FACT SHEET: Extreme Heat

What is a Chief Heat Officer?

- The Chief Heat Officer is the person who wakes up every day focused on the threat extreme heat poses to city/county residents.
- The Chief Heat Officer works directly with the mayor and across city/county departments toward a cooler, more shaded, more ready, and more equitable future.
- The Chief Heat Officer will do this by accelerating existing efforts, coordinating ongoing work, and intensifying focus on dealing with extreme heat.

What is a Heat Health Task Force?

- Heat Health Task Forces are groups with representation from multiple government agencies, local businesses, non-profits, and more.
- Heat Health Task Forces are adapted to suit local needs, but among other things can be responsible for coordination of heat risk reduction planning (e.g., around cooling centers, tree canopy), development and updating of a heat action plan.
- Heat Health Task Forces also coordinate and expand existing and new programs led by municipal, nonprofit, and academic partners, along with various government departments.
- Similar task forces have already been implemented in some cities in the United States, including Philadelphia and Milwaukee.

What is the Extreme Heat Resilience Alliance (EHRA)?

- EHRA is a coalition of 34 global city leaders and experts in public health, finance, humanitarian assistance, disaster management, climate science and risk, insurance, and public infrastructure.
- EHRA's goal is to protect lives and livelihoods from extreme urban heat with a focus on the most vulnerable people and communities.
- Since the launch of EHRA last August, EHRA's four working groups – Education of Decisionmakers Linked to Vulnerable Communities, Finance and Risk Transfer, Policy, and Implementation – have developed objectives and action plans that outline a one- and three-year timeline for working with selected cities to reduce their heat risk.
- These working groups will connect decisionmakers with resources and technical assistance so that they can identify their existing heat risk, access finance and new risk transfer products, identify and adopt heat-risk reduction policies, and successfully implement on-the-ground projects that mitigate heat risks and impacts.

What is City Champions for Heat Action (CCHA)?

- The CCHA initiative is a cornerstone program of the Extreme Heat Resilience Alliance.
- Members of CCHA commit to appointing a Chief Heat Officer for their city.
- Cities joining CCHA will receive technical assistance from EHRA; a ready-to-implement roadmap for decision-makers to reduce the risk of heat to their most vulnerable citizens; and a connection to a network of global cities working to address heat risks
- Miami-Dade County, Florida, Athens, Greece and Freetown, Sierra Leone have signed on as founding members of CCHA.

Why is extreme heat a public health threat?

- **Some populations are disproportionately impacted by extreme heat:** This includes elderly, infants and children, pregnant women, outdoor and manual workers, and the poor. In the US, poorer areas are often significantly hotter, and those exposed to these temperatures

are disproportionately communities of color. Black, Latinx and indigenous communities in the US are more likely to die from heat-related causes.
- **Morbidity**: Extreme heat can result in illnesses such as heat cramps, heat exhaustion, heatstroke, and hyperthermia, and can worsen chronic illnesses such as cardiovascular, respiratory, and diabetes-related conditions.
- **Lack of awareness of risk:** The C40 Cities Climate Leadership Group states that one of the primary reasons that heat is a 'silent killer' is that there is a widespread lack of awareness of the symptoms of heat stress.
- **Temperatures are already high**: The year 2020 was one of the three warmest on record, and rivaled 2016 for the top spot. 2011-2020 was the warmest decade on record, and the warmest six years have all been since 2015, with 2016, 2019 and 2020 being the top three.
- **In cities, temperatures are even higher:** The urban heat island effect results in temperatures 1–7°F higher in cities than in outlying areas, and nighttime temperatures of about 2-5°F higher.
- **Recent major heatwaves**: In 2003, 70,000 people in Europe died as a result of a June-August heatwave, in 2010, 56,000 excess deaths occurred during a 44-day heatwave in Russia.

