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Urban environments at the frontline of climate breakdown and health: planning, design, and management

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Twin challenges

Cities are confronting two defining challenges of our century: accelerating climate breakdown and widening health inequities. In 2024 alone, record-setting heatwaves closed schools from Mexico City to Manila, coastal floods displaced thousands across the Horn of Africa, and wildfire smoke blanketed entire North American conurbations. These events have reinforced what urban health scholars have long asserted: climate risk is neither evenly distributed nor merely environmental; it is profoundly social and spatial.

In response, *Cities & Health*, in partnership with the International Society for Urban Health (ISUH), invited scholars and practitioners to explore how planning, design, and governance might protect human well-being on a warming planet while advancing justice. The Call for Contributions, attached here as a [supplementary file](#), was opened at the International Conference on Urban Health in Marrakesh 18-21 November 2024 (Figure 1).

The contributions in this issue stem from that call. They range from empirical studies and conceptual manifestos to methodological frameworks and reflections from practice – they offer diverse perspectives, and yet converge on two urgent messages. First, that climate-health equity must become the central mandate of urban climate adaptation and mitigation. Second, that integrated innovations in design and governance, rooted in local context and guided by robust indicators, can translate this mandate into everyday decision-making.

The equity imperative

A common thread across the diverse methods and geographies represented here is the persistent spatiality of vulnerability. Whether in coastal Ecuador, inner-city London, an informal hillside settlement in Santiago, or a winter-stricken district of Jinan, the studies reveal how well-known axes of disadvantage – age, income,

ethnicity, migration status – amplify exposure to climatic extremes and their impacts on health.

In hot, treeless playgrounds where pavement temperatures exceed 40 degrees Celsius, children's concentration falters and the promise of education diminishes (Krenz and Amann 2025). In minority and low-income neighbourhoods where streets register up to four degrees hotter than the citywide average, a simple walk to work becomes a physiological strain. In homes of older adults who retreat indoors during sudden cold snaps, sleep disruption, low mood, and social isolation quietly accumulate (Chen *et al.* 2025). And for migrant families already facing insecure tenure, floods, fires, and furnace-like afternoons exacerbate both physical ailments and psychological stresses (Watkins *et al.* 2025).

These are not isolated anecdotes. Together, they form a compelling case: interventions must be assessed by their ability to reduce such inequities. The tools to diagnose these disparities already exist; from fine-scale thermal imagery overlaid with census data, to participatory interviews that surface hidden burdens, to mixed methods studies that combine satellite imagery with on-the-ground measurements (Cañizares and Romero-Alvarez 2025). A participatory and grounded production of knowledge in assessing urban environmental health involving citizens can also add value (Dakoure 2025). The ethical challenge now is whether cities will deploy these tools to direct resources where the needs are most acute.

Designing and governing for co-benefits

If the research chronicles imbalance, it also illuminates pathways to redress. In Greater Cairo, investigators show how modest insertions of canopy and water-harvesting infrastructure – ‘urban micro-lungs’ stitched into the tight urban fabric – can cool air, encourage movement and reclaim public space for mental restoration, even where land is scarce and funds are limited (Khalil *et al.* 2025).



Figure 1. Moments from ICUH 2024 in Marrakesh. Activating Urban Health Strategies for a Climate Resilient Tomorrow. From inspiring plenaries to hands-on activities and tours, participants came together to exchange knowledge, explore the city, and reimagine healthier, more sustainable urban futures.

A conceptual journey to a hotter future imagines ‘Noctopia’, a city that re-times daily life to the coolness of night, pairing community-co-designed lighting with late-opening libraries, midnight concerts and vibrant night markets (Schwendinger 2025). Far from escapist speculation, the piece invites planners to consider temporality as an additional layer of climate adaptation, one that preserves sociability while avoiding carbon-intensive mechanical cooling.

