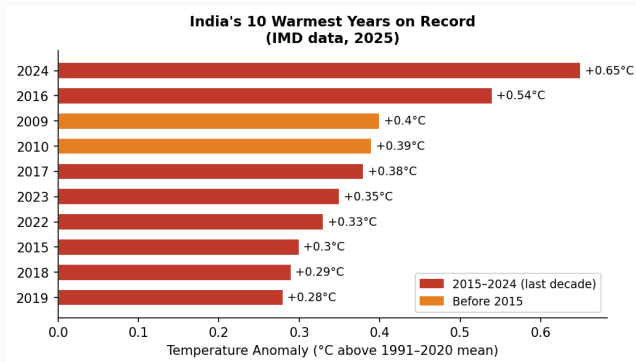
Key facts

$+0.89^{\circ}\text{C}$ rise in
2015–2024 vs
1901–1930 baseline

10 of 15 warmest years
since 1901 occurred
after 2011

Night-time temps rising
faster than daytime
maxima

The Last Decade Is Overwhelmingly the Hottest



IMD; Down to Earth / CSE Analysis, Jan 2026

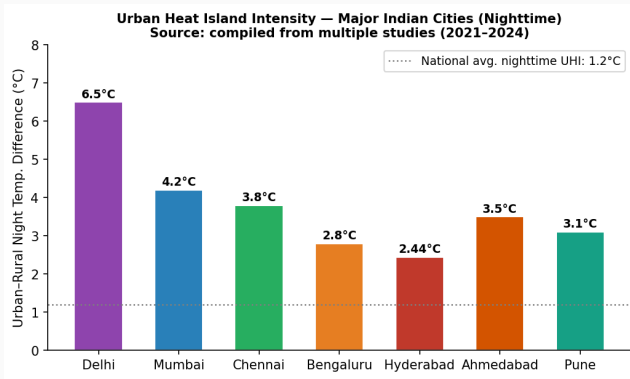
2024

Warmest year in India's
124-year record (+0.65°C)

2024 extreme events

- 52.9°C in Delhi Mungeshpur — highest ever recorded
- Extreme weather on **322 of 365 days**
- 2,933 people killed; 92,000

Cities Are Hottest — The Urban Heat Island Effect



AQI.in (2024); Greentree Global (2024); ScienceDirect (2025)

Urban vs Rural

Indian cities **3–8°C hotter** than surroundings at night

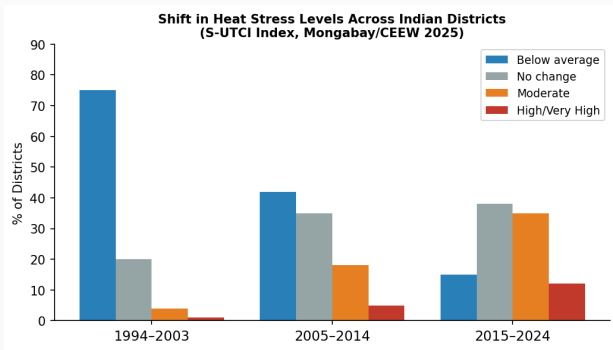
Urban areas: **2.9 more** heatwave days — rising to **13.8 days** under high emissions

Delhi, Patiala could warm **twice as fast** as regional average

PMC/NIH (2019); GlobalClimateRisks.org (2026);

Lodha/Islam et al. (2024)

Heat Stress Has Shifted Dramatically Across India



Mongabay India / S-UTCI (Dec 2025); CEEW (May 2025)

Population at risk

57% of districts — 76% of population — at high to very high heat risk

By 2030: **35 million jobs lost;**
4.5% GDP reduction

Labour cost (2024)

247 billion labour hours lost
≈ US\$194 billion economic loss

Lancet Countdown, 2024

The Evidence: Myth vs Reality

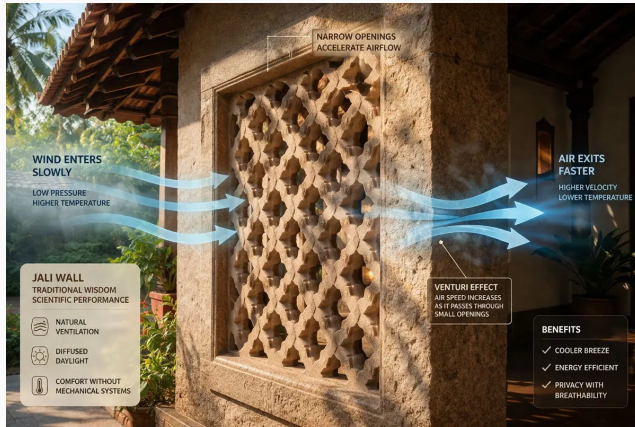
Myth / Perception	What Research Shows
"It has always been this hot"	Peak temps have risen 1.5–2°C since the 1950s in western and NE India (<i>PLOS Climate, 2025</i>)
"A few hot years, not a trend"	Warming accelerated from the 1990s ; 124-year trend unambiguous (<i>IMD, DataForIndia</i>)
"India is like everywhere else"	India faces a convergence : outdoor workforce, monsoon dependence, groundwater depletion, rapid urbanisation
"Rural areas are safe"	330 million people face water scarcity; Punjab/Haryana groundwater depleting rapidly (<i>Water Diplomat, 2024</i>)
"Heat deaths are exaggerated"	Severely underreported; confirmed toll 3,436–8,171/yr in 2015–22 (<i>Down to Earth, 2026</i>)

