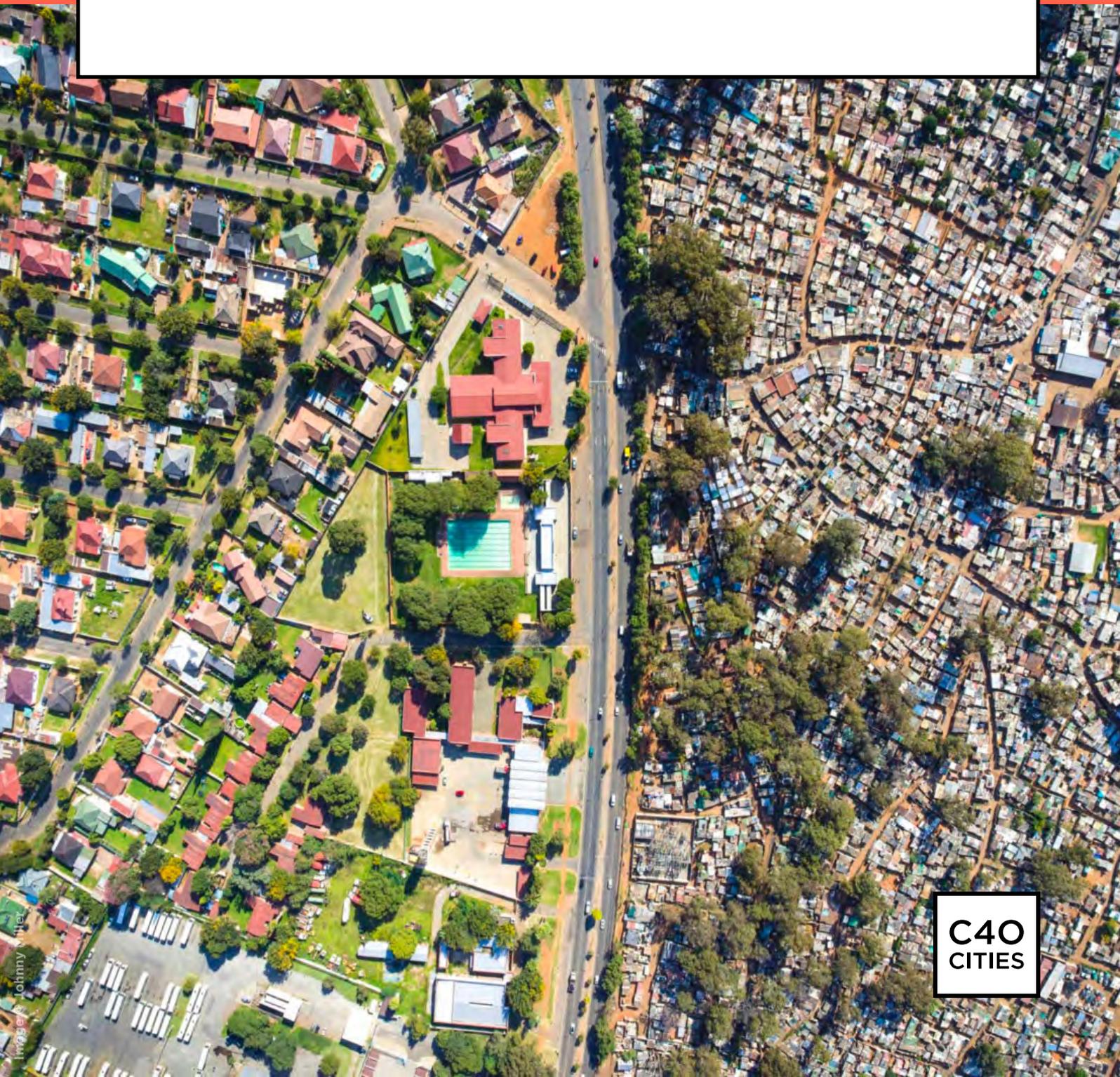


# Urban Heat & Equity

**Experiences from C40's Cool Cities Network**

September 2021



**C40  
CITIES**

## Introduction

As cities are becoming hotter, the impacts are often not experienced equally by all residents. Some neighbourhoods and population groups are more affected by urban heat than others. At the same time, some policy responses to heat impacts can be unfair. Members in C40's Cool Cities Network (CCN) are therefore applying environmental justice principles in their efforts to mitigate heat islands and prepare for extreme heat events.

This report showcases examples of 12 CCN cities that aim to reduce the inequitable distribution of heat risks across different populations and urban areas.

