



## Convening to Address Extreme Heat: Higher Education Toolkit

Extreme heat is among the deadliest of natural disasters, by some estimates, claiming over a quarter million lives worldwide annually.<sup>1</sup> Heat is also tinder for mega droughts, wildfires, and super storms, which as recent events illustrate,<sup>2</sup> compound its hazards and impacts. With heatwaves predicted to become both more frequent and more intense,<sup>3</sup> solutions to prepare for and prevent their impacts on people’s wellbeing are urgently needed.

Universities are well positioned to lend their academic expertise and convening power to address the escalating crisis of extreme heat. Centers for higher learning can bridge research and policy gaps on global warming and arm decision makers with the data they need to make informed and impactful decisions that will save lives. At the same time, universities offer platforms where all stakeholders can find space to re-envision the future, advance solutions, and commission new research. Diverse centers of learning and community can underwrite the multi-disciplinary approaches that will help prepare for an ever-warmer future – locally and globally.

Towards this end, [Perry World House](#) at the University of Pennsylvania has drafted this toolkit. It derives from its [convening design experience](#) as well as project-based work across sub-national, national, and international levels on extreme heat, among other climate-related topics. The toolkit supports universities and their partners –all around the world – to capitalize on their ability to foment substantive and cross-disciplinary collaboration that builds resilience to the heatwaves of today and tomorrow.

### *Part I: Multidisciplinary Programming & Approaches*

The impacts of extreme heat cannot be addressed in silo. Instead, solutions and policy pathways must recognize the wide-ranging and intertwined way heatwaves impact various sectors as well as segments of society. Convening design should consider:

- (1) Thermal inequality and issues of justice, recognizing that heatwaves will not play out evenly in countries or communities, and those with the least resources to adapt are often the most vulnerable;
- (2) With over 60% of the world living in cities – which often become heat islands– urban centers require special consideration; and
- (3) Extreme heat is a cross-sectoral challenge, simultaneously impacting public health, food security, labor productivity and safety, and many other components that underwrite societal wellbeing. A successful solutions infrastructure will be multidisciplinary and informed by diverse research, practice, and expertise.



## **Thermal Inequality**

“Thermal Inequality” is both a global and a local challenge. Between 1.5°C and 2°C of global warming, regions that house a disproportionate amount of people living in poverty are likely to experience the hottest temperatures.<sup>4</sup> By 2050, a 700% global increase in the number of urban poor exposed to extreme-heat is anticipated.<sup>5</sup> At the same time, research out of Dhaka, Cape Town, Hanoi, various cities in Mexico, and Nairobi show that poverty and population density correlate to higher temperatures across urban spaces.<sup>6</sup> This trend plays out in developed country cities as well, with marginalized and poorer communities facing higher temperatures and higher morbidity because they have insufficient access to cooler or greener spaces, air conditioning, basic services, or lack the financial and other resources needed to adapt how and where they work and live. Denizens of informal settlements, often characterized by inadequate infrastructure and access to basic services, are at particularly high risk of extreme heat exposure.

*Recommendation: Assure that conversations on extreme heat feature the viewpoints of countries and communities from a diversity of geographies and contexts, especially those where resources are limited, and the impacts of the climate crisis are accelerating rapidly. At the local level, varied inputs outlining threats and needs will help derivate solutions that protect vulnerable populations.*

## **The Urban Challenge**

By 2030, an estimated 60% of the world’s population will be living in cities. Against this backdrop of rapid urbanization, extreme temperatures in urban spaces will spike much faster than elsewhere.<sup>7</sup> This is because cities become “heat islands” or places where temperature concentrates and escalates due to congestion, the built environment, and intensive energy use. Cities also account for over 70% of greenhouse gas emissions globally. Urban centers must, therefore, find ways to protect residents living across dense and diverse socio-economic mosaics while also mitigating the factors that intensify heat. This will require a spectrum of adaptations as well as assuring that energy supply can meet demand - to stop heatwave-driven blackouts from literally turning into mass casualty events.

