Cool Cities

Rising urban temperatures have a serious impact on nearly every aspect of city life.[1]

The world's cities are heating up at twice the global average rate due to the urban heat island (UHI) effect[1] — a phenomenon where urban areas get hotter due to factors like less green space, more heat-absorbing materials like concrete and steel, and waste heat from human activities.

District cooling can provide cooling to dense urban environments with up to 50% lower energy and emissions impact.[2]

Water-based urban landscapes can decrease city temperatures by **1.8–3.6°F (1–2°C)**.[7]

In the U.S., cities can be **1–7°F (0.6–3.9°C) hotter** than outlying areas.[4]

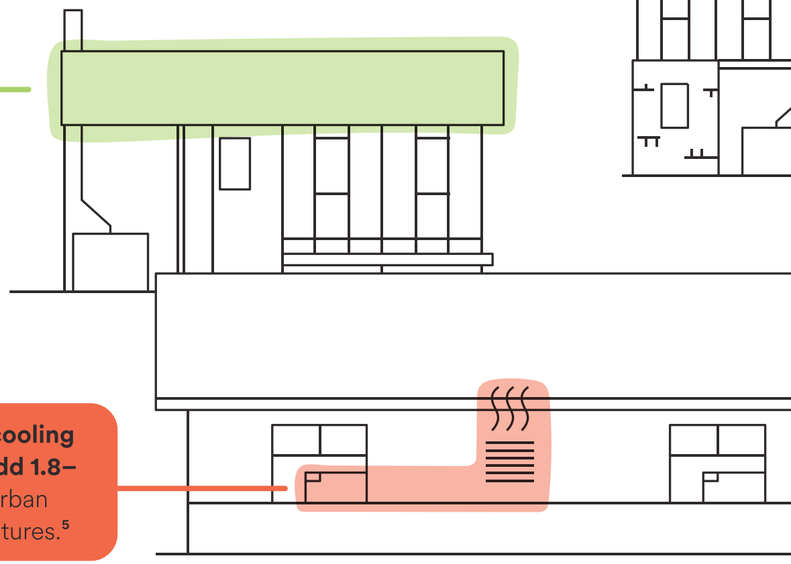
By 2100, cities across the world could warm as much as **7.2°F (4°C)**.[3]

Green roofs can reduce city-wide temperatures by up to **5.4°F (3°C)** if deployed at scale.[8]

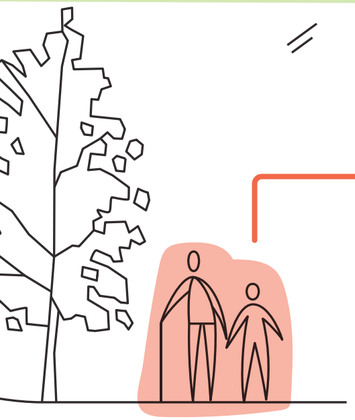
Low-income communities are usually the **most vulnerable** to heat and the least likely to be able to access thermal comfort.[2]

Tree canopies and vegetation can reduce peak summer temperatures by **1.8–9°F (1–5°C)**.[4]

Widespread application of **cool roofs and pavements** can reduce summer temperatures in cities by **3.6–5.4°F (2–3°C)**.[9]



By 2050, **1.6 billion urban residents** could experience average summertime **temperatures above 95°F (35°C)**.[6]



Waste heat from **cooling appliances can add 1.8–3.6°F (1–2°C)** to urban nighttime temperatures.[5]

Clean Cooling COLLABORATIVE

Sources: **1** *Primer for Cool Cities: Reducing Excessive Urban Heat* (2020), ESMAP | **2** *Beating the Heat: A Sustainable Cooling Handbook for Cities* (2021), UNEP | **3** *Global Multi-Model Projections of Local Urban Climates* (2021), Zhao et al. | **4** *Heat Island Effects, U.S.* EPA **5** *Anthropogenic Heating of the Urban Environment due to Air Conditioning* (2014), Salamanca et al. | **6** *Heat Extremes*, C40 Cities | **7** *Water bodies an urban microclimate: a review* (2015), Manteghi, bin Limit and Remaz | **8** *Cooling the Cities – A Review of Reflective and Green Roof Mitigation Technologies to Fight Heat Island and Improve Comfort in Urban Environments* (2014), Santamouris. M | **9** *Cool Surfaces and Shade Trees to Reduce Energy Use and Improve Air Quality in Urban Areas* (2001), Akbari, Pomerantz and Taha

#KeepItCool