### Key recommendations for inclusive planning & delivering of heat actions:

- Collect relevant temperature, socio-economic and health **data** to develop a heat-vulnerability index for your city
- Include heat-risk **stakeholders** in the decision making process - listen to their needs!
- Use effective heat risk **messaging** in multiple languages and multiple modes of communication (see CCN case study report on "Communicating Heat Risk")
- **Prioritise** cooling solutions in areas/communities most at risk
- Structure programmes to be **widely accessible**
- Measure and **track** inclusive climate action **progress**

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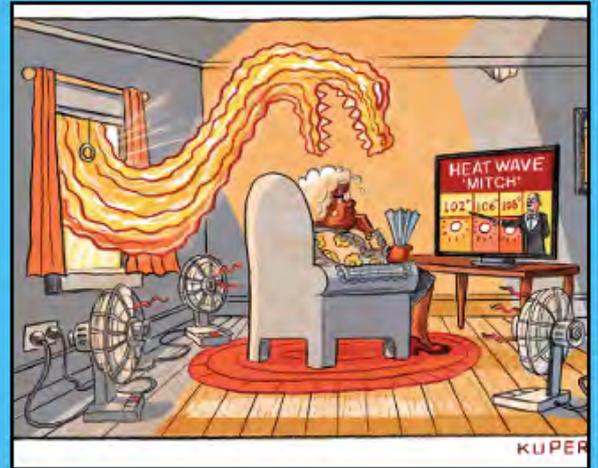
# CONTEXT

## Heat risk is unfair GLOBALLY ... AND AT CITY LEVEL

### Urban heat impacts some population groups more than others.

- Older adults (65+ years)
- Outdoor workers
- Ethnic minorities
- Women
- People with existing medical conditions
- Children, infants, and pregnant women
- People who live alone
- People who are homeless
- People with limited personal resources to deal with extreme heat (e.g., income, mobility).

EPA, [Heat Island & Equity](#)



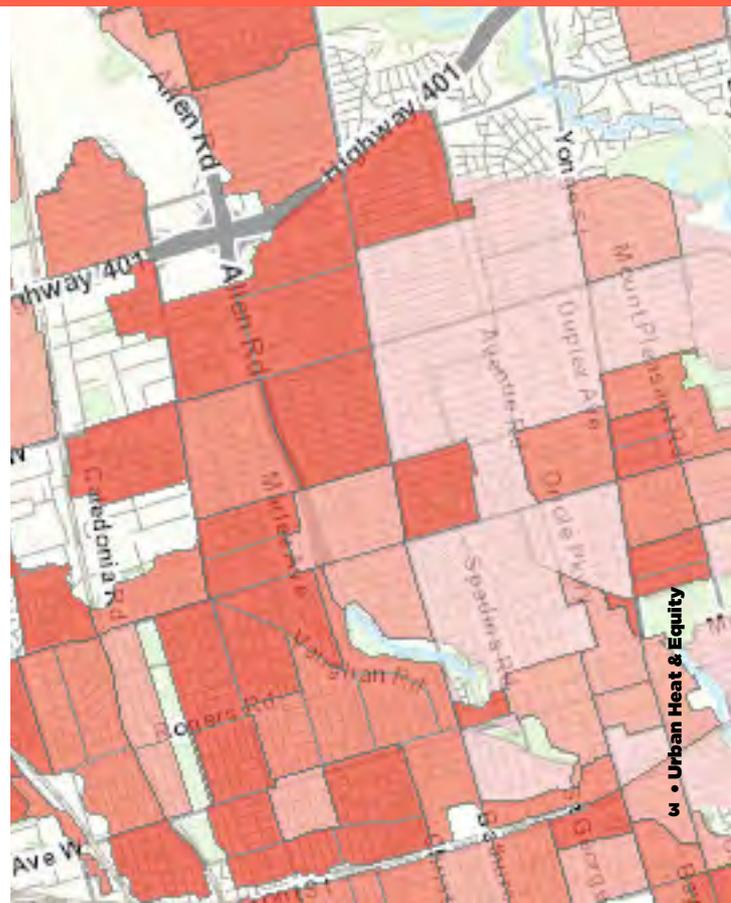
50% of the heat-related deaths in New York City are Black/African American people, even though they make up only 25 percent of the city's population. EPA, 2013

70% of people who die from heat in Barcelona are women.

### Urban heat is distributed unequally across a city.

#### Why?

- Varying urban heat island effect
- Racist housing policies
- Lack of green spaces in low-income communities
- Low-quality building materials (e.g. informal settlements)



# Cities need to integrate inclusivity and equity in planning and delivering heat actions

## Equity principles

### ACCESS/AVAILABILITY

### AFFORDABILITY

### SPATIAL INCLUSION/PLACE

...in the context of urban heat

#### Impact of climate change

- Which groups are impacted by urban heat more than others? Which are more vulnerable?

#### Impact of climate action

- Is information about heat waves and cooling solutions accessible by all? Are climate shelters physically accessible by the elderly, disabled, etc.?

#### Impact of climate change

- Which groups are already spending a disproportionate amount of money to keep cool?

#### Impact of climate action

- Are measures being taken to prevent green gentrification and displace low-income households?

#### Impact of climate change

- Who lives in the most heat vulnerable neighbourhoods? Has heat vulnerability been mapped against socio-economic vulnerability?

