Invited Article

A Heating Planet: Demanding Urgent Attention!

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The Climate Crisis triggered by us humans has put the Planet on a boil. Not only is the resultant heat adversely impacting us but it is also nudging risk mitigation to adapt to the new demands. Here is a quick overview in general and a call for addressing the serious implications for India in particular - which is likely to be the worst affected.

The Earth continued to endure a period of significant heating in 2020 according to the World Meteorological Organization (WMO)[1]. Its provisional assessment suggests 2020 will be one of the three hottest, just behind 2016 and 2019. Other than record numbers, research findings suggest that hurricanes get stronger when they hit land because of rising temperatures. Other impacts noted by the WMO in 2020 included wildfires in Siberia, Australia and along the US West Coast and South America, which saw plumes of smoke circumnavigate the globe. Floods in Africa and South East Asia displaced large numbers of people and undermined food security for millions.

Much of this excess heat generated from warming gases in the atmosphere ends up in the oceans. This in turn is putting added strain on the seas, with around 80% of global waters experiencing at least one marine heatwave this year. These events, similar to heatwaves on land, see prolonged exposure to high temperatures which can have devastating impacts on marine creatures and ecosystems.

A research report published, in The Lancet[2], by a team of public health experts has warned how more frequent, more intense heat waves in particular - are already damaging human health around the world. In the last 20 years, it says, there has been a 50 percent increase in heat-related deaths among people older than 65, with 296,000 deaths in 2018. Most of those deaths were in Japan, China, India, and parts of Europe.

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Extreme heat also makes it hard to work, especially outdoors. According to the report, 302 billion hours of potential labour productivity were lost in 2019 alone. Workers in hot, humid countries like India and Indonesia were most affected.

Silent killer[3]

Despite the fact that people are dying from heat and heat waves, we do not really fully understand it because we record these illnesses and deaths as say kidney failure or heart attack. Heat is killing more people in the U.S. than floods and hurricanes combined and the numbers are still seriously deflated. Moreover, in the U.S. for instance, heat disproportionately affects low-income and Black and brown communities. They were victim to urban-planning policies that have left them especially susceptible to the urban heat-island effect. Low-income areas tend to be treeless, concrete-filled neighborhoods that are significantly hotter than adjacent, leafy, wealthier neighborhoods. Tree-shaded surfaces, for example, can be twenty to forty-five degrees Fahrenheit cooler than the peak temperatures of unshaded streets and sidewalks.

It is not just extreme heat but the slow-roasting increased nighttime temperatures that do not allow the body to cool down and repair itself. There is a strong case for naming heat waves to give this deadly risk the spotlight it desperately needs, and bring media attention, improved advance warning, new public policy, protection for outdoor workers, resources, and a culture of better preparation that can result in saving lives.

"Will India get too hot to work[4]?"

McKinsey highlights the gravity of the implications in this case study. "India is especially vulnerable to lethal heat waves caused by climate change. Extreme heat will impact both the livability and workability of India in the decades to come. Lost labor hours due to extreme heat could put approximately 2.5-4.5 percent of GDP at risk by 2030, equivalent to roughly $150-250 billion.

The study also red flags that India could become one of the first places in the world to experience heat waves that cross the survivability limit for a healthy human being resting in the shade, and this could occur as early as next decade. Moreover, rising heat and humidity levels will impact labour productivity and economic growth in an economy that relies substantially on outdoor work.

While the hottest air temperatures ever recorded have been in places like Saudi Arabia, the Sahara Desert, and Death Valley, California, in the United States, the north of India

has historically exhibited some of the world's hottest wet-bulb temperatures. Wet-bulb temperature is an indicator that combines air temperature and relative humidity and provides a more accurate measure of heat stress on the human body than air temperature alone. But when sky-high humidity is also involved, evaporation slows down and eventually stops. That point comes when the so-called the wet-bulb temperature - a measure that combines air temperature and humidity - reaches 35 degrees Celsius (95 degrees Fahrenheit).* According to this scientific literature, 35 degrees wet-bulb temperature is commonly regarded as the heat-stress limit for human survival. At 35°C wet-bulb a healthy human being can survive, resting in the shade, for approximately five hours.

Wet-bulb temperatures?

