Cooling the city: the case for street trees

A evidence review for a city resilience committee. The source compares heat exposure, tree cover, costs, and implementation time.

Why cities overheat

Dark roofs, asphalt, and low tree cover combine to raise surface and air temperatures. The effect is uneven: neighbourhoods with less shade can be several degrees hotter than leafy districts nearby. The committee asked for a practical comparison of interventions, not a general essay on climate change.

What the evidence says

- Mature street trees cut peak street temperature by up to 4.2°C.
- One mature tree can intercept about 1,400 litres of rainfall a year, reducing pressure on drains.
- Tree cover in the surveyed district fell from 29% to 21% over ten years.
- Residents in planted streets report fewer heat-illness days after two summers.
- Maintenance costs are lower than installing and running new air conditioning.

Intervention	Peak cooling	Relative cost	Time to benefit
Mature street trees	Up to 4.2°C	Low	5–10 years
Reflective roof coating	1.5–2.5°C indoors	Medium	1–2 years
New air conditioning	2–3°C indoors	High	Immediate
Shade structures	2–3°C at street level	Medium	1 year

Implementation sequence

The committee’s preferred programme runs in four stages: survey streets and heat exposure; plant in winter; water and maintain for two years; evaluate shade, rain interception, and resident health. The order matters because planting without maintenance produces little shade and wastes the establishment cost.

> **Recommendation.** Treat shade as infrastructure. Fund a ten-year planting and maintenance programme instead of buying short-lived cooling equipment.

Limits

Trees take time to mature. They are not a substitute for emergency cooling during extreme heat, and species selection must account for water use, roots, and local climate. The evidence supports a mixed programme, not a single intervention.

What to measure

Track canopy cover, peak street temperature, rainfall interception, maintenance cost per tree, and heat-related health visits. A dashboard should show the trend over time, not only a single year’s result. The strongest story is the relationship between planting, shade, and health—not just the number of trees planted.

> “The cheapest cooling is a tree that was planted ten years ago.”

Prepared as a synthetic benchmark source for infographic design testing. All figures are illustrative.