Part II

Household Action

Passive Cooling — Before the Fan Was Invented

The Jali Screen — Passive Ventilation Since the 10th Century



How it works

Venturi effect: narrow openings accelerate airflow, lowering temperature on the interior side

Direct sunlight blocked; diffused daylight passes

Humid zones (Kerala): larger holes. Dry zones (Rajasthan): smaller, denser

Today

Brick, concrete, or terracotta

Thick Walls & Lime Plaster — Thermal Mass at Work



The physics

Laterite / mud walls
(230–345 mm thick) absorb
heat slowly all day — **interior
stays cool**

Heat reaches interior only after
6–8 hours — by then outdoor
temps are dropping

Lime plaster on exterior:
breathes, reflects, repairs itself

Modern equivalent

Cool Roof — The Single Highest-Impact Measure for Top Floors



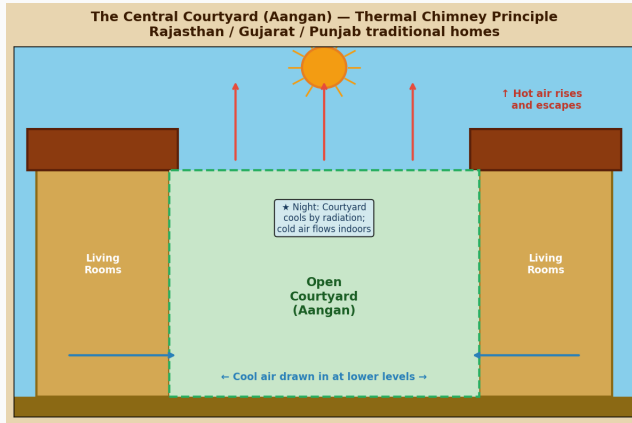
Why the roof matters most

A bare dark RCC slab reaches **65–70°C** at 3 PM — and radiates that heat downward all night

White lime wash, china mosaic, or reflective paint keeps slab at **40–45°C**

Result: **3–5°C** indoor temperature reduction; lasts 5–7 years

The Central Courtyard — A Thermal Engine



The physics

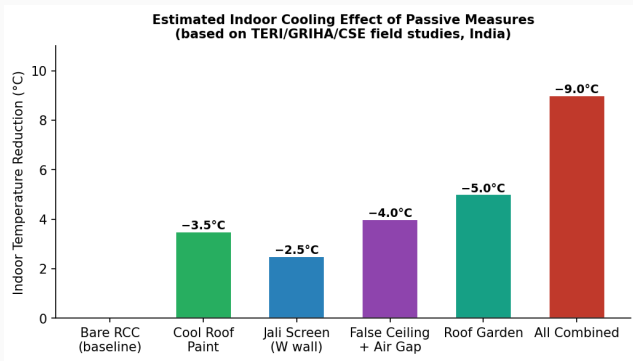
Day: Sun heats courtyard air, which rises and escapes — **drawing cooler air in** at ground level (stack effect)

Night: Open courtyard radiates heat to sky; cooled air flows back into surrounding rooms

Modern equivalent

Open-to-sky atrium shaft in apartments; a north-side ventilation shaft in row houses

Passive Measures Can Cool Homes by Up to 9°C



TERI/GRIHA field studies; CSE Cool Roofs Report (2021)

Why this matters

Every **0.6°C** rise in temperature pushes electricity demand up **2%** (TERI, 2017)

9°C cooler home can **eliminate or drastically reduce AC dependency**

Combined effect **exceeds** the sum of parts

Key principle: Intercept heat before it enters the wall — not cool air inside a hot shell.

