RESILIENT CITIES NETWORK | TheConduit

The Solutions Map

How Cities Are Building Resilience

45+ CITIES **100+** PRACTITIONERS

THE SOLUTIONS MAP

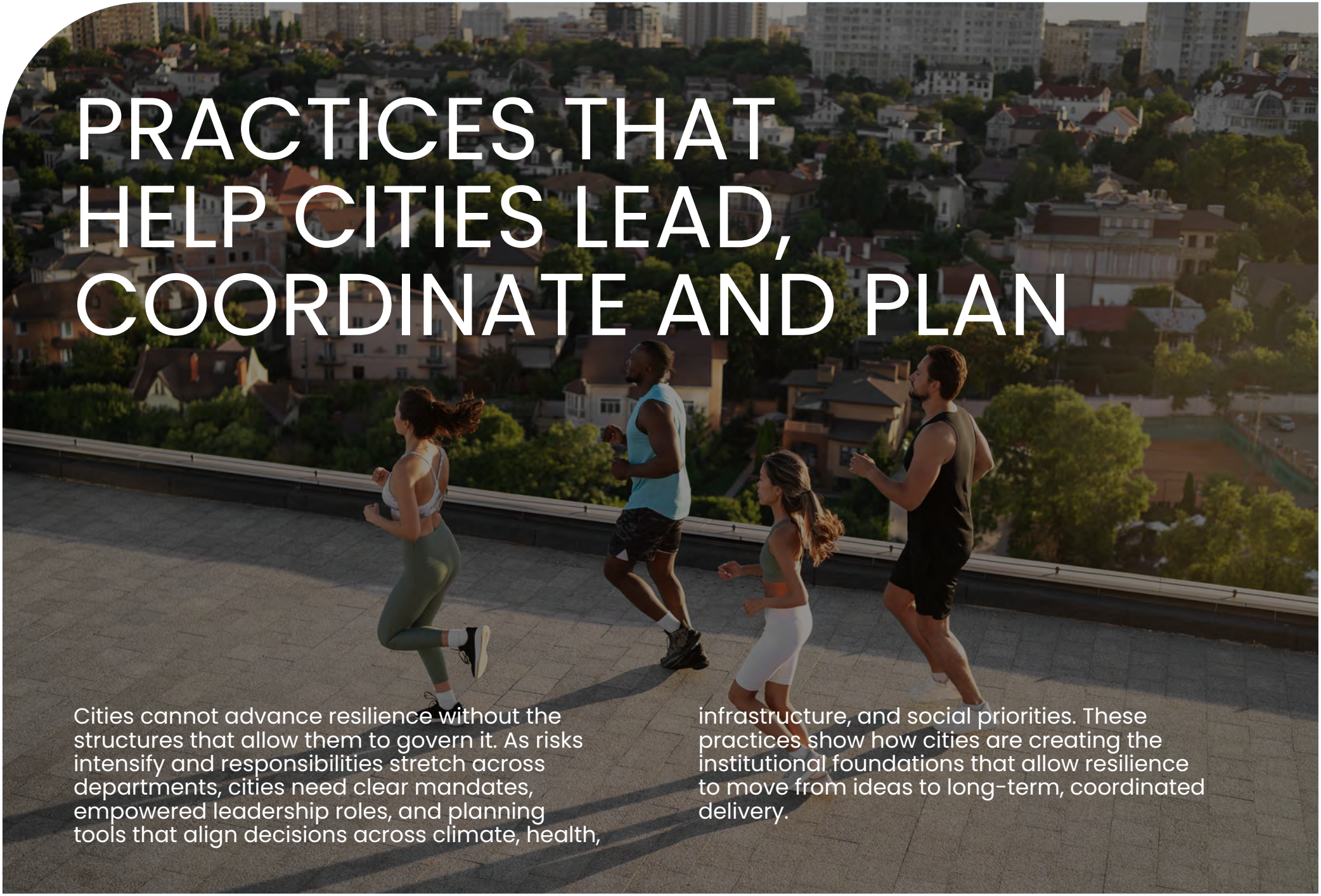
To scale resilience, we cities need clarity on what is already working. Yet the solutions developed across regions — from governance and planning approaches to finance mechanisms, neighbourhood programs, health systems, digital tools, and community-led initiatives — **often sit in separate projects and sectors, making it difficult to see the full practice of urban resilience in one place.**

At the Resilient Cities Forum convened at The Conduit, we brought together the collective intelligence of Chief Resilience Officers, city teams, civil society partners, researchers and technical experts to understand what resilience looks like in practice today. **This shared map reflects how solutions are being delivered on the ground — protecting communities, strengthening systems and helping cities prepare for rising climate, health and social and economic pressures.**

Built from more than a hundred practitioner inputs, the Solutions Map offers a clearer picture of the daily work that makes resilience real.

The Solutions Map reflects the capabilities cities draw on every day — the leadership that aligns systems, the planning that guides long-term choices, the data that informs action, the community solutions that protect people, the finance that unlocks delivery, the skills that keep institutions strong, and the collaboration that accelerates learning.

The **27** **practices** that follow show how they translate into real action on the ground and how cities everywhere are already putting them to work.



PRACTICES THAT HELP CITIES LEAD, COORDINATE AND PLAN

Cities cannot advance resilience without the structures that allow them to govern it. As risks intensify and responsibilities stretch across departments, cities need clear mandates, empowered leadership roles, and planning tools that align decisions across climate, health, infrastructure, and social priorities. These practices show how cities are creating the institutional foundations that allow resilience to move from ideas to long-term, coordinated delivery.

GOVERNANCE PRACTICES

INSTITUTIONAL LEADERSHIP ROLES FOR URBAN RESILIENCE

City Leaders are appointing Chief Resilience Officers and Chief Heat Officers to coordinate across departments and turn priorities into delivery. More than 90 cities from Milan to Mexico City and Melaka to Sydney have institutionilized these roles to ensure continuity. Partners like C40 Cities are also supporting cities to strengthen climate resilience governance through mayoral accelerators. Together, these leaders and partners are breaking silos and driving long-term systemic change.

RESILIENCE GOVERNANCE STRUCTURES

Cities are creating councils, directorates, and interagency committees to align climate, infrastructure, social policy, and emergency management. San Francisco integrates resilience into capital planning; Cape Town links climate action with investment and business continuity; Sydney coordinates across multiple local governments; and Penang and Ramallah formalised cross-level committees. These structures ensure coherence, accountability, and continuity.

PLANNING PRACTICES

HOLISTIC RESILIENCE PLANNING FRAMEWORKS

Cities and regions are using holistic urban resilience frameworks to understand interconnected risks and guide long-term decision-making. London, Monterrey, Rotterdam and Semarang among others, show how cross-sector planning embeds climate, health, infrastructure and social priorities into development pathways. These Urban Resilience Strategies ensure resilience becomes a foundation for urban development.

MULTI-SCALE RESILIENCE PLANS

Cities are aligning local, metropolitan, and regional priorities through coordinated planning processes. Penang and Guadalajara demonstrate how multi-scale approaches allow cities to tackle risks that transcend administrative boundaries, particularly around mobility, flooding, and growth. These plans strengthen coherence across jurisdictions.

INTEGRATED SECTORAL RESILIENCE STRATEGIES

Cities are developing targeted resilience strategies for sectors such as heat, water, energy, and health. Melbourne's HeatSafe strategy, Montreal's health-focused initiatives, and Chicago's sectoral plans show how cities coordinate multiple agencies around specific risks. These plans move resilience from principles to actionable interventions.

PRACTICES THAT HELP CITIES UNDERSTAND RISKS AND MAKE DECISIONS

Cities are facing risks that are faster, deeper, and more interconnected than their existing systems were designed for. To act confidently, they need better data, clearer insights, and tools that capture how hazards intersect with lived experience. These practices highlight how cities are strengthening their analytical capacity — integrating data, modelling future scenarios, and coordinating operations — so decisions are timely, targeted, and informed by both evidence and community reality.