#### Impact of climate action

- Is the territorial coverage of climate shelters equitable? Are new parks/green infrastructure built in

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CITIES

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## Inclusive Climate Action in 3 pillars



### Process

(engagement of hard to reach groups)

#### What this enables mayors to do



Develop instruments to improve participation and reach those not traditionally involved in engagement processes (Sydney)



### Policy

(how to maximize equity and avoid unintended inequities)

#### What this enables mayors to do



Set climate equity targets: e.g. climate shelters within 10 min reach by every resident by 2025 (Barcelona)



### Benefits/Impacts assessment

(measure impacts and their distribution)

#### What this enables mayors to do



C40's Heat Resilient Cities tool measures the economic & health benefits of different cooling actions (Piloted in Medellin and Sao Paulo)

C40 support

- C40 [Playbook for Inclusive Community Engagement](#)
- Guidance on vision setting, mapping and analysing, designing bespoke strategies
- Help build local coalitions and alliances through international partnerships

C40 support

- [C40 Roadmap for Inclusive Planning](#)
- Socio-economic baseline assessment for climate plans
- Identifying action-specific indicators and targets

C40 support

- C40 [Heat Resilient Cities Tool calculating](#) (economic & health benefits of cooling actions)
- C40 [Toolkit for Equitable Impacts](#), Benefits Research
- C40 [Cool roofs benefits assessment tool](#), including equity considerations

# CITY CASE STUDIES

How does your city integrate Inclusivity and equity in planning and delivering heat actions?



## Cape Town

As temperatures increase in Cape Town, **urban heat is expected to exacerbate existing socio-economic vulnerabilities in the city**, particularly as a consequence of the spatial planning legacy of Apartheid, which has led to significant disparities in access to cooling and cool spaces. The urban heat island effect within high-density formal and informal areas, many of which also lack trees or green vegetation, further contributes to this challenge. One of the City's main approaches for **addressing equity in terms of heat mitigation and adaptation is through urban greening**. The City's Green Infrastructure Programme (GIP) and the Urban Forest Programme are the primary mechanisms through which this is taking place. It is intended that these will be supported by the development and implementation of a real-time heat-monitoring network, which is currently being investigated for feasibility. Together, these programmes aim to increase vegetation coverage, restore ecosystem services, manage green spaces and increase access to healthy green spaces in vulnerable areas.

The **Green Infrastructure Network (GIN)**, the spatial component of the Green Infrastructure Programme (GIP), was developed primarily using an 'interrogative district mapping' approach, and has been captured into GIS. This can be seen as an innovative "bottom up" approach that ensured that local knowledge of City staff working on the ground was taken into account in defining areas of green infrastructure. While still in the initial stages of research, the project team is looking into ways to implement green infrastructure approaches

in informal areas, where residents are highly vulnerable to the impacts of heat and where few natural green spaces remain.

Cape Town is not a naturally tree rich region as trees form only a small component of the city's natural vegetation types and the climate poses a challenge. A **pilot project was initiated to gather data on trees in the city using remote sensing technology and GIS**. This project also aims to identify locations with potential for increasing urban tree canopy cover and to identify priority locations where urban tree canopy cover increases will support identified community priorities.

A **real-time heat monitoring networking** is being considered because there are only nine South African Weather Services Stations (SAWS) located throughout the city to monitor temperature, five of which are located outside of dense urban areas. As a result, City officials do not have a full picture of temperatures within heat-island areas, which can be significantly hotter than surrounding low-density suburbs.

The City of Cape Town **Climate Change Strategy and Action Plan** have recently been approved; as such, Cape Town's next step is to implement the actions in the Climate Change Action Plan related to heat responsiveness and urban cooling.

### Useful links:

- [Green Infrastructure Programme - Best Practice Guidelines for Trees](#)
- [City of Cape Town's Climate Change Strategy \(2021\)](#)



source: City of Cape Town



source: City of Cape Town

# CITY CASE STUDIES

How does your city integrate Inclusivity and equity in planning and delivering heat actions?



## Milan

As Milan heats up, the City Council declared a Climate and Environmental Emergency in May 2019, providing a legal basis on which the City can act.

A city-run study on the shocks and stresses caused by climate change, such as heat waves, found that the **effects are both enabled and worsened by socio-economic issues**. These include poverty and deprivation, poor housing quality and lack of security. Hence, as part of Milan' Climate Action Plan, the City aims to make communities more included, aware and proactive in three ways:

1. Creating a **Citizen's Board** as part of a public consultation process on the Air and Climate Plan that involved citizens across all ages, genders and socio-economic backgrounds, civil society organisations, professional associations and economic stakeholders.
2. Supporting the most vulnerable and facilitating their integration into society: Creating roles of "**Resilience Guardians**" who would mediate between civil society and institutions to raise awareness of climate risks.

3. Promoting **measures and tools to ensure the security of the community** and institutions: This is developed by integrating projects to reduce social vulnerability and manage emergencies. The City also built an app, called EXTREMA, that allowed citizens to share information on heat waves and cooling areas.

Milan is also part of the **CLEVER Cities** project that receives EU-Horizon 2020 funding which carries out nature-based interventions to reduce heatwaves and bring more nature into the city. A number of projects have arisen from this, such as green roofs and walls, development of public green areas, more open squares (Piazze Aperte) and the formation of an Energy Community where a group of people share renewable and clean energy. As a next step, the City intends to further integrate social equity principles in their climate action plan actions.

### Useful links:

- [Clever Cities Milan](#)



source: City of Milan



source: City of Milan

# CITY CASE STUDIES

How does your city integrate Inclusivity and equity in planning and delivering heat actions?



