Overview: Trendlines *synthesizes research from across CSIS programs to identify the structural trends and new forces shaping the global economy and geopolitical landscape. Each edition unpacks key signals for policymakers, industry leaders, and strategic decisionmakers.*

Issue 5 | Extreme Heat | August 2026

The 2026 summer heat has been the latest chapter in a clear upward trend. Unlike a one-off drought, extreme heat is not an episodic hazard. It is a chronic operating condition that has been increasing in duration and intensity for decades. The costs are becoming more visible across labor markets, food systems, and critical infrastructure. Strategic questions surrounding this theme have shifted from whether it will affect operations in the coming years to how leaders can best prepare for it.

The Data:

>70%

Share of the global workforce currently exposed to excessive heat on the job, equating to over 2.4 billion workers

$2.4T

Projected annual global productivity losses from heat stress by 2030

61-87%

Probability of an El Niño forming in 2026 and continuing into 2027, affecting agricultural commodity prices worldwide

8 in 10

Outside of declared heatwaves, 8 in 10 occupational injuries are still reported as due to excessive heat

11-13%

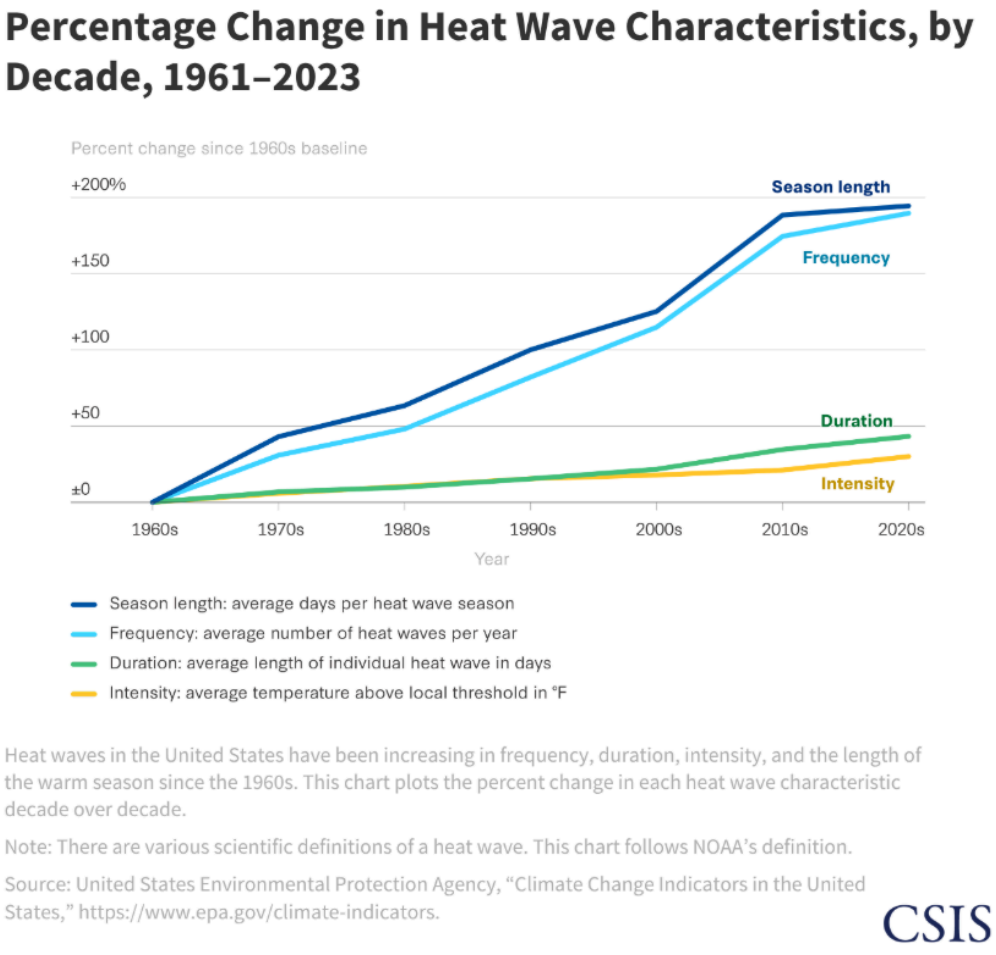
Decline in crop yields for corn, soy, and wheat in the United States by 2050 due to heat stress

3X

Global electricity demand for space cooling is expected to triple by 2050, equivalent to the current electricity consumption of both China and India combined

The Trends:

Trend 1: Worker Burnout is Real, Literally



Source: "Three Steps to Protect the United States Against Extreme Heat," CSIS, https://www.csis.org/analysis/three-steps-protect-united-states-against-extreme-heat

Over 70 percent of the global workforce is now exposed to extreme heat and humidity on the job, eroding economic growth by the hour. As temperatures rise past safe thresholds, outdoor work stops, projects slip, and productivity falls. The cost accumulates in sectors that are foundational to the global economy, including agriculture, construction, logistics, and transport.

"Extreme heat negatively impacts health, while also threatening economic performance and military readiness, underscoring the importance of local, state, and federal collaboration to collect data and strengthen emergency management."

—Katherine Bliss, CSIS

The Trendline: Extreme heat is shortening the viable workday, effectively becoming a structural constraint on labor productivity. Globally, excessive heat contributes to 22.9 million occupational injuries and nearly 19,000 deaths per year. Exposure is highest in developing economies, where large shares of the workforce perform outdoor labor and have limited access to cooling. This year, temperatures across India and Pakistan exceeded 46 degrees Celsius (115 degrees Fahrenheit), making outdoor work more dangerous; in 2024 India recorded 247 billion potential labor hours lost to heat exposure, with its agricultural sector accounting for nearly two-thirds of that total. Temperate climates are not immune. Since 1970, average temperatures in the United States have risen 60 percent above the global average increase. As in other regions, this rise in heat has been accompanied by labor productivity losses totaling nearly $100 billion per year according to CSIS.