DATA & RISK MANAGEMENT PRACTICES

URBAN RESILIENCE DATA PLATFORMS

Cities are developing platforms that integrate climate, infrastructure, social, and health data to support real-time and long-term decision-making. Mexico City, Monterrey and Sydney's data platforms help governments target interventions, monitor risk, and improve transparency. This creates a shared evidence base across agencies.

OPERATIONS & COORDINATION CENTERS

Cities are establishing real-time monitoring and response centres to coordinate across agencies during shocks. Rio's operations centre, Singapore's integrated command systems, and Barcelona's city monitoring units help governments anticipate disruptions and respond faster. These centres strengthen preparedness and improve service continuity.

COMMUNITY RISK & PERCEPTION ASSESSMENT TOOLS

Cities are combining climate data with community insights to understand how people experience risks. Houston, Boston, Greater Manchester, Melaka, Milan, Calgary and others use tools to map perceptions, identify gaps, and shape responses. These approaches make resilience more people-centred and equitable.

DECISION-SUPPORT & MODELLING TOOLS

Cities are using modelling tools to test scenarios and guide investments. Singapore uses heat modelling to shape design choices; Rio, Broward County and Athens use flood models to prioritise infrastructure; London and New Orleans use resilience modelling to compare adaptation pathways. These tools help cities make informed decisions under uncertainty.

EXTREME SCENARIO SIMULATION EXERCISES

Cities are running large-scale stress-tests to examine system vulnerabilities and improve coordination. Paris' 50ºC heat simulation and London's Helios exercise reveal where systems may fail and how to strengthen them before crises occur. These exercises turn foresight into preparedness.

PRACTICES THAT PROTECT PEOPLE AND STRENGTHEN COMMUNITIES

Resilience is ultimately lived at the neighbourhood scale, where people experience heat, flooding, insecurity, and unequal access to services most directly. Cities are redesigning spaces, investing in community infrastructure, and restoring ecosystems to make daily life safer, healthier and more stable. These practices show how place-based and community-centred approaches reduce risks, support wellbeing, and ensure that resilience delivers visible benefits where they matter most.

PLACE-BASED RESILIENCE PRACTICES

INTEGRATED NEIGHBORHOOD RESILIENCE PROGRAMS

Cities are investing in long-term neighbourhood initiatives that combine social, economic, spatial, and climate interventions. Rotterdam's Bospolder–Tussendijken program shows how coordinated action across housing, public space, safety, and economic development can transform local resilience. This model strengthens equity and community wellbeing.

CLIMATE-RESILIENT COMMUNITY SPACES

Cities are redesigning schoolyards, streets, and public spaces to reduce heat and improve comfort. Singapore's Cambridge Road project, OASIS schoolyards in Paris, Quezon City, Semarang and Milan, and Chennai's Urban Farming Initiative demonstrate how cities are creating cooler, safer, more inclusive spaces. These interventions deliver immediate community benefits.

ECOLOGICAL RESTORATION PROJECTS

Cities are restoring waterways, forests, wetlands, and degraded lands to improve flood protection, biodiversity and urban cooling. Cape Town's Living Urban Waterways program and Quito's post-fire reforestation show how ecological systems strengthen resilience. Nature is becoming core urban infrastructure.

FLOOD & COASTAL RESILIENCE SYSTEMS

Cities are integrating engineering, digital tools and nature-based solutions to manage flood and coastal risks. Vejle's Membrane concept, Norfolk's coastal system, and Glasgow's Smart Canal demonstrate how cities can anticipate storms and manage water dynamically. These systems protect people and enable sustainable development.

COMMUNITY RESILIENCE HUBS

Cities are creating trusted, multi-purpose facilities that offer cooling, clean air, services, and emergency support. Oakland, Houston and Vancouver are expanding hubs to support vulnerable populations before, during and after extreme events. Hubs strengthen local networks and provide life-saving resources.

HEALTH & WELLBEING PRACTICES

HEALTH RISK INFORMATION SYSTEMS

Cities are integrating climate, environmental and health data to anticipate risks and strengthen response. Semarang's LINCAH platform and Seoul's hospital-linked air quality and heat alerts show how cities can target support and prepare systems ahead of extreme conditions. This protects those most at risk.

HEALTH RISK COMMUNICATION & PREPAREDNESS

Cities are improving how they communicate and coordinate during heat and health emergencies. Project Heatwave in the UK, Rio de Janeiro's heat protocol, and Montreal's method for identifying vulnerable residents show how targeted communication and preparedness save lives. These programs make alerts more trusted and effective.

HEALTH-FOCUSED URBAN GREENING

Cities are using greening to reduce heat and improve public health. Delhi's shaded corridors, Addis Ababa's Green Legacy initiative, and Cali's urban forest network demonstrate how nature can cool cities and improve wellbeing. These projects deliver environmental and health benefits simultaneously.

AGE- AND CHILD-FRIENDLY PLANNING

Cities are designing resilience solutions that reflect the needs of older adults, children, and youth. Penang's age-friendly initiatives, Addis Ababa's early childhood centres, and child-friendly design in Belfast and Budapest show how inclusive planning reduces vulnerability and strengthens community resilience. These approaches make resilience equitable.

PRACTICES THAT HELP CITIES SECURE AND MOBILIZE FINANCE

Even with strong plans and proven solutions, many cities remain constrained by limited fiscal space, fragmented funding sources and inadequate risk-sharing mechanisms. To scale resilience, cities must be able to align budgets with priorities, build internal financial capability, and access instruments that protect communities from shocks. These practices illustrate how cities are improving financial governance, expanding pathways to capital, and using innovative tools to safeguard vulnerable populations.

FINANCE & INVESTMENT PRACTICES

RESILIENCE INVESTMENT PLANNING & COORDINATION

Cities are aligning budgeting, capital planning, and resilience priorities through structured processes. New York City's resilience finance task force, Cape Town's portfolio approach and Broward County and Lagos' work on the cost of inaction and the benefits of resilience investment, show how cities are creating clearer cases for funding resilience.

RESILIENCE FINANCE CAPACITY PROGRAMS

Cities are building skills in climate finance, risk assessment, and investment planning. Greater Manchester's experience through R-Cities Global Risk and Resilience Fellowship demonstrates how pairing city teams with external experts strengthens financial capability and accelerates project development. Across Africa, in cities like Accra, Addis Ababa and Cape Town, C40 Cities is reinforcing this work by supporting city chief financial officers through peer learning and investment matchmaking. Together, these innitiatives build the internal capacity cities need to unlock funding.

RISK-TRANSFER & INSURANCE MECHANISMS

Cities are using parametric insurance and risk-pooling models to enable rapid response after disasters. Miami's flood policy and Oakland's wildfire parcel tax show how financial instruments can protect vulnerable communities and stabilise municipal budgets. These mechanisms reduce shocks and speed recovery.

COMMUNITY-LEVEL MICRO-INSURANCE

Cities are piloting micro-insurance schemes that protect informal workers and vulnerable households from climate impacts. Ahmedabad's heat insurance program provides rapid payouts to women unable to work during extreme heat, supporting health and income stability. These tools help communities manage growing climate risks.

PRACTICES THAT HELP CITIES LEARN AND GROW TOGETHER

The pace and complexity of today's challenges require cities to learn quickly — from each other, from experts, and from their own experiences. As resilience becomes a core discipline, city institutions need continuous training, structured learning pathways, and strong peer networks that accelerate adoption of what works. These practices show how cities are building the skills, collaboration platforms, and shared knowledge systems needed to drive resilience forward across regions.

LEARNING & COLLABORATION PRACTICES

CITY-LED LEARNING PROGRAMS

Cities are designing internal academies and training programs to strengthen resilience skills across government. Broward County's Water and Climate Academy and Cape Town's learning initiatives show how cities build shared understanding and capability across agencies. These programs institutionalise resilience knowledge.

EXECUTIVE EDUCATION & SPECIALIST TRAINING

Cities are investing in advanced training for resilience leadership. Through programs such as the online Learning Hubs, sector-specific resilience trainings, and executive education from global universities, city leaders are developing the skills needed to manage complex risks. These programs deepen expertise and strengthen decision-making.

