Policy brief

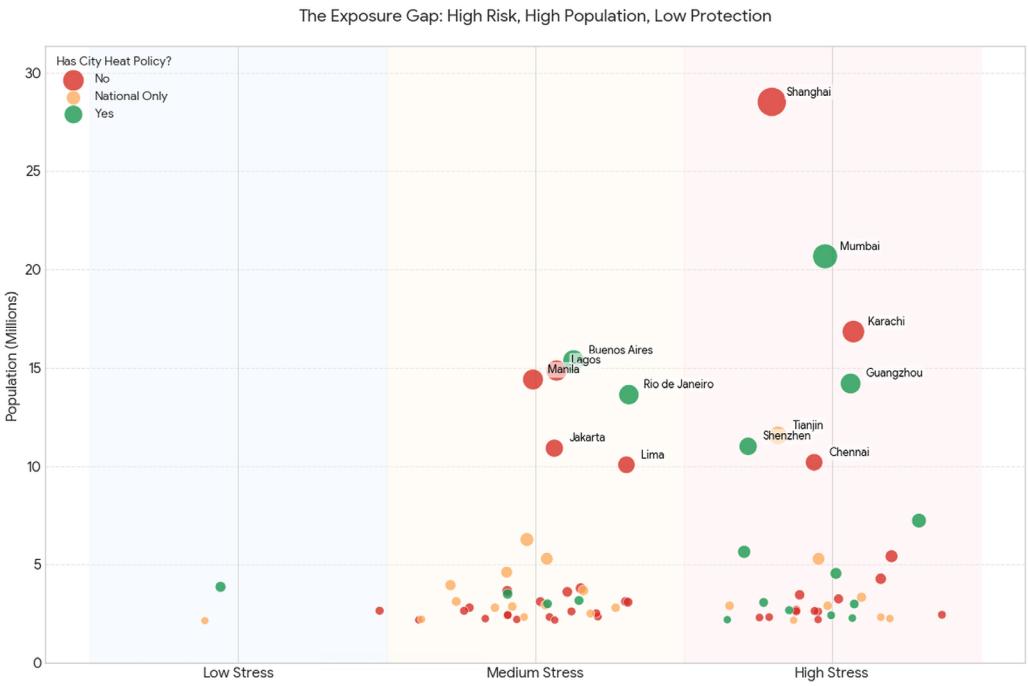
Urban heat governance:
Assessing institutional capacity to manage extreme heat in cities of the Global South

Climate Centre

Approximately 74.4 million people across 18 major cities live in a 'red zone' of extreme heat risk, where there is zero municipal budget to address heat events or heat adaptation policies to protect them.

Extreme heat is increasingly acknowledged as the 'silent killer' of the climate crisis, yet it remains severely under-governed. This briefing highlights key findings from an analysis on heat-related urban governance across 83 cities in the Global South, exposing a significant implementation gap: despite the rapid rise of heat hazards, local governance remains mostly reactive and consistently underfunded. Notably, the study reveals a 'red zone' encompassing 18 major urban centres, housing over 74 million residents, where intense heat stress is met with little to no local policy or financial support. Without decisive intervention, these institutional blind spots will continue to drive avoidable mortality, disrupt essential infrastructure, and deepen urban inequalities in the world's most vulnerable regions.

Figure 1. Chart showing cities' exposure to heat, based on high risk, high population and low protection



Background

The Red Cross Red Crescent Climate Centre partnered with University College London to explore the complexities of heat governance across different urban settings. This briefing builds on the initial findings by analysing urban resilience frameworks for municipal heat governance in the Global South, highlighting gaps and opportunities for city governments, development partners and practitioners aiming to enhance urban climate resilience.

How can urban heat hazards be effectively incorporated into heat governance, and support climate adaptation efforts for municipal governments?

Key findings

The assessment of coastal urban contexts reveals a critical disconnect between the escalating reality of extreme heat and the institutional frameworks needed to cope with it. While climate data shows that heatwaves are becoming more frequent and intense, city-level governance has not kept pace with this acceleration. The following five findings outline structural barriers, ranging from a lack of local mandates to significant funding gaps, that currently prevent cities from protecting their most vulnerable populations.