What It Means: Heat is becoming a persistent productivity tax that extends beyond the isolated events that normally trigger emergency protections. As dangerous temperatures spread further from the equator and warm seasons extend in duration, workplace cooling, revised schedules, and increased hydration mechanisms, among other actions, are no longer just health measures; they are investments in economic capacity. Additionally, as more people rely on air conditioners to mitigate the impacts of rising temperatures, demand for electricity also rises. The result is a vexing challenge for global policymakers in which the tools for mitigation can further exacerbate the underlying trend. In this new, hotter reality, learn more about the three steps decisionmakers can take to protect against extreme heat.

Trend 2: Fried Food

Photo: Justin Sullivan/Getty Images

Extreme heat is compounding agricultural losses: The world is projected to lose 1 in every 13 tons of corn produced for every additional degree Celsius (1.8 degrees Fahrenheit) across farms. Crop yields are falling as input costs continue to rise. Add rising temperatures to the occasional drought, erratic rainfall, or geopolitical upheaval and the result is a global food system losing both output and producers.

“2027 will likely be the hottest year on record. The extreme heat it brings will challenge all aspects of food systems, not just production, and could have serious impacts on global hunger.”

—Zane Swanson, CSIS

The Trendline: Extreme heat is shifting from an occasional agricultural shock to a recurring cost embedded across the global food system as heat events become more frequent, intense, and prolonged. This growing exposure could affect several staple crops including corn (maize), rice, soy, and wheat that together provide about 60 percent of current global caloric intake.Global meat and dairy losses are projected to reach almost $40 billion annually by the end of the century due to heat stress. Persistent high temperatures become more damaging when they overlap with periods of drought. Amid high temperatures, the U.S. Department of Agriculture has projected farm income declines for the remainder of 2026, after farm bankruptcy filings rose 46 percent in 2025 as output fell and input costs climbed. The effects of extreme heat are also felt well beyond the harvest, as food travels around the world through storage and transportation systems increasingly operating above the temperatures for which they were designed. In India, where cold chains cover only 4 percent of fresh produce, food waste and farmer losses already total approximately $13 billion annually. The result is a food system in which heat erodes value at every stage.

What it Means: Repeated losses due to heat will influence which crops and livestock can be produced profitably, which farmers can afford to adapt, and which supply chains can preserve food in transit. This means new opportunities for innovation: Advanced early warning systems, crop breeding, investments in climate-resilient crops, and cold-chain capacity are all becoming key in preserving the stability of the future global food supply. Declining output or rising spoilage in one production hub can raise costs for processors, retailers, and consumers elsewhere. As temperatures rise, the capacity to adapt will become a new source of comparative advantage in global food markets.

Trend 3: Infrastructure in the Red

Photo: RONDA CHURCHILL/AFP via Getty Images

The physical effects of extreme heat on transport and power infrastructure are well documented. Less visible is the threat to the digital and communications systems designed for cooler conditions.

"We must shape new systems of international cooperation and investments to flip the default reactive script by leveraging pre-arranged risk financing to address predictable shocks."

—Noam Unger, CSIS

The Trendline: Extreme heat is exposing vulnerabilities across the infrastructure systems that move information, data, energy, and people. In July 2026, heat domes over the U.S. Midwest triggered a phenomenon known as tropospheric ducting, when high temperatures create atmospheric conditions in which radio and television signals bend and travel well beyond their intended range, disrupting local communications and creating co-channel interference across hundreds of miles. Emergency radio networks, broadcast infrastructure, and telecommunications carriers operating in high-pressure heat systems experienced signal degradation in ways networks were not designed to handle. Physical infrastructure is not exempt: Heat has buckled roads across the United States, caused numerous flight delays, and contributed to a 49-car freight derailment in Canada. Together, these disruptions show how elevated temperatures can strain both the physical and digital foundations on which economies run.

What it Means: Building heat-resilient infrastructure requires a shift from emergency response to coordinated, long-term planning across sectors, especially for projects with longer product life cycles. Innovative mechanisms like anticipatory action plans and disaster risk financing are being used to help leaders prepare more effectively while leveraging international capital markets to expand access to financing. Infrastructure will withstand rising temperatures only if resilience is built into every stage, from planning and permitting to long-term strategic funding, monitoring, and maintenance. From a need to strengthen irrigation systems to newer challenges with data center, telecommunications, or energy infrastructure in high-heat corridors, testing systems against hotter operating conditions is becoming a new imperative. Treating heat adaptation as a core investment in operational continuity, economic security, and public safety will be important for the coming years.

The Trajectory

Extreme heat will have a compounding effect on the structural trends already reshaping the global economy. As demand for cooling increases, so too will demand for water and energy, raising costs and forcing trade-offs. Over time, these pressures will influence where agriculture and industry remain viable and where people can continue to live and work. Responses to extreme heat today still emphasize short-term emergency measures, while investment in more long-term preparedness, including infrastructure adaptation, lags behind. Leaders that account for extreme heat in capital planning, operating standards, and risk models will be better positioned to protect productivity and competitiveness amid increasingly severe temperatures.

For more information, please reach out to Joyce Bongongo at JBongongo@csis.org or Grace Dereemer at GDereemer@csis.org.