PEER LEARNING NETWORKS

Cities are joining thematic and regional networks to exchange practical experience and accelerate adoption of successful solutions. R-Cities Climate, Health & Equity Community of Practice, C40's Cool Cities, Urban Flooding and Water Safe Cities Networks, and its Urban Nature Accelerator, along with similar cross-regional coalitions, help cities learn quickly from one another, and other similar cross-regional networks allow cities to learn quickly from one another. Peer learning helps cities leapfrog barriers and scale proven ideas.

CITY RESILIENCE COALITIONS FOR COLLECTIVE ACTION

Cities are building coalitions with businesses, researchers, communities and civil society to align action around shared goals. Montréal's climate coalition shows how cities convene diverse actors locally, while global efforts like Beat the Heat and multilevel partnerships such as CHAMP, the FloodAction Coalition and the European Resilience Partnership help align priorities across governments and regions. Together, these alliances amplify impact and build momentum for systemic change.

GOVERNANCE

ANNEXES

GOVERNANCE

INSTITUTIONAL LEADERSHIP ROLES FOR URBAN RESILIENCE

Cities are creating dedicated leadership roles that coordinate across departments, champion resilience priorities and ensure integrated action on climate, risk and community wellbeing.

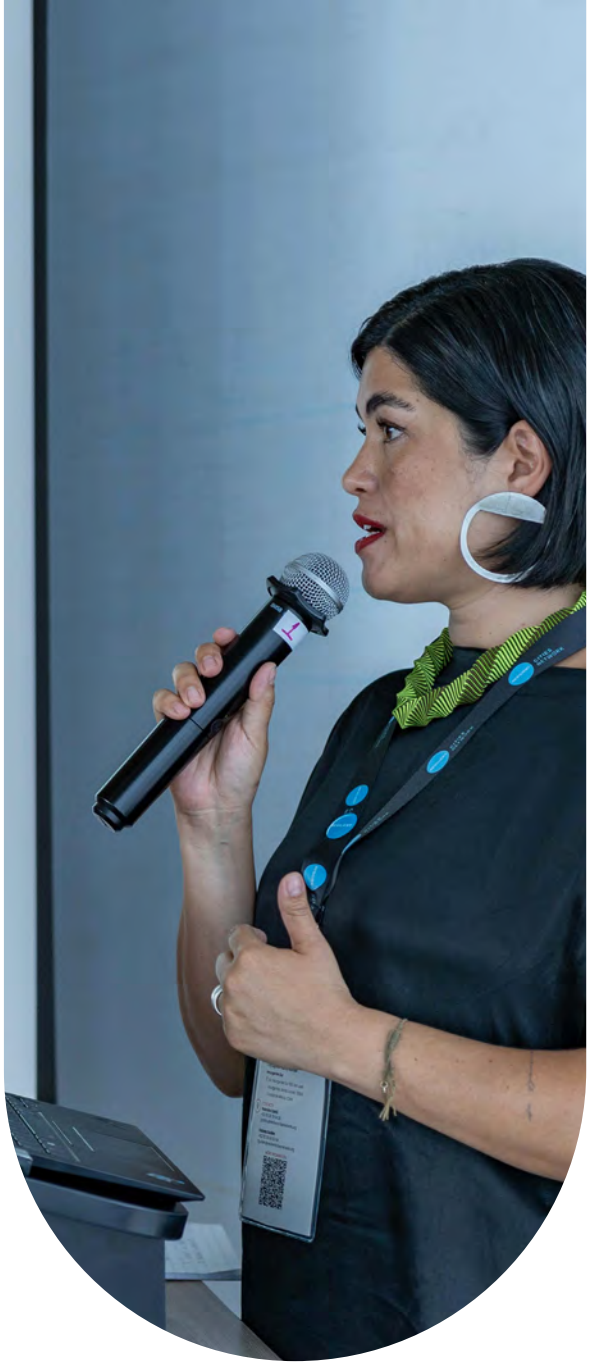
FEATURED CITIES:

Milan | Penang | Oakland | Cape Town | Sydney | Athens | Santiago | Melbourne | Mumbai | Rio | Lagos | Metropolitan Guadalajara

Across more than 90 cities worldwide, dedicated resilience leadership roles have become one of the most influential governance innovations in modern urban practice.

- Cities from **Milan to Metropolitan Guadalajara, Penang to Oakland, Cape Town** to **Sydney** have institutionalized Chief Resilience Officers who sit at the intersection of planning, infrastructure, social policy, finance and emergency management. These roles give cities a clear focal point for coordinating across departments and driving long-term strategic resilience priorities.
- In recent years, cities have expanded this leadership model to address emerging climate pressures. **Athens, Santiago, Cape Town and Melbourne** have appointed Chief Heat Officers to accelerate heat adaptation across planning, health, and social sectors.
- At the same time, Global partners such as C40 Cities are also supporting cities like **Mumbai**, **Rio** and **Lagos** to fast-track climate and resilience governance through mayoral accelerators, climate budgeting and cross-departmental coordination.

Taken together, these roles represent a global shift toward empowered, cross-sectoral leadership embedded inside government. They enable cities to align policies, mobilize partnerships and maintain continuity across political cycles.



GOVERNANCE

RESILIENCE GOVERNANCE STRUCTURES

Cities are developing structures and mechanisms—such as resilience offices, cross-departmental committees, and embedded resilience units within core departments —that institutionalize resilience and align city operations around shared priorities.

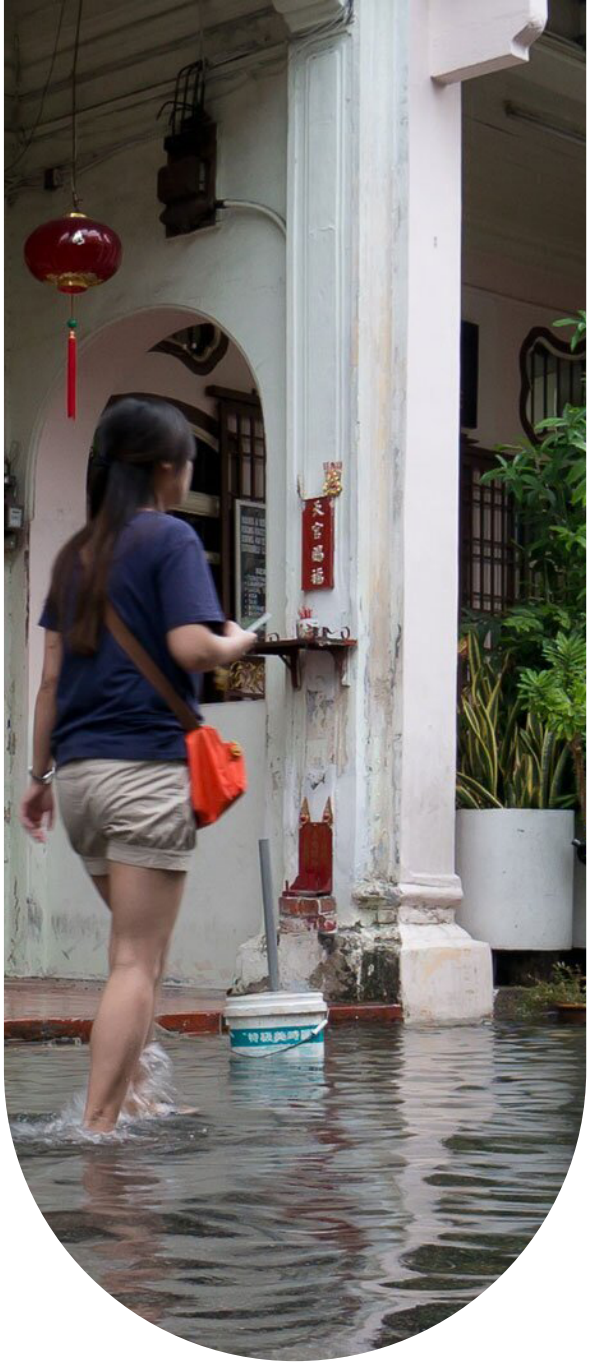
FEATURED CITIES:

San Francisco | Montevideo | Cape Town | Penang | Sydney | Ramallah | Mexico City

Cities are building formal governance structures to embed resilience into everyday decision-making.