## Mexico City

The Government of Mexico City, through its Ministry of Environment (SEDEMA, in Spanish), has developed the “Green Infrastructure Master Plan”. The goal of this plan is to reconnect the Conservation Land and Natural Protected Areas, with the urban land; to provide the city and its inhabitants with **green spaces for multiple environmental, social and cultural purposes**, and to contribute to the mitigation and adaptation to climate change. This plan includes four main programmes: 1) Designing of Parks, 2) Socio-Environmental Restoration of Conservation Areas, 3) River Sanitation, 4) Green Challenge.

Designing of parks is an effort between SEDEMA, the Water System (SACMEX, in Spanish) and the Public Works and Services Ministry (SOBSE, in Spanish). Its aim is to protect, **conserve, and build new green areas around the city, focusing in the city’s marginalised zones.**

To select those areas a regionalisation (mapping) of Mexico City was done. The criteria to do it were the type of climate, type of soil, type of vegetation, land use, habitability index. The **habitability index** measures the population’s access to health, transportation, job, education, services. Areas with a less habitability index are those where it is needed to pay more attention to provide services. Then these criteria were crossed with geological, hydro-meteorological, and chemical-technological risks. The final criterion crossed was the accessibility

to green areas. With this information the areas to build green areas were selected, taking into account free space to do it. The goals of the programme included:

- Expanding and improving green areas per citizen
- Revegetation of the city
- Building green spaces for recreation and enjoyment of citizens

To develop the programme, the proposal of each landscape project is evaluated and reviewed.

The selection of vegetation to be used in each park considering its potential and contribution to environmental services such as soil conservation and improvement, humidity regulation, heat island mitigation, rainwater infiltration, carbon capture, pollinator attraction, biodiversity, among other aspects, which also considers comfort parameters and the application of new technologies to improve the environment.

Until now, the City has rehabilitated 11 parks of 16 for example Xochimilco Ecological Park, National Canal Linear Park or Grand Canal Linear Park.

The **local community is involved** to be part of those changes in their area to appropriated, enjoy and take care of the green spaces.

### Useful links:

- [Mexico City’s Green Infrastrucutre Programme - homepage](#)
- [Green Infrastructure Porgramme - summary presentation-](#)



source: sembrandoparques.cdmx.gob.mx



Xochimilco Ecological Park, source:City of CDMX

# CITY CASE STUDIES

How does your city integrate Inclusivity and equity in planning and delivering heat actions?



## Los Angeles

In order to continue the momentum of LA's urban cooling work, an **multidisciplinary working group** was created with the aim of increasing inclusion in the internal process that can drive external equity processes as well. The team consists of members of different divisions within the City of Los Angeles' Bureau of Street Services (Streets LA), including Urban Forestry, Street Maintenance, Advanced Planning, External Relations and Engineering.

The ambitious urban cooling programme the City plans to carry out is installing 60 lane miles of cool pavement coating and the planting of nearly 2,000 trees across eight under-served neighbourhoods. The City of Los Angeles has been using various **data mapping tools** to identify priority neighbourhoods that are suffering most from increasing urban heat for implementing these cooling solutions.

### Climate-Smart Cities

- The tool uses publicly available data such as heat islands, health and socio-economic indicators to identify and prioritise locations.
- Using the tool allowed the City to create various scenarios by setting different weight values for different goals (e.g. reduce heat islands, provide climate equity, create an active transportation network) that then creates a heat map of different LA neighbourhoods, that would benefit most from cooling projects.
- Based on this analysis, the City selected four neighbourhoods for implementation of cool pavements, and the interdisciplinary team evaluated the site conditions.

### Environmental Insights Explorer: Tree Canopy

- This tool uses aerial imagery to map tree canopy across the city as well as integrating neighbourhood data, such as population density and heat vulnerability.
- Using the EIE tool, the City was able to confirm the previous analysis particularly identify those neighbourhoods with lack of tree canopy

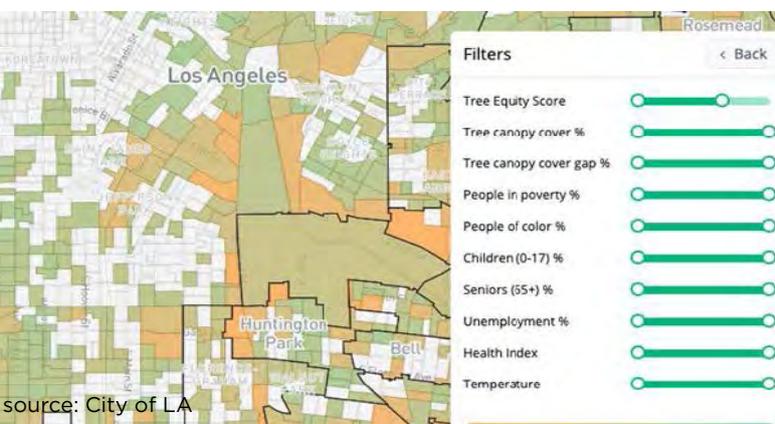
### Tree Equity Score

- Metric that helps cities cross US to assess how well they are delivering equitable tree canopy to all residents. Also includes tree canopy data, climate, demographic, and economic data.
- The City was able to prioritise neighbourhoods even further, based on equity and also track progress

One of the selected neighbourhoods was North Hollywood, which experiences very high temperatures and is also one of the most disadvantaged communities, particularly in regards to pollution and health burdens. By implementing network of cool streets (cool pavements and trees), the City has been able to **provide urban cooling benefits that are equitable** as well as encouraging residents to take active modes of transportation. Currently, the StreetsLA team is continuing to use their data-driven approach as they identify more neighbourhoods whilst engaging with the community on the implementation of the programme.