The research identifies distinct regional patterns in how cities are responding to the heat crisis:

- **South and Southeast Asia:** This region faces the highest concentration of extreme heat stress. While some municipalities have begun to formalize responses, the rapid growth of cities in this region often outpaces the development of local safety protocols, leaving dense urban populations exposed to the dangers of extreme heat. This region also shows the most diversity, containing both highly prepared cities (like those in India with established Heat Action Plans (HAPs)) as well as highly vulnerable ones without policies.
- **Middle East and North Africa:** Cities in this region face some of the highest absolute temperatures. However, governance often focuses on high-level national plans or large-scale technical projects rather than operational city-level actions.
- **Sub-Saharan Africa:** Cities in this region exhibit the lowest levels of city-specific governance, often relying on vague national frameworks rather than actionable city plans. While heat is often recognized as a threat in national documents, local governments frequently lack the data, budgets and mandates required to implement life-saving interventions at the neighbourhood level.
- **Latin America:** Policy shifts are typically a reaction to previous record-breaking heatwaves rather than a proactive measure taken before disaster strikes. Although this region leads in formalizing city-level roles (e.g., Buenos Aires, Argentina has a 'Chief Heat Officer'), there is a gap in policy diffusion beyond these few successful examples.

1. **The implementation gap:** High-risk urban centres lack the institutional frameworks required to manage escalating heat indices.

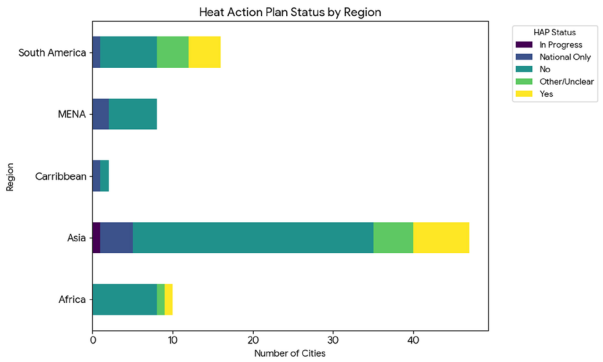


Figure 2. Chart showing HAP status by region.

- There is no dedicated city-level heat policy in 60 per cent of cities.
- Heat is recognized as a risk in 71 per cent of the cities surveyed, yet only a small group of cities (approx. 12 per cent) have either a Heat Urban Policy or a HAP. These include:
  - South America: Buenos Aires (Argentina), Rio de Janeiro (Brazil) and Fortaleza (Brazil).
  - Asia: Guangzhou and Shenzhen (China), and several Indian cities including Surat, Kochi and Bhubaneswar.
  - Africa: Cape Town (South Africa).

While heat stress is a high threat for many cities, governance infrastructure such as plans, budgets and evaluation policies to address extreme heat is missing for the vast majority. Millions of people live in high-stress zones with zero formal policy protection, leaving large populations completely unprotected from the dangers of extreme heat. While capital cities such as Algiers in Algeria and Luanda in Angola demonstrate high-level alignment with national climate frameworks, there is a distinct governance disconnect at the municipal level. Even in areas experiencing extreme temperatures, such as those in the Middle East and North Africa region, there is a lack of city-level heat policies. Many cities depend more on wider climate adaptation strategies, disaster risk reduction plans or national guidelines than on a local HAP. This suggests that, while heat is recognized as a risk, it is often treated as a sub-component of general climate policy rather than a distinct, urgent area of governance. National policies often fail to scale down into localized heat protective policies with operational granularity, such as city-specific cooling protocols or emergency response triggers, necessary for effective urban intervention.

The observed governance void in middle-income cities aligns with established theories of the 'middle-income trap' in public administration, where rapid economic expansion outpaces the development of specialized municipal mandates. As noted in literature from the Organisation for Economic Co-operation and Development and the World Bank, these 'transitional' cities often prioritize capital-intensive infrastructure over the multi-sectoral 'soft' infrastructure required for climate-health resilience, leading to the strategic decoupling of risk and response.