Meanwhile, a study of community ‘air centres’ in West Africa points to multifunctional hubs where passive-cooling architecture sits alongside health-education programmes – a reminder that built forms and behavioural support work best in tandem (Apantaku *et al.* 2025). On the policy front, Delhi’s compressed-natural-gas transition – propelled less by technological readiness than by legal activism – demonstrates how judicial authority and coalition-building can puncture entrenched fossil-fuel regimes, rapidly improving air quality and public health (Lakum 2025).

Threaded through these examples is a conviction that climate and health objectives flourish when approached in an integrative manner. Nature-based design earns greater political traction when linked to school performance, mobility or mental wellbeing (Russo *et al.* 2025). Legal action acquires legitimacy when grounded in constitutional rights to clean air. And speculative design gains purchase when translated into pilot projects that residents can touch and critique.

Knowing what matters and how to measure it

Integration, however, demands metrics that are both rigorous and usable. A scoping review in this issue catalogues more than three hundred indicators of healthy, climate-resilient cities, yet warns that the sheer breadth risks overwhelming practitioners. The authors call for validation studies that test which measures reliably predict health outcomes across climatic zones, and for streamlined dashboards that city departments can adopt without prohibitive cost or expertise (Soleimani Roudi *et al.* 2025).

From frontline to forefront

Taken together, the articles recast the notion of ‘frontline’ in two senses. Urban environments undoubtedly sit at the frontline of climate impacts: they concentrate populations, infrastructure and economic value in harm’s way. Yet, as this issue shows, they also stand at the forefront of solutions. When practitioners centre equity, harness integrated design and governance tools, and commit to transparent measurement, cities become laboratories of resilience

whose lessons travel far beyond municipal borders. Equally, solutions endure only when they are co-created with communities – especially those most affected – so legitimacy, cultural fit, and long-term stewardship are built into design, delivery, and evaluation.

Three priorities emerge for researchers and practitioners alike. First, validate and share indicators that balance scientific credibility with everyday applicability. Second, institutionalise participatory co-design so that children, migrants, elders and other often-excluded voices shape adaptation strategies from the outset. Third, embed health-equity checkpoints into transport, housing and economic plans, making inter-sectoral accountability routine rather than exceptional.

The guest editors thank every author and reviewer whose care and critique make this dialogue possible. Several manuscripts remain under assessment; their eventual inclusion will deepen the evidence on cooling centres, participatory assessment and regulatory reform, and any final editorial adjustments will duly acknowledge their insights.

As usual, the *Research for City Practice* article in this Special Issue, contains a short policy and practice briefing for each research article. We call each of these a ‘City Know-how’, they are written by the original research team, many more can be found and searched for on our *City Know-how* website.

The challenge ahead is formidable, but the scholarship assembled here proves it is surmountable. With equity as compass and integration as method, the next, healthier urban era is within reach.

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A few words from our special issue partner

The International Society for Urban Health (ISUH) is the only global nonprofit dedicated exclusively to advancing urban health and equity by addressing the broad determinants of health in cities. Our mission is to achieve a healthier, more equitable urban future for all people, in all communities, worldwide.

ISUH brings together leaders from academia, government, philanthropy, civil society, and the private sector to foster knowledge exchange and collective action. Our flagship convening, the International Conference on Urban Health (ICUH), is the premier global forum for research, practice, and policy dialogue on the health of cities.

We thank the team at *Cities & Health* and the guest editorial team for their dedication and hard work in putting together this superb special issue. We also wish to thank the authors and reviewers, without whom this special issue would not exist.

ICUH 2025 takes place in Wellington, New Zealand, under the theme ‘Weaving Climate Action, Equity, and Wellbeing from the Pacific to the World’. The conference will spotlight urgent challenges such as climate change, healthy ageing, food systems, and health equity, while elevating diverse perspectives from across the Asia-Pacific and beyond.

Through our convenings, networks, and initiatives, ISUH champions innovative, cross-sector solutions to build healthier, more equitable, and resilient cities worldwide. Learn more: www.isuh.org.