### Useful links:

- [Climate Smart Cities tool](#)
- [EIE: Tree Canopy tool](#)
- [Tree Equity Score](#)



# CITY CASE STUDIES

How does your city bring the voices of the most heat-vulnerable to the decision making table?



## Austin

When Austin reached out to their community members on climate resilience, the City learnt some very **valuable lessons in community engagement**. The City had previously acted on a data-driven approach, trying to resolve climate challenges by looking at critical assets such as energy, water and wastewater utilities. Thus, when city officials contacted different communities on how to better support them to become more resilient in the face of more frequently occurring extreme heat events, the response received was reluctant as the communities felt they were already resilient.

To establish a more productive relationship with the communities, the City's Office of Sustainability **worked with individual community leads** to understand why community members were not using cooling centres. It quickly became apparent that cooling centres were often perceived as intimidating places. Instead, residents rather opted for more informal places to cool down such as creeks or libraries with air conditioning.

The team then carried out research to gain a better understanding of social vulnerability and its relations to the city's landscape, including impervious cover and tree canopy coverage. Community leaders were hired that were based in

areas of low-income housing, trailer parks, senior housing as well as parks, schools and hospitals to talk about heat resilience to the locals.

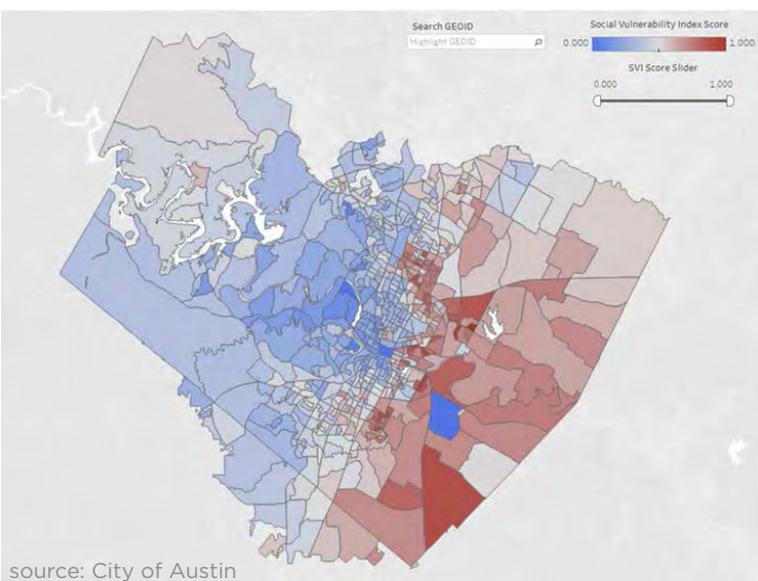
Once the data came back, the City paid local community organisers to **discuss with the communities how they are impacted by increasing heat**, how heat has changed their lives and what are the lived experiences that the city has not accounted for.

As a result, the city gained the following lessons:

1. **Lived experience is equal, if not better, than technical expertise.** Data can provide a lot of insights, but without the insights, there is higher chances that the wrong decisions would be made.
2. Make sure that the **community members are paid to share their experiences**, as this would invite more engagement and more detailed stories being revealed.

### Useful links:

- City of Austin staff worked with University of Texas to map social vulnerability to heat and other climate stressors.
- Heat mapping campaign to understand ambient heat in low-income areas of Austin.



# CITY CASE STUDIES

How is your city bringing the voices of the most heat-vulnerable to the decision making table?



## Washington D.C.

Washington D.C. is working to finalise a comprehensive heat plan outlining how residents will have access to cool places and stay safe on hot days. The District of Columbia's Department of Energy and Environment (DOEE), MITRE, American Public Health Association (APHA) and the Georgetown Climate Center (GCC) partnered to **engage local service providers and members of communities most affected by extreme heat**. Online/virtual focus groups (carried out in the midst of the COVID-19 pandemic) - led by an environmental justice advocate to **ensure equity and inclusion was foremost in the process** - explored planning, investments, and policy decisions that affect health outcomes, and the degree of health inequities around extreme urban heat.