- Many of the cities with risk are the least governed, operating without local policy or a HAP (e.g., **Jeddah (Saudi Arabia), Dammam (Saudi Arabia) and Algiers (Algeria)**). In 30 per cent of the surveyed cities with 'high' heat-stress levels, municipal governance is entirely absent, relying instead on broad national initiatives.
- Preparedness is often reliant on national levels, which may not account for the specific urban micro-climates and heat island effects of individual cities.

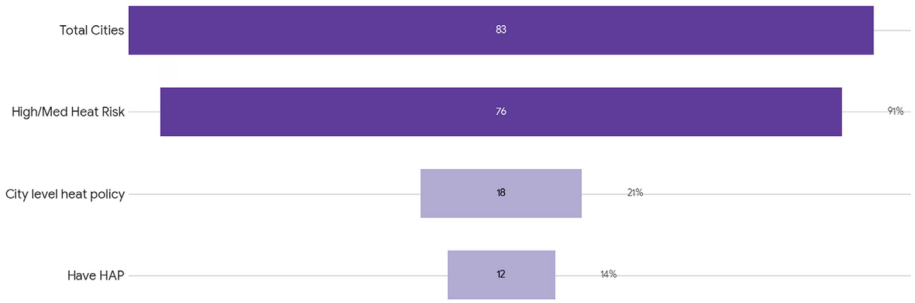


Figure 3. The total number of cities studied, those at medium and high risk, and those with heat policies.

Entry points:

→ Institutionalize multi-stakeholder heat committees to bridge the gap between high-level actions and the 'last mile' of protection, formally connecting municipal health departments with neighbourhood leaders and local clinics. Co-designing plans with these stakeholders ensures that interventions are culturally appropriate and physically accessible to the most vulnerable residents.

→ Provide targeted governance support to 'red zone' cities by prioritizing technical assistance for high-risk areas. Support them to transition from a 'zero policy' status to 'operational readiness', such as by institutionalizing basic HAPs.

2. **Governance blind spots:** Data invisibility and siloed mechanisms obscure the true scale of heat-related impacts.

The analysis reveals a trend in middle-income cities, in which these cities exhibit high exposure but low governance (zero localized budget or municipal mandates to address heat). The presence of high-growth, high-risk cities with near-zero heat governance represents a systemic threat to regional urban stability.

Fewer than 15 per cent of cities involve non-governmental stakeholders in the design of their HAPs. Cities with the most extreme recent heat histories (e.g., Luanda (Angola) with a 110 per cent increase in heat days) are often those with the lowest stakeholder engagement, leaving the most impacted citizens out of the solution-design process. By treating heat as a narrow meteorological or engineering problem rather than a social-health crisis, municipal governments create siloed responses. This top-down approach misses the opportunity to leverage the existing social capital of community-based organizations, which are essential for translating technical early warning messages into culturally appropriate, actionable community advice.

CASES STUDIES:

Kochi, India: stands out as a 'leader' because it specifically integrates the Kerala State Disaster Management Authority and local stakeholders. This inter-departmental coordination is a strength of Kochi's functional HAP.

Dammam and Jeddah, Saudi Arabia: these cities adopt a technological approach to tackling heat. Although they have access to national funding (e.g., 60 million US dollars through the Saudi Green Initiative) data shows they lack city-level policy. Their stakeholder participation focuses on commissions for international urban development firms. While this represents a long-term adaptation effort, both cities remain in the red zone because they lack HAPs, social protection policies or health-integrated strategies. As a result, they remain highly vulnerable to immediate heat shocks.

A key challenge in urban heat management is the information gap between global climate forecasts and localized public health issues. Although satellite data can accurately identify urban heat islands, city governments often lack data on how these heat patterns affect people's health. This disconnect creates a cycle where the true health impacts of heat are hidden, because the inability to measure heat-related illnesses and deaths makes the danger seem 'invisible' to planners and decision-makers.

In cities like Chittagong (Bangladesh) or Luanda (Angola), this lack of causal evidence prevents heat from being classified as a 'disaster' in the same way as a flood or cyclone. As a result, it fails to trigger the emergency funding or statutory mandates necessary for a localized HAP.

Without a cross-departmental evidence base, cities cannot trigger the multi-sector responses such as coordinated energy-load management, emergency health alerts and targeted social protections, which are essential to address the cascading effects of a heat event.