- **San Francisco** placed its Resilience Office inside the Capital Planning Office, ensuring that resilience directly shapes long-term infrastructure investment.
- **Montevideo**'s Integrated Risk Governance Framework aligns planning, communication, and emergency management across departments and political cycles.
- **Cape Town** created a dedicated Directorate for Future Planning and Resilience that connects climate action, investment planning, risk management, policy, strategy co-ordination and business continuity under one strategic agenda.
- Across the **Penang State**, resilience has been institutionalized through the appointment of Chief Resilience Officers at both the state level and within local authorities — creating a coordinated, multi-tiered governance structure for resilience delivery.
- At the metropolitan scale, **Sydney** coordinates resilience outcomes across multiple councils through a cross-portfolio governance mechanism, while cities such as **Ramallah** and **Mexico City** have established resilience councils and cross-government committees to anchor responsibilities in permanent institutions.

Together, these models demonstrate how cities are formalizing mandates, decision pathways, and coordination mechanisms that drive coherence, accountability, and long-term resilience outcomes.



PLANNING TOOLS

ANNEXES

PLANNING TOOLS

HOLISTIC RESILIENCE PLANNING FRAMEWORKS

Cities are building frameworks that guide them in the assessment of risks, help set priorities, and integrate resilience across policies, plans, and investments through a comprehensive, systems-based approach.

FEATURED CITIES:

Monterrey | Vejle | Addis | Sydney

Cities and regions are using integrated planning frameworks to understand how risks interact across systems and to shape coherent resilience strategies.

- In cities such as **Monterrey, Vejle, Addis Ababa** and **Sydney**, the City Resilience Framework has helped map physical, social, economic and institutional vulnerabilities together, allowing governments to move beyond sectoral plans and define a shared resilience agenda that aligns departments, partners, and investments.
- Across regions like Gelderland in the Netherlands, Castilla y León in Spain and Ithaki in Greece, the Regional Resilience Journey framework provides a structured process for developing climate resilience strategies that apply systemic analysis, just transition principles and coherent portfolios of adaptation actions.

These frameworks give cities a common language, a structured way to prioritize risks and opportunities, and a basis for tracking progress over time—turning resilience from an abstract concept into a practical planning backbone.

PLANNING TOOLS

MULTI-SCALE URBAN RESILIENCE PLANS

Cities are putting together plans and strategies developed at the metropolitan or regional scale that align multiple jurisdictions, coordinate investments and strengthen system-wide resilience across interconnected cities and communities.

FEATURED CITIES:

Guadalajara | Santa Fe

Cities are increasingly developing resilience plans that operate across jurisdictional boundaries, aligning municipal action with metropolitan and regional priorities.

- In the **Metropolitan Area of Guadalajara**, a multi-scale resilience strategy brings together multiple local authorities to jointly address shared risks such as flooding, mobility disruptions and watershed degradation.
- Similarly, in **Santa Fe**, the city has worked with provincial and basin-level institutions to integrate resilience goals across different tiers of government and align investments in water management, housing and social resilience.

These multi-scale plans help cities confront system-wide risks—like climate-related flooding, drought, or infrastructure failure—that no single jurisdiction can manage alone. By synchronizing assessments, governance structures, and investment pathways across municipal, metropolitan and regional levels, cities are creating coherent, cross-boundary strategies that reflect how risks and systems actually function in the real world.

PLANNING TOOLS

INTEGRATED SECTORAL RESILIENCE STRATEGIES

Cities are building strategies focused on specific sectors—such as water, heat, energy, or mobility—that apply an integrated, cross-stakeholder approach to manage risks, align priorities and strengthen resilience within critical urban systems.

FEATURED CITIES:

Melbourne | Montreal | Ahmedabad | Santiago | Chicago

Cities are increasingly developing sector-specific strategies to address the risks that require deep cross-sectoral coordination.

- In **Melbourne**, the Heat Safe City initiative demonstrates how extreme heat—one of the most lethal and rapidly escalating climate risks—demands integrated action across public health, planning, infrastructure, emergency management and social services.
- **Montreal**'s Heat Action Plan applies a similar approach, aligning health authorities, urban planners and community partners to identify vulnerable populations, tailor local interventions and protect residents during extreme heat events.
- Other cities, such as **Ahmedabad** and **Santiago**, have developed comprehensive Heat Resilience Plans that combine data, early warning systems, cooling infrastructure and targeted outreach.
- At a broader scale, **Chicago**'s 2050 Climate Action Plan shows how sectoral strategies can guide long-term transformations in energy, buildings, mobility and public health.

Together, these examples illustrate how sector-focused resilience strategies help cities coordinate across departments, align investments and apply resilience thinking to address risks—such as extreme heat—that no single agency can manage alone.

DATA AND RISK MANAGMENT

ANNEXES

DATA AND RISK MANAGMENT

URBAN RESILIENCE DATA PLATFORMS

Cities are building robust platforms that consolidate and visualize urban risk, climate, and resilience data to support informed decision-making, improve coordination across departments, and make risk information accessible to communities and partners.

FEATURED CITIES:

Guadalajara Metropolitan Area, | Mexico City | Cape Town | Sydney

Cities are developing integrated data platforms to bring together the information needed for risk assessment, strategic planning and coordinated action.

- In the **Guadalajara Metropolitan Area**, the Metropolitan Zoom platform enables municipal leaders to visualise climate hazards, social vulnerabilities and infrastructure conditions across the metro region — creating a shared evidence base for metropolitan-scale governance.
- **Mexico City**'s Risk Atlas provides granular, spatialised information on urban hazards and exposure, supporting agencies in prioritising risk reduction and resilience investment.
- **Cape Town** uses various dashboards on social, economic, health indicators, water use and safety incidents, to track resilience-related indicators, which enables the integration of risk, systems and service-delivery data across departments, strengthening cross-government situational awareness and responses.
- In **Sydney**, the Resilient Sydney Platform functions as an online data portal that visualises city-scale environmental footprints, enabling councils across the metropolitan area to incorporate climate and resilience considerations directly into strategic planning.

Together, these platforms show how cities are building shared, integrated data systems that improve decision-making, support collaboration and strengthen long-term resilience outcomes.

DATA AND RISK MANAGMENT

CITY OPERATIONS & COORDINATION CENTERS

Cities are establishing centers that integrate data, operations and interagency coordination to support real-time decision-making, manage shocks and strengthen a city's ability to respond and adapt under pressure.

FEATURED CITIES:

Rio de Janeiro

Cities are strengthening their ability to anticipate, coordinate and respond to shocks by building integrated operations and coordination centers.

- In **Rio de Janeiro**, the city's center of operations (COR) brings together agencies responsible for transport, utilities, emergency management and public safety, enabling real-time monitoring and coordinated action during floods, heatwaves, landslides and large public events. The center functions as a shared decision-making hub where risk information, alerts and interagency operations are managed collectively.

These centers allow cities to link early warning with real-time response, break down operational silos, and ensure that critical services work together during both everyday incidents and extreme events.

DATA AND RISK MANAGMENT

DECISION-SUPPORT & SCENARIO MODELLING TOOLS

Cities are relying on tools that model climate and hazard scenarios, simulate impacts and support evidence-based decision-making by comparing resilience options at neighborhood and citywide scales.