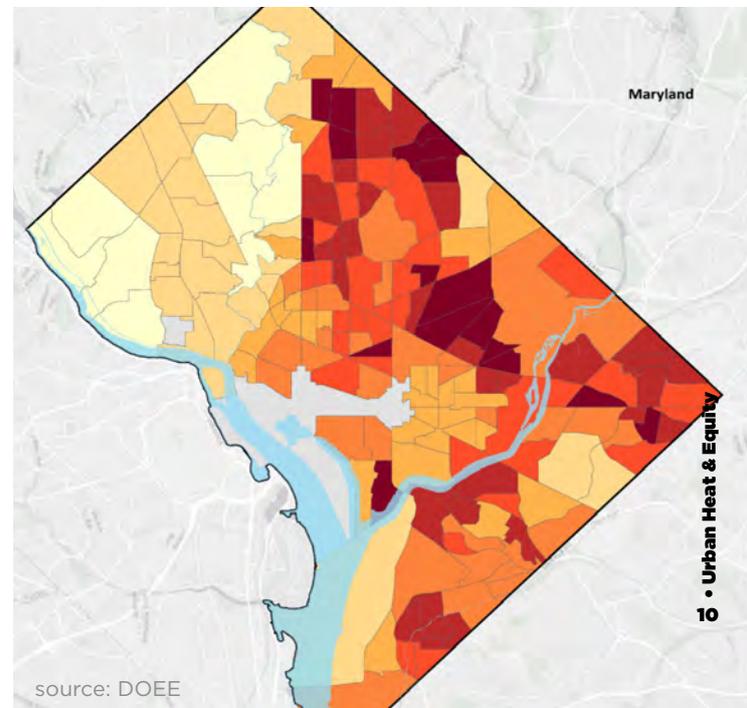
Through these meetings and an electronic survey, residents were asked to **share their experiences coping with extreme heat** and how the city could best support their communities. Residents were also asked for feedback on strategies for staying

safe (e.g. cooling centers, financial assistance for energy bills) and staying cool (e.g. cool roofs, shade structures). The survey was specifically designed and distributed to get a representative **sample from various demographic groups and regions** within the District, and the focus groups targeted heat sensitive or traditionally underrepresented groups, including people of color and Spanish-speakers.

Combined with heat risk mapping that incorporates heat sensitivity and exposure, this work **will help people in DC's most affected neighborhoods cope with extreme heat**, using community engagement to develop values-based strategies and resources and make investments that enhance preparedness and urban heat adaptation.

### Useful links:

- [Washington DC's Heat Vulnerability Index](#)
- [Climate Read D.C. homepage](#)
- [Climate Ready D.C. - 2020 progress report](#)



source: DOEE

source: DOEE

# CITY CASE STUDIES

How are you tailoring your city's response to heat to meet the unique needs of the most at-risk residents?



## Buenos Aires - ELDERLY

As part of Buenos Aires's Adaptation programme, the city hosted workshops on extreme weather events. The City targeted the elderly as they are one of the most vulnerable groups affected by climate change impacts. The main focus of the workshops was sensibilising elderly on the impacts on health from heat waves and extremely high temperatures.

The programme was launched in 2017, where the City began hosting **workshops in retirement centres**. Since, then the workshops have expanded to other areas, such as community centres and public squares where the government had developed programmes, so that a wider target audience can benefit from existing initiatives.

In 2020, the workshops were transferred online due to the pandemic. To make the programme more interesting, especially in a virtual space, the **team presented visual aids and adopted a more participative approach**. They also introduced new

topics, such as city growth, green spaces, drainage systems, flooding, waste, food, housing and means of transportation. Also a **historical perspective** was introduced, giving elderly the opportunity to share their own personal experiences of how the climate has changed in Buenos Aires. This allowed the audience to grasp more easily the complexity of the concepts. Moreover, the workshop was not mandatory, hence the attendees were truly interested in the matters discussed.

By raising awareness through the elderly, the city was able to **form a group of environmental advocates who would spread climate change awareness** amongst their family, friends and wider community.

### Useful links:

- [Climate Adaptation programme & workshops](#)



source: City of Buenos Aires

# CITY CASE STUDIES

How are you tailoring your city's response to heat to meet the unique needs of the most at-risk residents?



## Melbourne - HOMELESS

Since 2013, the City of Melbourne has implemented a Heatwave and Homelessness programme to provide highly vulnerable people living in the municipality heat respite options. The programme acknowledges that **certain groups are more vulnerable to the climate risks of heatwaves, particularly the homeless and the socially disadvantaged.** An operations plan (for implementation) is revised each year to take into account circumstances and funding. The plan consists of the following programmes:

- 1. CoM Pool pass programme:** Free swim and locker passes for use at any of the City of Melbourne's four aquatic facilities during the summer period (December - March).
- 2. Movie Pass programme:** The City of Melbourne has purchased complimentary movie passes for distribution during periods of prolonged extreme heat. These are provided to ensure people are able to access cool, safe, welcoming, inclusive environments after hours and on weekends.
- 3. Afterhours cool places programme:** The City of Melbourne afterhours cool places programme provides resources to enable after-hour access to existing homelessness services in the event of a heatwave and or day of extreme heat.
- 4. Cohealth rooming house programme:** The programme's objective is to facilitate improved access to health, social, recreational and nutritional services for rooming house residents and to reduce isolation and marginalisation of vulnerable and homeless rooming house residents in the City

of Melbourne. During the summer months this programme provides rooming house residents and operators information on how to prepare for periods of extreme heat. This programme ended in 2018.

**5. Summer Sense:** a communication strategy that is initiated each summer season by the City of Melbourne to educate and inform members of the City's support, prepare and take preventative action in readiness for extreme heat days.

The City of Melbourne has had to revise the scope of the Heatwave and Homelessness Programme in **consideration of COVID-19 impacts.** These include:

- Access to Rough Sleepers not in Quarantine Hotels is critical as they tend to have the most complex health issues.
- Ability to adapt the program to suit Rough Sleepers in Quarantine Hotels.
- Recreation facilities such as cinemas, libraries and public swimming pools may close or have restricted access if Melbourne has another COVID-19 lockdown.

