

## Is it hot enough for you this August?

Is it hot enough for you this August? As scientists warn us about global warming, without a doubt, heat is going to play a major role in how we live and work. As a professor living in the northern latitudes and working largely in climate-controlled buildings, at first glance this is little more than an inconvenience. But what will it look like around the globe? My own travels have taken me to some rather hot cities. I spent a sweltering week working in New Delhi, India and while working in Guangzhou, China, I decided to play tourist one afternoon and visited the Nanyue King Tomb just to get 60 feet underground to get away from the heat. I also remember walking around town at 11:00 PM and experiencing temperatures still in the 90s with the streets still full as most people's apartments were too hot to sleep! As a college student, my summer job was highway construction. While visiting such hotspots, I would find myself asking what it would be like to spend a day laying blacktop in such conditions. Honestly, I don't know if I would have physically been able to do it, even in the prime of my youth.

Coping with the heat will certainly be a Business of Humanity® issue in the years to come. Many scientists predict in the coming decades parts of the Persian Gulf and South Asia will be all but uninhabitable in the summer months as temperatures are forecast to far exceed all international occupational health standards. Even countries with historically moderate climates are going to be feeling the strain. The Times of London reports that Britons vacationing in Spain are experiencing heatwaves spiking to 115 degrees Fahrenheit and the London School of Economics has forecast that the heat hitting the British Isles will result in 1,000 heat related deaths in the UK during the summer of 2018. For reference, once the temperature exceeds 85 degrees Fahrenheit, our bodies reach the "heat stress threshold"... we have trouble dissipating heat quickly enough to regulate our core body temperature. OSHA, the American Occupational Safety and Health Administration guides employers to begin to implement precautions when the temperature reaches 91 degrees (although states that heat awareness is necessary at even lower temperatures). This summer, the temperature in Baghdad, Iraq has exceeded 100 degrees every day since May 30 and has logged multiple days of 120 degrees. Southern Iraqi cities have experienced 125 degrees this year. Think a sea breeze would bring welcome relief? Weather.com comments that the breeze off the Persian Gulf brings stifling humidity with it.

What is a person to do? A person who relies on manual labor to earn a living and returns home to an unairconditioned home to rest has no easy escape. Addressing the problem will be a key aspect of human health and productivity. Can the problem be addressed in place or will we see a mass migration to cities in higher latitudes? Such a migration would be without precedent as many affected regions have multiple megacities with populations in excess of 10 million residents... and growing. Compounding this, cities constructed of asphalt and concrete are heat sinks which trap and intensify the heat.

In July, the New York Times reported that the Administrative Staff College of Hyderabad conducted a pilot project where they covered tin roofs with white tarps resulting in a 2 degree Centigrade drop in the interior temperature of living structures, making the dwellings bearable. The university would like to expand the experiment to a 1 square kilometer region of the city, but funding has not materialized.

NPR recently ran a story about the heat inside a garment factory in Bangalore, India. Anat Nyshadham, A professor at Boston College was visiting to do an unrelated project but was overwhelmed with how

hot it was inside the factory. Purely for energy efficiency, the owner of the factor was switching to LED lighting which uses one seventh the electricity for illumination. The side benefit is that the lights also generate about one seventh the heat. The parent company owns 50 factories and 26 have made the lighting switch which sets up a great experiment. It turns out that the switch in lighting lowered the factory temperature by more than 4 degrees.

The research showed that when the factory temperature exceeded 85 degrees, productivity dropped by 3.3% and profits dropped by 2.2%. This is a concern because the number of days exceeding 85 degrees is growing and clearly shows an effect on profitability. As such, the parent company is dedicated to measures that will lower the factory temperature. Air conditioning is not feasible for a number of reasons including cost and the contribution that it makes to global warming. However, in addition to the lighting change, they have found simple measures that make a difference. Moving construction out of the city and into the cooler countryside and building 1 story facilities with high ceilings for instance have a large effect. Such changes drop energy costs and increase productivity, a real win-win proposition.

As the world copes with the challenges of climate change, many factors that affect the quality of life or even viability of a healthy workforce will be encountered by businesses. Recognizing these challenges and addressing them are critical to devising solutions that not only achieve an organization's financial goals, but make life better for their workforce. As a 19-year-old kid working road construction, I often reminded myself on a hot day, "Study hard in school and you will be able to put this all behind you." Most of the world does not have that luxury. Most of the world will not head home to an air-conditioned home at the end of the day. These are challenges that must be addressed.

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