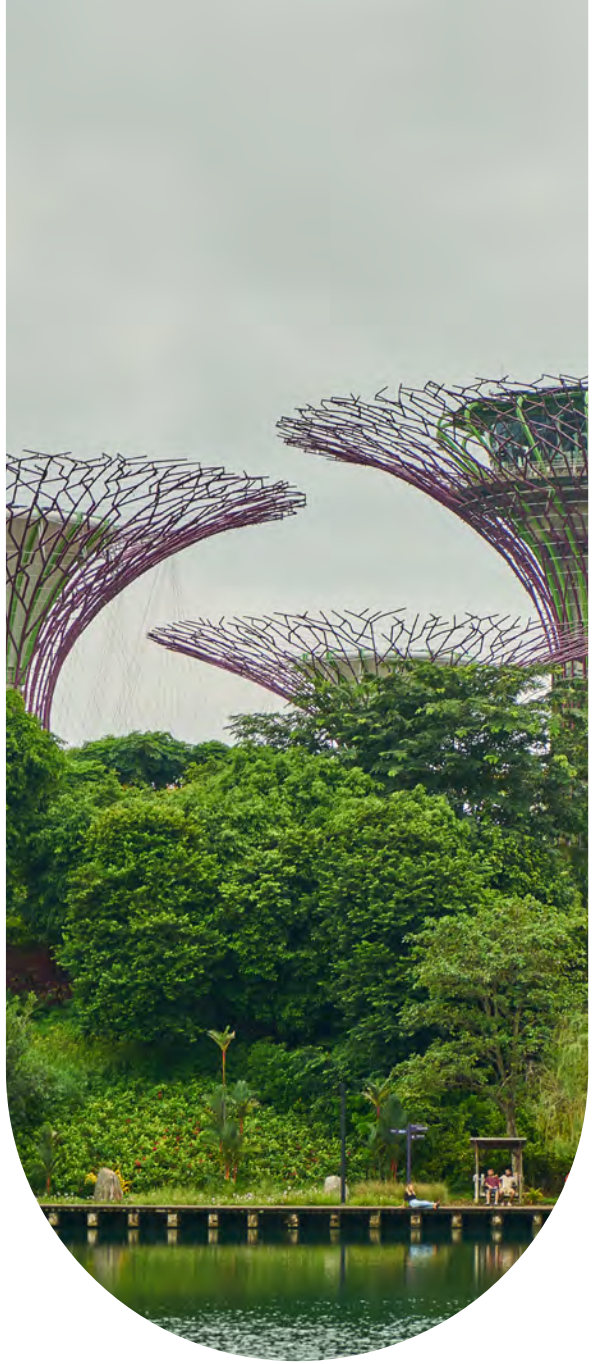
FEATURED CITIES:

Singapore | Rio de Janeiro | Broward County | Athens | London | New Orleans | Quito

Cities are increasingly using modelling approaches to understand climate impacts, test adaptation options and guide long-term investment decisions.

- Neighbourhood-scale climate simulations in **Singapore** have shown how building form, vegetation, and surface materials influence local temperatures, informing targeted cooling strategies.
- In **Rio de Janeiro**, **Broward County**, and **Athens**, flood-scenario modelling Flood Adapt has helped agencies simulate how different rainfall events, drainage configurations and infrastructure upgrades would perform under future climate conditions—prioritising the measures that deliver the greatest risk reduction.
- In **London**, **New Orleans**, and **Quito**, resilience assessment and scenario tools have been used to evaluate climate exposure, identify systemic vulnerabilities and compare adaptation pathways.

Together, these modelling approaches help cities move from reactive planning to evidence-based, forward-looking decision-making—shaping where they invest, how they design infrastructure and which risks they prioritise.



DATA AND RISK MANAGMENT

COMMUNITY RISK & PERCEPTION ASSESSMENT TOOLS

Cities are using methods that help them understand local vulnerabilities, map risks and capture community perceptions to inform targeted, risk-informed resilience planning.

FEATURED CITIES:

Houston | Greater Manchester | Melaka | Milan | Calgary

Cities are increasingly using tools that reveal how residents understand and experience risk, helping governments design interventions grounded in real community needs.

- The Climate Resilience Measurement for Communities (CRMC), applied in cities such as **Houston**, **Greater Manchester**, **Melaka** and **Milan**, highlights how different groups perceive vulnerability, trust institutions and navigate daily risks.
- **Calgary** has combined resident insight with neighbourhood heat mapping to show how people actually feel and experience heat across the city—exposing hotspots that traditional datasets miss.
- In **Melaka**, community dialogue validated local microclimate measurements that revealed temperatures significantly higher than those reported by national stations, underscoring the value of integrating lived experience with physical data.
- Cities also draw on global insights such as the **Lloyd's World Risk Poll**, which surveys households worldwide to understand how people perceive safety and climate-related hazards.

Together, these approaches show how cities are grounding resilience strategies in social realities—making policies more targeted, equitable and trusted.

DATA AND RISK MANAGMENT

EXTREME SCENARIO PLANNING & SIMULATION EXERCISES

Cities are creating exercises that simulate extreme climate and crisis scenarios—such as severe heat waves—to assess vulnerabilities, test coordination and strengthen preparedness across city systems and stakeholders.

FEATURED CITIES:

Paris | London

Cities are increasingly using extreme scenario simulations to stress-test systems, expose vulnerabilities, and coordinate cross-agency responses.

- **Paris** has run large-scale "50°C heatwave" exercises that bring together health services, emergency responders, social agencies and infrastructure operators to practice how the city would function under unprecedented heat conditions. These simulations help the city identify weak points in cooling capacity, emergency communication and service continuity — and refine protocols before a crisis hits.
- Similarly, with Exercise Helios, **London** has conducted multi-agency exercises to test readiness for cascading climate shocks. These simulations allow the city to examine how risks compound across systems, and to strengthen coordination across departments and partners.

Together, these exercises demonstrate how scenario-based planning helps cities anticipate high-impact events, reduce systemic blind spots, and build more adaptive operational responses.

PLACE BASED RESILIENCE

ANNEXES

PLACE BASED RESILIENCE

INTEGRATED NEIGHBORHOOD RESILIENCE PROGRAMS

Cities are committing to multi-year, cross-sector programs that strengthen resilience at the neighborhood scale by integrating social, spatial, economic and environmental interventions—co-designed with residents and delivered through deep, place-based collaboration.

FEATURED CITIES:

Rotterdam

Cities are developing deep, place-based resilience programs that integrate social, economic, environmental and spatial interventions at the neighborhood scale.

- In **Rotterdam**, the long-term investment in Bospolder–Tussendijken (BoTu) demonstrates how resilience can be built through coordinated action across housing, public space, social services, community safety, economic opportunity and climate adaptation. The program brings city departments, local partners, and residents together around shared priorities, combining physical improvements with social and economic initiatives to strengthen neighborhood wellbeing. Together, these exercises demonstrate how scenario-based planning helps cities anticipate high-impact events, reduce systemic blind spots and build more adaptive operational responses.

These approaches help cities tackle challenges that are highly localized — such as heat vulnerability, economic exclusion, social cohesion and deteriorating infrastructure — but systemic in their underlying drivers. Integrated neighborhood resilience programs allow cities to build trust, coordinate across agencies, and deliver interventions that reinforce each other, ultimately creating stronger and more equitable communities.

PLACE BASED RESILIENCE

CLIMATE -RESILIENT COMMUNITY SPACES

Cities are partaking in initiatives that redesign and adapt shared spaces to reduce climate and social risks, strengthen community wellbeing and create more resilient neighborhoods through inclusive, locally grounded place-making.

FEATURED CITIES:

Paris | Quezon City | Semarang | Milan | Chennai | Singapore

Cities are transforming everyday public spaces into cooler, safer and more resilient environments.

- OASIS schoolyard projects in **Paris**, **Quezon City**, **Semarang** and **Milan** demonstrate how nature-based cooling, permeable surfaces and multi-functional designs can turn school grounds into climate-resilient community spaces that support learning, play and neighbourhood cohesion.
- In **Chennai**, the Chennai Urban Farming Initiative is activating rooftops and vacant urban spaces for community gardens, helping cool dense neighbourhoods, expand access to healthy food and create livelihood opportunities for vulnerable groups.
- In **Singapore**, the Community Resilience by Design initiative at Cambridge Road shows how shade, greenery and microclimate-sensitive design can transform everyday outdoor areas into inclusive spaces that improve comfort, safety and social interaction.

Together, these examples show how cities are using nature-based and design-led approaches to reduce heat risk, improve wellbeing and strengthen community life through climate-resilient public spaces.

PLACE BASED RESILIENCE

COMMUNITY RESILIENCE HUBS

Cities are creating multi-purpose community facilities that provide trusted, accessible spaces for climate and health resilience—offering cooling or heating relief, emergency information, essential services and year-round programs that strengthen preparedness, connectivity, and local capacity.