As a result, the City of Melbourne has decided not to issue public swimming pool passes and movie tickets as we have done in previous years. The alternative cooling methods offered are: water bottles, mosquito repellent, cooling towels, sunscreen, hats.

### Useful links:

- [Heatwaves and Homeless, Report 2014/5](#)



# CITY CASE STUDIES

How are you tailoring your city's response to heat to meet the unique needs of the most at-risk residents?



## London - ELDERLY CARE HOMES

The Mayor of London is concerned about the **impacts of hot summers on older people**. According to Public Health England (PHE) the three heatwaves in 2019 resulted in over 230 excess summer deaths across London. In one week in August 2019, (23-29 August), there were 108 excess deaths of people of 65 or older. Following the 2003 heatwave that resulted in over 600 excess summer deaths across London, studies showed that the older population residing in care homes are at the highest risk of heat-related premature death. To address this a **care home overheating audit pilot** was undertaken in London in 2019 (ahead of the COVID-19 pandemic). Findings:

- The main sources of overheating in the pilot care home were found to be associated with the **unnecessary circulation of hot water** through the space heating pipework, the **lack of solar protection for windows** and the **limited ventilation** due to the restrictors placed for safety reasons.
  - Between residents, carers and staff the latter were more aware of the negative effects of overheating while both were very aware of the cold-related risks.
  - The most **common actions** taken to keep cool during hot weather were keeping residents hydrated, opening windows, subject to safety requirements, and moving residents to the cooler ground floor common areas.
  - The data analysis revealed the **presence of overheating** to some extent, even during the heating season, with summer overheating expected to become worse under the changing climate.
  - On average, internal temperatures during heatwaves are projected to increase by approximately two and four degrees in 2050s and 2080s respectively, when the use of passive measures alone will not suffice for the maintenance of internal comfortable conditions.
- Of all passive measures tested, the **combination of external window shading with the provision of an increased ventilation rate whenever external temperatures are lower than internal was the most effective**, however the only way to ensure that the internal environment remains comfortable at all times, both under the current and future climate (based on the 26 °C overheating criterion utilised in this study), appears to be the provision of mechanical cooling, ideally in a solar shaded and sealed environment.
  - The care home could **benefit from simple measures** incurring minimal or no cost at all, such as switching off unnecessary heat sources and applying window opening and curtain rules, to highly efficient albeit more complex and expensive solutions that could be implemented in the longer term. These include the application of external shading, high albedo finishing materials and green roofs.
  - Even though passive solutions alone may not be adequate under the future warming climate, care homes investing in adaptation measures are expected to remain comfortable for longer and rely less on mechanical cooling.

### Useful links:

- [Pilot findings and a checklist for use by care homes to prepare, respond and recover from an extreme summer heat event](#)



source: Greater London Authority

# CITY CASE STUDIES

How are you tailoring your city's response to heat to meet the unique needs of the most at-risk residents?



## New York City - LOW-INCOME HOUSEHOLDS

### Get Cool NYC Program

The City of New York provides residents access to Cooling Centers during extreme heat events in the summer. However, due to the COVID-19 pandemic, the capacity of these Cooling Centers was limited during the summer of 2020 to maintain effective social distancing to prevent transmission. In response to these challenges, the **City installed 74,000 air conditioners to provide lifesaving in-home cooling for low-income seniors** who met program criteria. The program was coupled with \$70MM in utility assistance approved by the Public Service Commission for 440,000 low-income households to minimize energy cost burdens and encourage use of the air conditioners.

NYC Emergency Management (NYCEM) led the programme with the support of 18 City agencies. Eligible residents were identified based on age over 60 years, income of 60% below state medium income levels, and participation in eligible benefit programs offered by the City and the state.

#### Useful links:

- [Get Cool NYC](#)
- [National HEAP Programme](#)
- [Cool Neighborhoods NYC report](#)

### Home Energy Assistance Program (HEAP) Cooling Assistance

HEAP is a federal program that was established in 1980 and is funded by the U.S. Department of Health and Human Services (HHS). A formula determines annual allocations to States, Tribes, and Territories, who have authority to determine eligibility criteria and disburse the funds to households through sub-grantees. In NYS, HEAP is managed by the Office of Temporary Disability Assistance (OTDA) and has four components: Heating Assistance, Cooling Assistance, Crisis Assistance, Weatherization Assistance. The **Cooling Assistance Component helps low-income households who have a medical condition that is exacerbated by extreme heat purchase and install an air conditioner up to a cost of \$800.**

In the summer of 2020, NYC advocated for an expansion of HEAP Cooling Assistance to public and subsidized housing residents. This change resulted in 260% increase in applications. The City continues to advocate for expansion of the benefit to cover utility costs in addition to AC purchase.



source: City of New York



source: NYC Emergency Management

# CITY CASE STUDIES

How are you tailoring your city's response to heat to meet the unique needs of the most at-risk residents?



## Barcelona - HOME CARE WORKERS TRAINING

### Climate Resiliency training for Home Care Workers and Care Volunteers

The City of Barcelona, with C40's support, developed and provided a pilot training programme on Energy Poverty and Climate Resiliency for home care workers and care volunteers in Barcelona. The training took place during 5-16 of July 2021 with the objective of **equipping participants with the knowledge and actionable tools to detect energy poverty situations and build climate resilience of vulnerable populations/frontline communities.**

Training participants included professional home care service providers and care sector volunteers from civil society organizations that provide support and services to vulnerable elderly.