Entry points:

→ Current policy dialogues often treat disaster response and climate adaptation as separate siloes. Integrating climate and humanitarian agendas could enable cities to leverage humanitarian expertise for rapid response while using climate data for long-term planning.

- Establish a unified heat information system that integrates meteorological, public health and urban planning data.
- Co-develop heat–health early warning systems linking forecasts to health thresholds.
- Formally connect municipal health departments with neighbourhood leaders and local clinics, to leverage existing social capital to ensure that early warning systems and cooling infrastructure reach the most vulnerable 'last mile' populations.
- Support low-cost weather stations in under-monitored areas.
- Build technical capacity of municipal staff to analyse climate data, issue alerts and design local thresholds.

3. **Crisis-driven response:** Reactive governance mechanisms are triggered by disaster events rather than proactive risk modelling.

The research shows a recurring pattern where major heat governance milestones, like those in Buenos Aires, Argentina (2022–2023) or Baku, Azerbaijan (2018), are often preceded by record-breaking heat events and high death rates. This indicates that heat governance operates under a 'disaster management' model rather than a 'climate resilience' framework. While crisis management emphasizes short-term survival during an event, true resilience requires establishing policies before the hazard reaches its peak. For humanitarian actors, this reactive model represents an opportunity for Early Warning Early Action integration. This reactive stance is especially risky in low-income urban contexts where structural inequalities mean that by the time a 'record-breaking' event prompts policy change, the most vulnerable populations have already faced irreversible economic and physical damage.

CASES STUDIES:

Baku (Azerbaijan) exemplifies how climate velocity surpasses policy measures. The increase from 86 days over 35°C (1960–1990) to 365 days over 35°C (1991–2020) signifies a 300 per cent rise in hazard frequency. The governance response was only formalized after the 2018 heatwave record led to three-day power outages from the heat-induced grid collapse at the Mingachevir plant. This demonstrates how governance often reacts late and lags behind climate change impacts. The 2018 national blackout in Azerbaijan served as a definitive policy trigger, shifting the state's approach to extreme heat to a focus on infrastructure security.

Algiers (Algeria) experienced major heatwaves in 2005 and 2022, while **Chittagong (Bangladesh)** faced severe heatwaves in 2023 and 2024. These examples show how rapid urbanization in the Global South often outpaces the development of climate-responsive governance, despite rising heat stress levels.

Entry points:

- Shift from event-based budgeting to risk-based planning: moving away from funding heat measures only in response to 'system shock' events. This involves shifting from an event-based approach to proactive, resilience-focused frameworks. For example, establishing Anticipatory Action frameworks that activate funding and operational protocols based on forecast thresholds (e.g., a predicted five-day heatwave).
- Strengthen heat literacy through education campaigns and behavioural adaptation training.
- Embed community participation in local governance.

4. **An evaluation deficit:** A systemic failure to monitor impact hinders the evidence-based expansion of successful heat interventions.

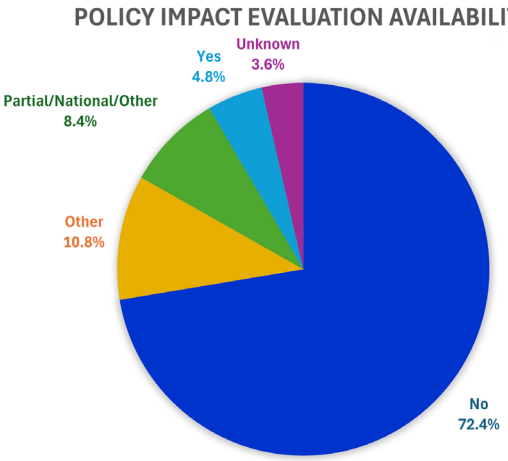


Figure 4. Percentage of cities with available policy impact evaluations.

Only four out of 83 cities (less than 5 per cent) have any record of a policy impact evaluation. This indicates that even where policies are in place, there is little data on their effectiveness in saving lives or reducing heat-related illnesses. There is almost no accountability or impact monitoring in urban heat governance. Without evaluation metrics, municipal governments are 'governing in the dark', unable to demonstrate the return on investment of heat interventions or determine which strategies effectively reduce morbidity and mortality.