A Hierarchy — From Free to Affordable

Cost	Action	Benefit
Free	Cross-ventilation: align opposite windows, rearrange furniture	Continuous airflow; removes trapped heat
Free	Shade west windows 12–5 PM (blind or curtain)	Cuts direct solar gain 50–70%
Free	Terracotta pots (<i>matka</i>) near inlets	2–4°C drop in incoming air
Low	Shade net / bamboo pergola over balcony	Stops solar gain before hitting wall
Low	Jali or terracotta blocks on W/S wall	40–60% radiation cut; zero maintenance
Moderate	Cool roof reflective paint on terrace	3–5°C reduction; lasts 5–7 yrs
Moderate	False ceiling with 6–8 inch air gap	8–12°C slab heat trapped away
Moderate	Roof garden: succulents or grass	10–15°C slab temp reduction

CSE India;

What Works Best — By Home Type

Top-Floor Flat

1. **Cool roof paint** — single highest impact
2. **False ceiling + air gap** — stops slab heat at night
3. Jali or shade net on west balcony

Any Flat (Mid-floor)

1. West/south **jali or shade net**
2. **Cross-ventilation** at dawn and dusk

Independent House

1. **Roof garden** — drought-tolerant plants
2. **Lime wash** on exterior walls
3. Jali on boundary and west walls

Ground Floor

1. Dense balcony / boundary planting
2. **Evaporative cooling** with unglazed pots

What You Can Do This Week

✓ Zero-cost (today)

- ➔ Move furniture to clear a path between opposite windows
- ➔ Hang a wetted cotton cloth in front of west window, 1–5 PM
- ➔ Place 2–3 large unglazed earthen pots filled with water near inlets
- ➔ Keep interior doors open at night for cool air circulation

★ Low-cost (this season)

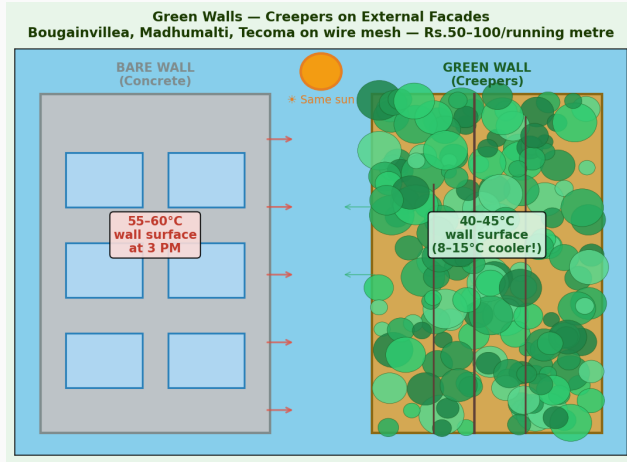
- ➔ Buy shade cloth (krishi net) — Rs. 200–400/m²; fix over balcony or west window
- ➔ Apply white lime wash on accessible south/west exterior wall
- ➔ Plant 2–3 fast-growing climbers (money plant, Madhumalti) on balcony railing

Part III

Collective Action

What Citizens Can Organise — and Demand

Green Walls — The Most Accessible Collective Intervention



The numbers

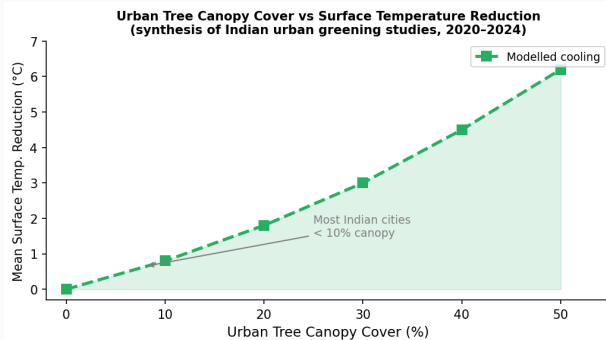
Green wall reduces wall surface temperature by **8–15°C** through transpiration and shading

That is the wall radiating heat into every flat it touches — all night

Cost: Rs. 50–100/running metre for mesh and plants

Best climbers for India

Individual Action Has Limits — Collective Action Changes the City



Synthesis of Indian urban greening studies (2020–2024); TERI

The scale problem

One cool roof helps one family.
50% canopy across a ward
drops neighbourhood temperature
by 6°C

Most Indian cities have **under
10% canopy** — far below the
20–30% needed

Urban heat is a planning
failure

Scheme A — What Your Housing Society Can Do

RWA / Apartment Complex

- **Light-coloured exterior** at next maintenance cycle — RWA consensus only; reduces whole-building heat load
- **Terrace / podium garden** — top-floor residents benefit most; all share the cost
- **Creepers on external walls** on wire mesh — minimal cost, insulates every flat sharing that wall
- **Tree canopy in parking** — shading

Why it works beyond your flat

A shaded external wall stays 15°C cooler. That coolness radiates **into every flat** on that wall — not just the one with the plant.

Quick win: Raise exterior paint colour at next AGM. Whole building benefits; no individual cost.