### Background and purpose

One of the main concerns in Barcelona is the health impacts of rising temperatures and the Heat Island Effect - particularly for senior citizens with limited autonomy and/or chronic illnesses who are in a situation of energy poverty or vulnerability (those with low incomes and inadequate housing).

### Training description

As a key strategy to build the resilience of most vulnerable to heat groups, such as, senior citizens,

C40 designed and offered training modules to care sector volunteers as well as professional home care service providers, who work with vulnerable populations with reduced mobility and limitations on personal autonomy.

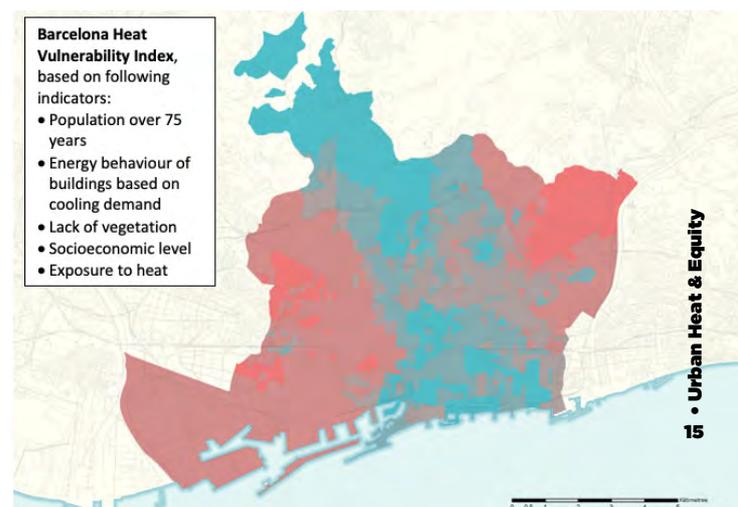
### Key training outcomes:

Participants know how to:

- detect situations of energy poverty and energy vulnerability
- communicate the health risks associated with extreme temperature
- promote measures to prevent risks and improve thermal comfort in the homes of those they support
- identify possible improvements in the contracting of domestic energy and water services, as well as social bonuses that can be accessed
- empower people in situations of vulnerability and/or energy poverty in the defence of their energy and water rights
- refer people in situations of vulnerability and/or energy poverty to Energy Advisory Points, climate shelters and other services available

### Useful links:

- [Barcelona's climate shelter network](#)
- [Energy Advisory Points](#)



# CITY CASE STUDIES

How are you tailoring your city’s response to heat to meet the unique needs of the most at-risk residents?



## Miami - pregnant people

The City of Miami – together with Miami-Dade County and the Women’s Fund of Miami-Dade - launched a new **awareness campaign focused on heat-related risks for pregnant people.**

Rising temperatures disproportionately affect pregnant people in the US who live in low-income neighbourhoods with lack of greenery and access to air-conditioning and who are Black or Hispanic. New studies (see links) find that **being exposed to prolonged heat drives higher rates of premature deliveries, stillbirths and other dangerous pregnancy outcomes.** Also newborns are less able to regulate their body temperature than other people. Being exposed to high indoor and outdoor temperatures already as babies can have lifelong health impacts.

In addition to prioritising heat adaptation solutions in vulnerable areas, the City of Miami has pledged to in support of The Women’s Fund campaign with \$10,000 in order to raise awareness of this risk and directly support people in need.

### Useful links:

- [The Women’s Fund announcement](#)
- [Fact sheet: “Increasing Temperatures Because of the Climate Change Crisis is a Reproductive Justice Issue in the US](#)
- [“Heat and racism threaten birth outcomes for women of color”, Scientific American 2021](#)
- [City of Miami: Extreme heat as a climate threat](#)



## Other heat-vulnerable groups: CHILDREN

In cities that experience extreme heat, children are particularly vulnerable. Cooling school buildings increases children’s thermal comfort and creates a better learning environment, while schoolyards with shaded areas encourage children to play outside and increase physical activity in breaks. As municipally-owned buildings, schools can also function as demonstration projects for cooling features on buildings, and can act as cooling centres for the public outside of school hours during heatwave periods.

This report from **C40’s Cool Cities Network** provides recommendations and case studies from six cities that are implementing measures to cool their schools - Accra, Barcelona, London, Madrid, Paris and Rio de Janeiro.

### Useful links:

- [“Cooling Schools: Experiences from C40’s Cool Cities Network” \(2020 case study report\)](#)

## Furhter reading:

[Green Space: An Underestimated Tool to Create More Equal Cities](#) (WRI, 2020)

[‘Heat Island and Equity’](#), EPA, 2020

[‘Policy and Planning Toolkit for Urban Green Justice’](#), BCNUEJ, 2021

[‘Extreme heat: The economic and social consequences for the United States’](#),  
Adrienne Arsht – Rockefeller Foundation Resilience Center (2021)

[“Making Equity Real In Climate Adaptation and Community Resilience Policies and Programs: A Guidebook”](#) (Greenlining Institute, 2019)

## Acknowledgements

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