While wet-bulb temperatures during the worst heat waves in India today rarely exceed 32 degrees, the climatological analysis conducted for this case study indicates that temperatures during the most severe heat waves in the hottest parts of India could begin to breach 34 degrees wet-bulb by 2030. Such high temperatures have been recorded only a couple of times on Earth, including a 34.6-degree wet-bulb measurement on the coast of the Persian Gulf in July of 2015, and a later 35.4-degree wet-bulb measurement in the same region. Exposure to 34-degree wet-bulb temperatures will increase mortality risk for the sick and elderly, but more importantly, due to the amplifying urban heat-island effect which can raise temperatures in urban areas, for example, due to the presence of concrete buildings and limited green spaces, urban or semi-urban centers exposed to these temperatures may cross the 35-degree survivability threshold for healthy adults.

By 2050, portions of northern India could begin to experience heat waves that cross the 35-degree wet-bulb survivability with a probability of occurrence at least once in the decade centered on 2050 approaching 80 percent. As heat and humidity increase, this could also affect labor productivity in outdoor work. This phenomenon occurs not only due to the need to take breaks to avoid dangerous core temperature rise, but also because the body will fatigue to reduce the amount of work (and therefore heat) that it is able to produce.

Another consequence of chronic exposure to extreme heat is a rapid decrease in the capacity for outdoor work. The McKinsey study estimates the number of daylight hours during which outdoor work is unsafe will increase approximately 15 percent by 2030, compared with today's levels.

* *www.scientificamerican.com*

This is significant because India's economy is highly dependent on heat-exposed labor. As of 2017, heat-exposed work produces about 50 percent of GDP, drives about 30 percent of GDP growth, and employs about 75 percent of the labor force, some 380 million people. Lost labor hours due to increasing heat and humidity could put approximately 2.5 - 4.5 percent of GDP at risk by 2030, equivalent to roughly $150 - 250 billion.

Humid Heat[5]

"I believe that the Indo-Gangetic belt and the Sundarbans will be among the most affected parts of the country since multiple climate change impacts are playing out in those regions. The Indo-Gangetic plains are hot and humid. Humid heat is much more dangerous than dry heat, and a simultaneous spike in heat and humidity can significantly raise the risk of cardiovascular and neurological conditions'', warns Dr. Chirag Dhara, eminent Climate expert. "In fact, the deadly heat waves in the summer of 2015 across India and Pakistan, with high fatalities, were a result of the combination of high temperature and humidity that lasted several days".

While the focus of this paper is on heat, Chirag Dhara highlights the complex interplay of forces triggered by heat - sea level rise, falling ground water levels and cyclones. The Indo-Gangetic plains are projected to see higher intensity of 'humid heat waves' with global warming, he says. The Sundarbans in particular is seeing a highly accelerated pace of sea level rise relative to the global average (attributed not just to global warming but also to extensive upstream damming of rivers flowing into the Sundarbans and ground water extraction). In addition, there is the propensity for cyclones, which are likely to intensify with warming.

Is buying heat-wave insurance the solution[3]?

Cities in countries that are less used to dealing with extreme heat are especially vulnerable. The 2003 heat wave in Europe led to seventy thousand deaths. In addition to loss of life, cities - especially ones with older infrastructure that is not designed for these temperatures - are exposed to heat risks to structures, transportation, and other critical systems during heat waves. Insurance that covers heat impacts right now is in the life-and-health and business-interruption product lines. Property and casualty insurance for heat is virtually nil.

The economic impact of heat waves is massive. They can cut goods and service outputs by more than twenty per cent in sectors such as manufacturing and construction. Global economic costs of reduced productivity could reach two trillion dollars by 2030. From 2002 through 2009, the U.S. health-related cost of heat waves was $5.3 billion.

Conclusion

What if India does get too hot to work, as the science is now pointing out? Would the current format of insurance be a good enough safety network? How farther and wider could it take the protection gap? What kind of risk mitigation measures are called for, starting now? Heat, what may seem a run of the mill component of the overall climate risk, beckons fresh thinking between what increasingly tends to be cross-class, causa proxima, and the fine line of distinction between a peril and a hazard! A parametric approach would only be a part solution. This is a call for re-engineering insurance.

Michele M. Wucker[6] is the bestselling author of Gray Rhino: How to Recognize and Act on the Obvious Dangers We Ignore. A commentator and policy analyst, Michele specialises in the world economy and crisis anticipation - she categorises heat waves as a gray rhino - an essential metaphor for risk managers today. Something that we see racing in our direction, yet likely to ignore and thereby get runover. Would we wish to ignore it? There couldn't be a timelier warning and a reminder to act!

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