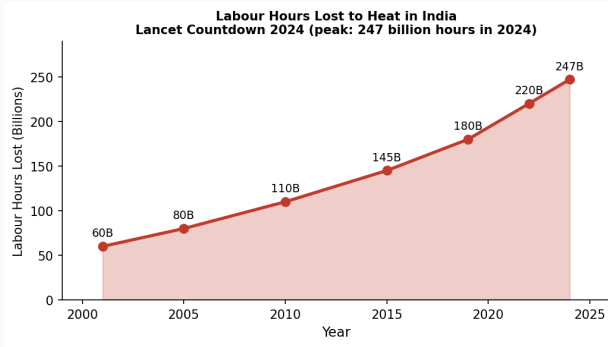
CSE India; TERI; Pune, Bengaluru field docs (2022–24)

Scheme B — What Citizens Can Demand from Local Authorities

Demand	What to Ask For	Indian Precedent
Street trees	Ward-level plantation drive; native species, not ornamental	Nagpur, Bengaluru citizen drives pressured municipalities
Grass on dividers	Replace concrete medians with grass and groundcover	Delhi RWAs lobbied NDMC successfully (2021–23)
Permeable paving	Gravel or stone in pedestrian zones instead of asphalt	Pune Heritage Area; retains rain, cooler surface
Cool roof mandate	Reflective coating required in new building bylaws	Ahmedabad and Hyderabad added specs post-2019
Tree protection	Large trees as listed asset in redevelopment approvals	Active petitions in Mumbai, Chennai (2023–25)

CSE India

The Economic Argument That Moves Municipalities



Lancet Countdown on Health and Climate Change, 2024 Report

247 Billion

Labour hours lost to heat in India
in 2024 alone

The case that moves municipalities

- Heatwave days cost daily wage labourers their only income
- Hospital surge demand — preventable with shade and water

Building the Campaign — A Practical Roadmap

Phase 1 — Awareness (0–6 months)

- Document local temperatures (phone apps) — show your neighbourhood is a heat island
- Map trees lost in last 5 years in your ward using Google Maps timeline
- Present data at RWA meetings with printed charts

Phase 2 — Internal Wins (6–12 months)

- Get RWA resolution on exterior colour, roof garden, creepers
- Start a collective nursery with native species

Phase 3 — External Pressure (Year 2+)

- File RTI on ward-level tree plantation targets
- Join or form a ward *Harit Samiti* (Green Committee)
- Submit comments during local development plan consultations
- Partner with schools — student data is compelling to officials

“The person who puts a jali screen on their balcony is more likely to argue for creepers on the building facade. Household awareness changes civic behaviour.”

What Does It Actually Cost? Rough Estimates

Solution	Upfront Cost	Lifespan	Who can do it
Wetted cloth / earthen pot	Rs. 0–200	Seasonal	Anyone, any home
Cross-ventilation (habit change)	Rs. 0	Permanent	Anyone, any home
Krishi shade net (balcony)	Rs. 400–800	4–5 yrs	Flat or house
Lime wash (1 wall, exterior)	Rs. 500–1,500	2–3 yrs	House / accessible wall
Creeper plants + wire mesh	Rs. 300–1,000	10+ yrs	Balcony or compound
Jali blocks (1 window opening)	Rs. 2,000–5,000	20+ yrs	House or ground floor
Cool roof paint (1,000 sq ft)	Rs. 15,000–25,000	5–7 yrs	House / RWA terrace
False ceiling + air gap	Rs. 40,000–80,000	15+ yrs	Top-floor flat or house
Roof garden (basic setup)	Rs. 20,000–60,000	Permanent	Terrace access needed

Approximate figures, local market rates — Maharashtra/Delhi/Bengaluru, 2025–26. Vary by region and contractor.

The Paradox at the Heart of This Talk

Who suffers most?

- Daily wage labourers, construction workers, farmers, street vendors — those who **must go outside**
- Families in *jhuggis*, *chawls*, thin-walled single rooms with no cross-ventilation
- The 330 million facing water scarcity — no water, no evaporative cooling, no relief
- Those who cannot afford even a fan, let alone an AC

The cruel arithmetic

- They contributed the **least** to urban heat — no cars, no ACs, no concrete yards
- They **cannot** use even free solutions — no balcony, no wall they control, no secure tenure
- Even Rs. 400 for a shade net is **not affordable** on a daily wage of Rs. 500–700

This is not just a design problem. It is a justice problem. The most exposed need **public shade, public water, green cover, and housing that does not kill them.** These are state

Before the fan was invented. . .

. . . Indians built jali, dug baoli, laid out courtyards.

They outsmarted heat with stone, soil, and wind.

The physics hasn't changed. The solutions still work.

Individual action lowers your home temperature today.

Collective pressure lowers your city temperature over a decade.

Both begin with understanding that the heat we have
is largely the heat we made — and can therefore unmake.

Key References i

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