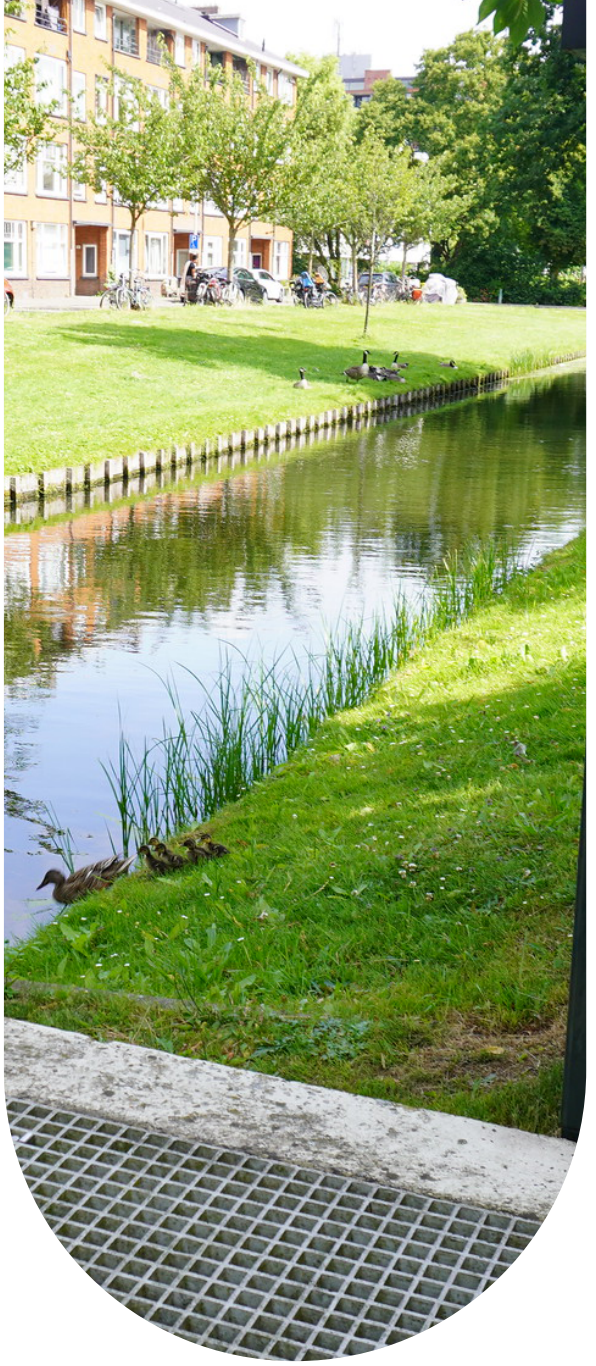
FEATURED CITIES:

Oakland | Houston | Vancouver

Cities are creating multi-purpose resilience hubs that provide trusted, accessible spaces for residents to prepare for, respond to and recover from climate shocks.

- In **Oakland**, resilience hubs are being developed through community-based facilities that offer cooling and clean-air refuge during extreme heat and smoke events, while also providing year-round programs and services.
- **Houston** is building a network of resilience hubs across neighbourhoods to strengthen emergency readiness, support vulnerable populations and expand access to resources before and after major storms.
- **Vancouver** is similarly working with community partners to establish hubs within existing facilities—such as community centres and neighbourhood houses—that can offer climate-related services, emergency support and culturally informed programming. These hubs combine physical upgrades with social infrastructure, ensuring residents have places they trust and rely on when conditions deteriorate.

Together, these examples show how community resilience hubs operate as the backbone of local, people-centred resilience—strengthening social networks, improving emergency preparedness and providing essential support during climate-driven events.



PLACE BASED RESILIENCE

ECOLOGICAL RESILIENCE & RESTORATION PROJECTS

Cities are investing in projects that restore forests, watersheds and other ecological systems to reduce climate risks—such as wildfires, landslides, or heat—while strengthening biodiversity, improving long-term environmental health and mobilizing multi-stakeholder collaboration.

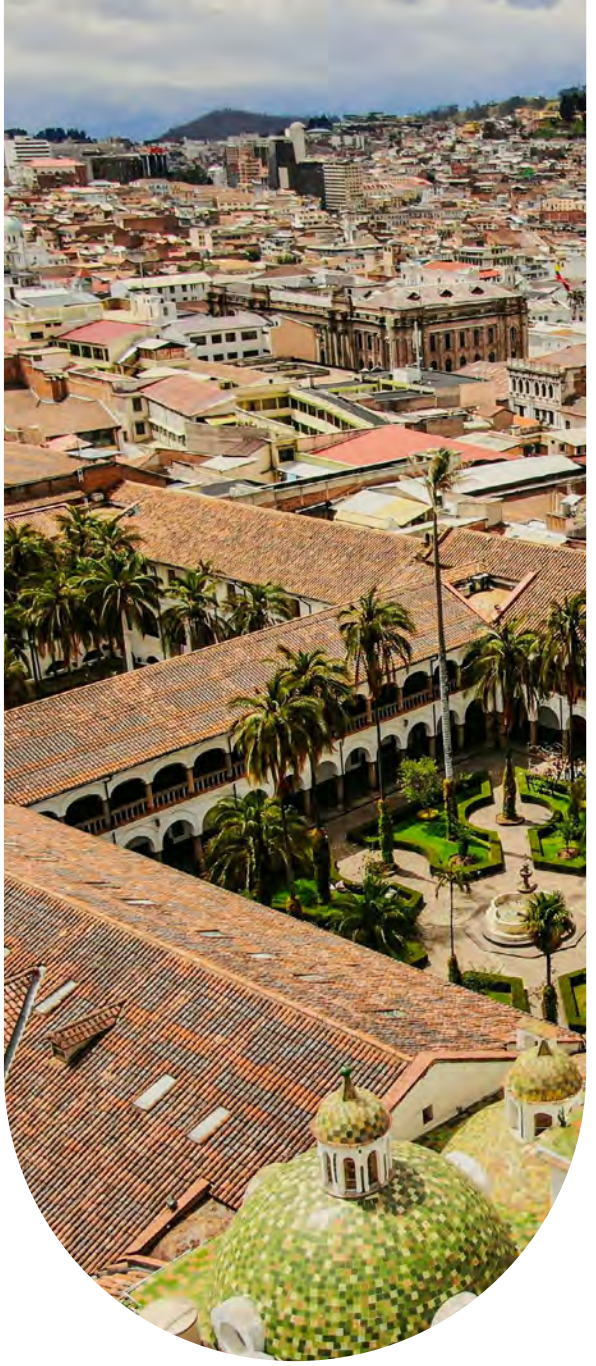
FEATURED CITIES:

Cape Town | Quito

Cities are investing in ecological restoration to strengthen climate resilience, improve water systems, and recover damaged landscapes.

- **Cape Town**'s Living Urban Waterways Programme demonstrates how cities can rehabilitate river corridors and catchments through nature-based approaches that reduce flood risk, improve water quality, control erosion and restore ecosystems across multiple basins. By coordinating departments, communities and environmental partners, the LUW Programme is creating long-term, catchment-wide resilience benefits.
- In **Quito**, the city is restoring areas damaged by forest fires through an Ecological Reforestation Plan supported by the Environmental Fund of Quito. The programme mobilises municipal, community, and private-sector partners to reforest degraded zones, recover biodiversity, stabilise soils and reduce future fire risks.

Together, these examples show how ecological restoration projects help cities address climate hazards, strengthen ecosystem services and create healthier, more resilient urban environments.



PLACE BASED RESILIENCE

INTEGRATED FLOOD & COASTAL RESILIENCE SYSTEMS

Cities are building hybrid interventions that integrate engineering, nature-based solutions, and urban design to manage climate and water risks, protect critical areas and create resilient landscapes capable of absorbing, redirecting, or buffering extreme events.

FEATURED CITIES:

Vejle | Norfolk | Glasgow

Cities are developing large-scale, hybrid systems that integrate engineered infrastructure, nature-based solutions, and real-time operations to manage flood and coastal risks.