*Recommendation: Cities, especially at-risk urban populations, require special consideration and should feature in discussions on extreme heat. Global exchange between municipal leaders and stakeholders can illuminate common challenges as well as share successful approaches and policies. Discourse should aim to unlock the data, technologies, and resources that urban centers need to keep people safe.*



## **Cross-Sectoral Approaches**

Heatwaves threaten many systems underpinning societal well-being and function – such as public health, agriculture and food security, livelihoods and labor, and energy provision. Heat withers crops, reduces soil productivity, and threatens husbandry. It complicates food supply chains by increasing refrigeration costs and hastening spoilage. Research from 103 countries suggests that extreme heat, specifically, was associated with 98 million more people reporting moderate to severe food insecurity in 2020 than annually in 1981–2010.<sup>8</sup> Hot spells can also cause blackouts, reduce worker productivity, as well as put certain labor communities, like migrants who often make up the majority of agriculture or construction workers, at heightened risk of injury, illness and even death. By 2030, it is estimated that the equivalent of more than 2% of total working hours worldwide will be lost annually, because it is either too hot to work at pace or too hot to work at all.”<sup>9</sup>

One of extreme heat’s greatest costs has been its toll on public health. Heatwaves are believed the deadliest of all natural disasters globally,<sup>10</sup> often described as a “silent killer.” People with compounding conditions like obesity, high blood pressure, asthma, multiple sclerosis, and diabetes are more likely to be affected – as are the very young, pregnant women, and the elderly.<sup>11</sup> Heat stress is also believed to affect mental health, with links to higher rates of violence, crime,<sup>12</sup> anxiety, depression, and suicide.<sup>13</sup>

*Recommendation: Discussions on extreme heat must be multidisciplinary. Programming should bring academic researchers from many disciplines together with policymakers and practitioners representing an array of institutions, on-the-ground experience, and contexts. Rich discussions serve as an excellent platform for knowledge sharing, and they can foster robust solutions that stand up to the challenge of extreme heat.*



## *Part II: A Checklist of Convening Outcomes*

### ✓ **Building a Network**

Universities can bring diverse researchers together with decision-makers and practitioners to drive heat action and build resilience. Convenings are an opportunity for growing a networking of engaged stakeholders, and meetings should be approached as mechanisms to create networks, invite new perspectives, and develop dedicated working groups or work programs.

### ✓ **Learning and Next Steps**

Convenings on heat offer a chance to understand what solutions are on the table, which are working, which are failing, as well as why. Academic spaces can be platforms for floating new ideas, learning from different perspectives, and galvanizing innovation and research. Meetings should inform the next set of steps to take or stakeholders to convene, while identifying local heat-related challenges to be prioritized and addressed.

### ✓ **Communications**

Convenings are an opportunity to highlight and advance action, research, and policy ideas, all of which can be amplified with media and communications tools. Academic publications, white papers, policy briefs, social media, and even the meeting agenda itself can be leveraged to reach stakeholders and help them understand how to put extreme heat on their own dockets.

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<sup>1</sup> [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(21\)01860-2/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(21)01860-2/fulltext)

<sup>2</sup> <https://www.theguardian.com/environment/2022/mar/21/extremes-of-40c-above-normal-whats-causing-extraordinary-heating-in-polar-regions>; <https://www.washingtonpost.com/weather/2022/04/25/india-record-heat-march-april/>; <https://www.bbc.com/news/world-asia-india-61242341>.amp; <https://www.theguardian.com/world/2022/sep/07/china-reports-most-severe-heatwave-and-lowest-rainfall-on-record>; <https://www.reuters.com/world/americas/furnace-argentina-roasts-record-setting-heat-wave-2022-01-11/>; <https://www.cnbc.com/2023/07/13/canada-record-heat-meets-record-wildfires-new-reality-say-scientists.html>

<sup>3</sup> [https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC\\_AR6\\_WGI\\_Chapter11.pdf](https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_Chapter11.pdf)

<sup>4</sup> <https://www.ifrc.org/sites/default/files/2022-10/Extreme-Heat-Report-IFRC-OCHA-2022.pdf>

<sup>5</sup> *ibid*

<sup>6</sup> *ibid*

<sup>7</sup> *ibid*

<sup>8</sup> [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(22\)01540-9/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(22)01540-9/fulltext)

<sup>9</sup> [https://www.ilo.org/global/publications/books/WCMS\\_711919/lang--en/index.htm](https://www.ilo.org/global/publications/books/WCMS_711919/lang--en/index.htm)

<sup>10</sup> <https://www.nbcnews.com/health/health-news/heat-waves-deadliest-weather-event-united-states-rcna41129>

<sup>11</sup> <https://www.nytimes.com/2022/06/13/climate/extreme-heat-wave-health.html>

<sup>12</sup> <https://www.nytimes.com/2018/09/21/upshot/a-rise-in-murder-lets-talk-about-the-weather.html>

<sup>13</sup> [https://www.nature.com/articles/s41558-018-0222-x?source=post\\_page](https://www.nature.com/articles/s41558-018-0222-x?source=post_page)