- Of the 12 cities that have a HAP, only three evaluate its impact. Half of cities with a HAP (six out of 12) state they do not evaluate their policy, leading to a lack of accountability.

Entry points:

- → Evaluation and monitoring as a statutory requirement within any city-level HAP
- → Standardize success; developing indicators such as 'heat-related morbidity per 100,000 people'.
- → Foster local research on health and economic impacts.

5. **A resource constraint:** The lack of ring-fenced budgets leaves high-risk cities operationally exposed.

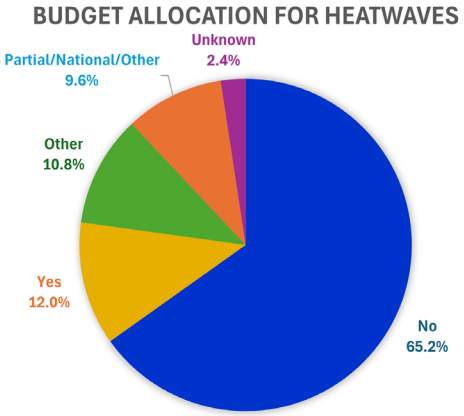


Figure 5. Percentage of the cities studied with budget allocation for heatwaves.

Heat adaptation receives less than 1 per cent of urban climate finance, while city-level projects lack credit access and multilateral development banks prioritize national governments.

- There is no dedicated heat funding in 88 per cent of cities (only ten cities, approximately 12 per cent, have a dedicated budget allocation for heatwaves). Almost all cities without a budget also lack a HAP.
- Bigger cities tend to be more prepared:
  - megacities (>10 million population): Approximately 38.5 per cent have a city-level policy.
  - smaller cities (1–5 million population): Only 17.2 per cent have a city-level policy.
- The highest-risk cities are the least likely to have budgets for heat adaptation. In high-stress cities, 83 per cent lack a budget allocated for heat.

Larger cities are likely to have more resources and visibility, leading to better institutionalization of heat response strategies. Findings emphasize that the scale of financial investment does not match the severity of the public health risk. Climate adaptation is often decentralized to cities without the necessary budget.

Entry points:

- → Ring-fenced municipal budgets: Establishing dedicated, year-round budget lines for heat–health operations to ensure that emergency protocols are pre-funded before the hot season begins.
- → Climate-health fiscal transfers: Developing national-to-local grant mechanisms specifically tied to the implementation of HAPs.
- → Pilot public–private funding models for sustainability.

Methodology

Coastal cities were selected due to their multiple climate threats. Rising sea levels, storm surges and frequent flooding intersect with extreme heat, forming complex multi-hazard scenarios that heighten urban vulnerability and complicate resilience efforts (Hallegatte et al., 2013; Nicholls *et al.,* 2021). Consequently, coastal populations are at greater risk of heat-related illnesses and fatalities, even at lower temperatures, compared to inland cities with drier climates (Raymond, Matthews & Horton, 2020).

A comprehensive literature review analysed academic and grey literature across urban heat governance, disaster response and institutional financing. Followed by the development of a city assessment framework to evaluate 83 coastal cities with populations exceeding one million people. Within this framework, heat risk was calculated as the product of hazard likelihood (derived from the World Bank's ThinkHazard! tool) (GFDRR, n.d.) and the institutional adaptive capacity. This capacity was further disaggregated across five core thematic areas to identify specific governance gaps:

1. **Governance and planning:** Heat action plans, urban heat policies and policy evaluation
2. **Early warning systems:** Heat monitoring and forecasting, and public alert system
3. **Health system preparedness:** Facility readiness, monitoring and data systems
4. **Infrastructure resilience:** Blue-green infrastructure, cooling centres/public spaces, heat-responsive building design, heat-adaptive public services.
5. **Community preparedness and social support:** Public awareness and education, community-led initiatives

Note: For each sub-category, specific criteria were set to rate the city as *high, medium* or *low*. All cities were assessed using this capacity-heat stress matrix, which produced a composite score for each. The five cities selected for in-depth analysis were chosen on the basis of having a range of capacity and risk levels. Case studies involved desk-based research and semi-structured interviews.

Acknowledgements

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