- In **Vejle**, the Membrane concept demonstrates how coastal protection can be reimagined through adaptive, nature-based design that absorbs storm surges while creating new public spaces and ecological value.
- **Norfolk**'s Coastal Risk Management Project similarly combines natural buffers, engineered barriers, and community engagement to reduce coastal flooding across vulnerable neighbourhoods, aligning long-term infrastructure investments with environmental restoration.
- In **Glasgow**, the Smart Canal system uses predictive modelling and automated water-level controls to create dynamic stormwater storage, reducing flood risk while enabling regeneration in areas previously constrained by drainage capacity.

Together, these examples show how cities are integrating engineering, ecology and digital technology to build resilient, adaptive flood and coastal systems that protect people, infrastructure, and ecosystems in the face of more extreme climate events.

HEALTH AND WELLBEING

ANNEXES

HEALTH AND WELLBEING

HEALTH RISK INFORMATION SYSTEMS

Cities are using tools and systems that generate and integrate climate- and health-relevant risk data — including neighborhood-scale monitoring, sensor networks, and exposure mapping — to reveal local vulnerabilities, validate community experience, and support targeted, cross-sector resilience action.

FEATURED CITIES:

Semarang | Seoul

Cities are developing large-scale, hybrid systems that integrate engineered infrastructure, nature-based solutions and real-time operations to manage flood and coastal risks.

- In **Semarang**, the LINCAH platform brings together regional risk maps, health indicators and environmental data to help authorities identify priority areas and coordinate action across health agencies, emergency services, and local government. This integrated approach enables the city to understand where vulnerabilities are concentrated and to target interventions accordingly.
- In **Seoul**, air-quality and heat-alert systems are directly linked to hospital preparedness protocols, allowing health facilities to anticipate spikes in respiratory and heat-related illnesses during extreme conditions. By connecting environmental signals to operational planning, these systems improve early warning, resource allocation and protection for vulnerable populations, alongside long-term improvements in emissions and air quality.

Together, these examples show how integrated information systems—anchored in both technical monitoring and community engagement—enable cities to anticipate climate-driven health risks, protect priority populations and shift from reactive crisis response to proactive, evidence-based resilience.

HEALTH AND WELLBEING

HEALTH RISK COMMUNICATION & PREPAREDNESS PROGRAMS

Cities are betting on programs that support residents most at risk during climate-related health emergencies by combining targeted outreach, address-based vulnerability mapping, multi-agency coordination and tailored response measures. These interventions ensure that warnings are actionable and reach the right people at the right time.

FEATURED CITIES:

Greater Manchester | Rio de Janeiro | Montreal

As extreme heat and climate-driven health risks intensify, cities are creating communication and preparedness systems that cut through information fatigue and deliver clear guidance to priority populations.

- In **Greater Manchester**, Project Heatwave shows how co-design with older adults and community organisations can reshape messages so they are more trusted, culturally resonant and easier to act on. Grounding communication in lived experience improves recognition of heat danger and strengthens protective behaviour.
- **Rio de Janeiro's** Heat Protocol highlights the operational side of preparedness. Defined alert levels, interdepartmental coordination and agreed response procedures ensure that health, emergency and social services act quickly and consistently when extreme heat is forecast.
- **Montreal** shows how data can sharpen outreach. An address-based system identifies where vulnerable residents live, enabling targeted contact from health authorities and community partners before heatwaves intensify.

Together, these examples show how communication, collaborative design and preparedness can deliver timely, trusted and life-saving information — especially to those who need it most.

HEALTH AND WELLBEING

HEALTH-FOCUSED URBAN GREENING INITIATIVES

Cities are creating initiatives that use urban greening to reduce heat exposure, improve air quality, strengthen local microclimates and create healthier, more resilient public spaces.

FEATURED CITIES:

Delhi | Addis Ababa | Cali

Cities are increasingly deploying greening strategies not only for environmental benefits but as direct public-health interventions.

- In **Delhi**, health-focused greening is embedded in the Master Plan 2041 through actions such as expanding tree cover, restoring biocorridors and creating shaded walking routes. These measures help reduce urban heat, protect pedestrians during extreme temperatures and supor wider efforts to curb cooling demand.
- **Addis Ababa**'s Green Legacy Program demonstrates large'scale, community-supported greening. Mass tree planting, riverbank restaoration and new parks aim to reduce heat, improve stormwater managment and air quality while expanding access to fruit trees that support nutrition and income. The initiative has mobilised schools, youth groups and volunteers citywide.
- **Cali**'s Community Network of Urban Forests shows greening as a tool for ecological restauration and social equity. With the environmental authority (DAGMA), communities expand native trees, reopen permeable surfaces and invest in shaded public areas, creating neighbourhood forests that cool dense districts and improve wellbeing.

Together, these examples highlight how health-centred greening reduces heat risk, strengthens resilience and supports more liveable cities as climate pressures intensify.

HEALTH AND WELLBEING

AGE- AND CHILD-FRIENDLY RESILIENCE PLANNING

Cities are designing resilience solutions that reflect the needs of older adults, children, and youth. These approaches make resilience equitable.

FEATURED CITIES:

Penang | Addis Ababa | Belfast | Budapest

Cities are increasingly recognising that older adults and children experience climate and urban risks differently, and therefore require age-responsive resilience strategies.

- **Penang**'s Age-Friendly City initiative shows how to integrate ageing into climate–health resilience through WHO-guided action plans on mobility, housing, health, public space and social inclusion. Investments such as the Taman Lip Sin park, accessible walkways, senior centres and dedicated mobility vans help older residents stay active, access care safely and cope with rising heat, supported by strong interagency coordination and community engagement.
- **Addis Ababa**'s expansion of early childhood centres demonstrates how child-focused planning strengthens household and community resilience by providing shaded, nutritionally supportive spaces while enabling women's employment.
- Cities like **Belfast** and **Budapest** are advancing youth-friendly design through participatory approaches that translate young people's perspectives into real planning decisions, improving safety, mobility and access to green space.

Together, these examples show how age-responsive planning reduces vulnerability, improves inclusion and strengthens wellbeing across all life stages.

FINANCE AND INVESTMENT

ANNEXES

FINANCE AND INVESTMENT

RESILIENCE INVESTMENT PLANNING APPROACHES

Cities are developing plans and approaches that assess risks, quantify the cost of inaction, measure multi-benefits and build the financial and economic case for investing in resilience—supporting cities to prioritise and mobilize capital for high-impact projects.

FEATURED CITIES:

New York City | Cape Town | Broward County | Lagos

Cities are developing coordinated approaches to plan and finance resilience investments across departments and sectors.

- **New York City**'s Resilience Finance Task Force brings together budget offices, infrastructure agencies and emergency management to align capital planning with climate risk and long-term resilience priorities.
- **Cape Town**'s portfolio-based investment approach evaluates the costs, benefits and co-benefits of resilience measures integrated into capital program and project management across the city, helping decision-makers prioritise the most impactful interventions.
- In **Broward County** and **Lagos**, resilience planning integrates economic analysis with hazard modelling to assess the cost of inaction and guide investment choices.

Together, these examples show how cities are strengthening coordination between finance, planning and technical agencies to make strategic, forward-looking decisions about where and how to invest in resilience.

FINANCE AND INVESTMENT

RESILIENCE FINANCE CAPACITY PROGRAMS

Cities are using programs that strengthen financial capability by connecting local practitioners with external finance, risk and business expertise—building skills needed to design, fund and deliver resilience projects

FEATURED CITIES:

Greater Manchester

Cities are strengthening their ability to finance resilience by building internal skills and connecting officials with external expertise.