The number of people exposed to extreme heat is rising:

- **Heat exposure rates are already high**: Currently, ~30 percent of the world copes with deadly heat waves lasting 20 days or longer, and this number is expected to rise to nearly half of the world's population even with drastic reductions to carbon emissions.
- **Recent exposure increase:** Between 2000 and 2016, the number of people exposed to heat waves globally increased by around 125 million.
- **Future exposure**: Heat stress due to extreme heat events will annually affect four times the number of people affected today by 2100, assuming current greenhouse gas emissions.
- **Urban exposure**: By mid-century, heat waves are expected to affect more than 3.5 billion people globally – 1.6 billion people in urban centers – as they grow in frequency, duration and intensity.

Extreme heat will kill or injure even more people in the future:

- **Future deaths worldwide:** A Climate Impact Lab study projected an additional 73 deaths globally per 100,000 people by the end of the century solely from excess heat; in a worst case scenario (no economic growth, extreme heat conditions), excess heat by the end of the century causes more than 200 deaths per 100,000 people each year.
- **Future deaths in the European Union:** A study by the European Commission's Joint Research Centre found that without further climate adaptation, annual heat-related mortality could rise to 50,000 deaths per year across the EU by 2050 (under 2°C climate scenario).
- **Inequitable distribution of heat impacts:** People in poorer regions around the world benefit less from investment in air conditioning, protective infrastructure, and elder care.

Extreme heat is an economic risk:

- The International Labour Organization estimates that the total economic cost from heat in the workplace will be equivalent to $2.4 trillion every year in 2030, based on a conservative projected global temperature rise of only 1.5 degrees Celsius by the end of the century.

Solutions for heat risk reduction:

- **Nature-based Solutions**
  - **Tree cover:** Trees can lower surface temperatures by providing shade and through evapotranspiration, which can reduce peak local summer temperatures by 2-9°F. Shady areas can be between 20-45°F cooler than sunny areas, providing safe resting places outside.

- **Green roofs:** Green roof temperatures can be 30–40°F lower than those of conventional roofs and can reduce city-wide ambient temperatures by up to 5°F.
- **City-wide benefits:** City-wide installations of highly reflective roofs and pavements, along with planting shade trees will, on average, reduce a city's ambient air temperature by 2 to 4 degrees Celsius (4 to 9 degrees Fahrenheit) in summer months.

- **Early Warning Systems**
  - Heat-health warning systems provide meteorological and/or climate-prediction-based information on the likelihood of hot weather that may have an effect on health.
  - These systems have been shown to reduce the chance of morbidity or mortality due to heat.

What (EHRA-Member) Cities are Already Doing to Reduce Heat Risk:

- **Miami Beach, Florida, USA:** Approved a plan in October 2020 to swap out palm trees with varieties that provide greater shade. The plan sets a target to increase canopy coverage in the city from 17 percent of the total land area to 22 percent over the next 20 years, and 5,000 trees in the next five years.
- **Miami, Florida, USA:** Participated in and completed a National Integrated Heat Health Information System-led (NIHHIS – formed by CDC/NOAA) community urban heat mapping campaign in 2020.
- **Tel Aviv-Yafo Municipality, Israel:** Published a climate adaptation plan in May 2020 which includes urban forest management, increasing green urban planning, increasing shaded areas, climate-appropriate construction, encouraging sustainable community lifestyles, and support for vulnerable population groups.
- **Athens, Greece**: Launched a heatwave action plan in 2016 which aims to protect the city's most at-risk group through a variety of methods including increasing green areas, expanding the use of cool materials, increasing shade options, and promoting "cooling routes" in parts of the city where the urban heat island effect is more intense. An existing tool addressing the vulnerability caused of extreme heat is a smart-phone app, Extrema Global, which provides personalized information to city residents and visitors about their Heat health risks. It uses real time meteorological data for your specific location and directions to the nearest cooling spaces. The app was first developed in Athens and it is now adopted by Paris, Rotterdam, Milan, Mallorca and scaling up.