- Through programs like the Global Risk and Resilience Fellowship, practitioners receive hands-on support from finance and risk specialists to understand climate risks, evaluate investment options and embed resilience into budgeting and capital planning. In **Greater Manchester**, fellows worked with city teams to assess financial exposure to climate impacts, prioritise resilience projects and clarify how resilience should shape long-term investment decisions.
- -Across **Africa**, in cities like Accra, Addis Ababa and Cape Town, networks such as C40 Cities are supporting city chief financial officers through peer learning, climate budgeting and investment matchmaking, expanding the ecosystem of support and helping cities access capital for resilience initiatives

These capacity-building programs and peer networks help cities navigate the technical and financial complexities of climate investment, strengthen collaboration between finance and planning teams and build the institutional capability needed to fund and deliver long-term resilience outcomes. By investing in people as much as projects, cities are creating the skills and structures required to move resilience from concept to implementation.

FINANCE AND INVESTMENT

RISK-TRANSFER & RESILIENCE INSURANCE MECHANISMS

Cities are taking part in initiatives that use innovative insurance and risk-transfer tools to provide rapid, predictable financing for post-disaster recovery and strengthen cities' financial resilience.

FEATURED CITIES:

South Florida | Oakland

Cities are turning to financial risk-transfer mechanisms to secure faster, more predictable funding when climate shocks occur.

- In **South Florida**, a parametric insurance policy purchased by The Miami Foundation provides immediate post-flooding resources for communities facing the greatest vulnerabilities and gaps in traditional coverage. Designed with three municipalities to identify priority neighbourhoods in advance, the policy helps ensure that funding flows quickly after extreme rainfall.
- Other cities are testing parametric triggers that pay out automatically based on rainfall, wind speed or water levels, allowing agencies to accelerate recovery without waiting for traditional damage assessments.
- Cities are also creating public financing tools that function as collective resilience insurance models. In **Oakland**, a voter-approved wildfire parcel tax provides annual funding for vegetation management and fuel-reduction in high-risk areas, creating a reliable revenue stream for prevention and response.

Together, these approaches show how cities are applying risk-transfer instruments, from insurance products to public risk-pooling, to reduce financial shocks, close protection gaps and strengthen their ability to respond as climate impacts intensify.

FINANCE AND INVESTMENT

COMMUNITY-LEVEL RESILIENCE INSURANCE & MICRO-FINANCE INSTRUMENTS

Micro-insurance and community-level financial protection tools that provide rapid, affordable payouts to households and small businesses after floods and other climate shocks, reducing recovery time and protecting the most vulnerable.

FEATURED CITIES:

Ahmedabad

Cities are beginning to use micro-insurance and small-scale financial instruments to help vulnerable residents manage the immediate costs of climate impacts.

- In **Ahmedabad**, a pioneering parametric heat insurance programme has provided rapid payouts to tens of thousands of women working in the informal economy—such as salt-pan workers, street vendors and construction labourers—when temperatures reach extreme thresholds. These low-cost policies trigger automatic payments directly into beneficiaries' accounts, without requiring proof of losses, enabling families to cover essential expenses such as medical care, food and school fees during severe heat events.

This approach demonstrates how micro-insurance can deliver fast, targeted relief to those most affected by climate shocks, especially in contexts where traditional insurance products are inaccessible or too slow to meet urgent needs. As heat risks intensify, community-level resilience insurance can help cities reduce the financial and health impacts of extreme heat on their most exposed workers.

LEARNING AND COLLABORATION

ANNEXES

LEARNING AND COLLABORATION

CITY-LED RESILIENCE LEARNING PROGRAMS

Cities are designing and delivering structured training, skills development and peer learning for public servants and local stakeholders to strengthen resilience Practice.

FEATURED CITIES:

Broward County

Cities are increasingly designing their own learning and capacity-building programs to strengthen the resilience skills of public officials, frontline staff and key local partners.

- **Broward County**'s Water and Climate Academy is a leading example: a structured, county-run program that equips municipal leaders and community stakeholders with foundational knowledge on climate science, water management and risk-informed decision-making. By creating a shared baseline of understanding across departments, the academy helps the county coordinate more effectively and embed resilience into daily operations.
- Other cities are developing similar internal learning initiatives to build the competencies needed for cross-sector collaboration, long-term planning and climate-informed service delivery.

These programs enable cities to institutionalize resilience knowledge, strengthen leadership capacity and cultivate a common language and Practice across agencies and partners. City-led learning efforts are becoming a core governance tool—ensuring that resilience is not just a strategy, but an organizational capability.

LEARNING AND COLLABORATION

RESILIENCE TRAINING & EXECUTIVE EDUCATION PROGRAMS

Cities are joining trainings and executive education programs delivered by universities, NGOs and specialised organisations to build the skills and technical knowledge needed to design and implement resilience initiatives.

FEATURED CITIES:

Global

As urban challenges grow more complex and interconnected, these programs are becoming essential tools for strengthening resilience leadership and preparing practitioners to make informed, system-aware decisions.

- Through the **R-Cities Learning Hub**, practitioners engage in structured, multi-module programs that strengthen skills in systems thinking, climate risk assessment and urban governance.
- Technical training programs are also helping cities address specialised resilience needs. **The Urban Water Infrastructure Resilience Training Program** in India equips teams with practical skills for managing drought, flooding and infrastructure vulnerabilities, improving their ability to design and operate resilient water systems.
- **Executive education** offered by institutions such as the LSE and the University of Miami supports senior officials in navigating uncertainty, leading cross-sector collaboration and translating long-term resilience goals into actionable strategies.

Together, these programs deepen knowledge and leadership capacity cities need to respond to today's complexity, ensuring that resilience becomes an applied competency embedded across institutions.

LEARNING AND COLLABORATION

PEER LEARNING NETWORKS

Cities are part of networks that connect city practitioners across regions to share experience, exchange practical solutions, and strengthen global knowledge on resilience design and delivery.

FEATURED CITIES:

Global

Cities are increasingly relying on one another as essential sources of knowledge, joining peer-learning networks that enable them to exchange practical experience and adapt proven approaches to their own contexts.

- Communities of Practice on topics such as **R-Cities Climate, Health and Equity CoP** or C40s **Cool Cities**, **Urban Flooding** and **Water Safe Cities** Networks, and its **Urban Nature** Accelerator, allow cities to compare what they are seeing on the ground, co-develop tools and surface effective strategies for emerging risks.

These networks provide access to real-time insights and candid lessons that formal guidance alone cannot offer. By connecting practitioners confronting similar challenges, peer-learning networks create trusted spaces for cities to learn from each other, test ideas and refine solutions before scaling them.

LEARNING AND COLLABORATION

CITY RESILIENCE COALITIONS FOR COLLECTIVE ACTION

Cities are becoming part of coalitions that bring them together—globally or nationally—to advocate for shared priorities, advance common agendas, and accelerate collective action on issues such as heat resilience, health and nature.

FEATURED CITIES:

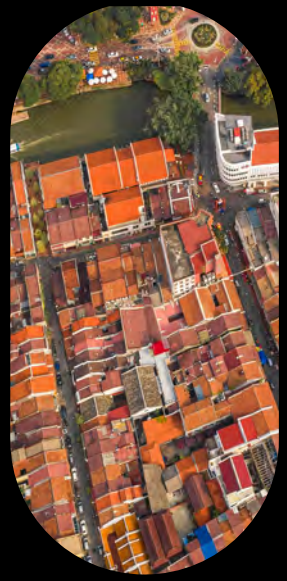
Global

Cities are forming broad coalitions to mobilise collective action on resilience—bringing together government, businesses, civil society, philanthropy, and community organisations around shared priorities.

- In **Montréal**, coalitions such as the Montréal Climate Partnership and Transition en Commun demonstrate how cities can convene economic actors, citizen groups, and institutions to coordinate climate action, align investments, and accelerate progress on emissions reduction and community resilience.
- Across countries, multilevel partnerships such as CHAMP, the FloodAction Coalition, **Europe-wide** alliances like the European Resilience Partnership and global collaboration efforts like Beat the Heat are helping align priorities across local, regional and national levels, strengthen governance structures and make more effective use of limited resources to advance climate and resilience goals.

These coalitions create platforms for diverse stakeholders to work toward common goals, pool resources and promote solutions that no single actor could deliver alone. By building shared agendas and strengthening collaboration across sectors, city resilience coalitions mobilise political will, leverage partnerships and drive action at the scale required to tackle complex urban challenges.





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