Heat Is An Invisible Climate Risk

(The editorial is based on the article "Heat is an invisible climate risk" which appears in Livemint for 19th November 2018. It analyses the issues related to climate change.)

Climate change often triggers images of melting icebergs and long periods of drought. Study regarding the slow and gradual trend of rising temperatures that directly impacts people's lives, livelihoods and productivity is always missed in this scenario. **Heat is an invisible climate risk that traps communities unaware. Heat is a slow-moving climate hazard that is yet to be recognized as a 'natural calamity' by the National Disaster Management Act, 2005.**

Latest Trends

- Recent research from the **Massachusetts Institute of Technology (MIT)** suggests that heat waves in South Asia could push heat and humidity levels beyond the survivability thresholds of 35°C. The **temperature of 35°C can be considered an upper limit** on human survivability.
- The most intense hazard from extreme future heat waves is concentrated around densely populated **agricultural regions of the Ganges and Indus river basins** - a region inhabited by about one-fifth of the global human population.
- Heat waves, without mitigation, presents a serious and **unique risk in South Asia** due to an unprecedented combination of severe natural hazard and acute vulnerability.

The latest Intergovernmental Panel for Climate Change (IPCC) special report presents the difference between the two scenarios of global warming at 1.5°C and at 2°C above pre-industrial levels.

1.5°C and 2°C warmer worlds

The global climate has changed relative to the preindustrial period with multiple lines of evidence that these changes have had impacts on organisms and ecosystems, as well as human systems and human well-being.

- **Substantial changes in regional climate occur between 1.5°C and 2°C, depending on the variable and region in question. Particularly large differences are found for temperature extremes.**
- Limiting global warming to 1.5°C limits risks of increases in heavy precipitation events in several regions.
- Risks to natural and human systems are lower at 1.5°C than 2°C.
- Some regions are projected to experience multiple compound climate-related risks at 1.5°C that will increase with the warming of 2°C.
- **Global warming of 2°C would lead to an expansion of areas with significant increases in runoff as well as those affected by flood hazard, as compared to conditions at 1.5°C global warming.**
- The ocean has absorbed about 30% of the anthropogenic carbon dioxide, resulting in ocean acidification and changes to carbonate chemistry that are unprecedented in the last 65 million years at least.
- Global mean sea level rise will be around 0.1 m (10 cm) less by the end of the century in a 1.5°C world as compared to a 2°C warmer world.

The Ministry of Environment, Forests and Climate Change (MoEFCC) recently released a draft of the India Cooling Action Plan (ICAP).

Importance of ICAP

- **The ICAP is an opportunity for cities, state governments and policymakers to address 'cooling' as a national adaptation need.**
- Reports like ICAP are also needed to develop an institutionally coherent approach, addressing technology, regulating future urban growth, protecting natural ecosystems, retrofitting existing built forms and planning for vulnerable people.

Shortcomings in ICAP

- ICAP in its current form fails to address future cooling demand through technology innovations.
- ICAP fails to integrate future climate trends in its projection of heat risk under different geographic conditions. Cooling requirements in dry and arid regions, as opposed to humid coastal regions, will vary drastically; so will the technology and planning.

- In response to increasing threats, ICAP misses a crucial opportunity to
    - **mandate retrofitting guidelines** for existing buildings, infrastructure and services to potentially reduce urban heat island effects;
    - **create awareness** and encourage informed participation to plan for collective heat resilience rather than focusing on a greater reliance on personal cooling solutions;
    - **ensure early warning alerts include heat warnings** and personal resilience strategies that are responsive to dry and humid heat conditions, factoring temperature and humidity as two simultaneous risk factors.

Suggestions for ICAP

- It must **consider critical interventions** to integrate heat action and cooling strategies towards a sustainable, equitable and climate resilient future.
- Integrating climate projections in a city and regional plans can emphasize the need for climate-sensitive urban environments and potentially reduce ambient temperatures.
- In addition to land use plans, the report should suggest cities to use remote sensing data to produce vulnerability maps that correlate urban **heat islands*** with depleted tree covers, under different temperature scenarios.

*The term **"heat island"** describes built up areas that are hotter than nearby rural areas. The annual mean air temperature of a city with 1 million people or more can be 1.8–5.4°F (1–3°C) warmer than its surroundings.

- This can help cities **identify highly exposed areas** and target interventions such as increasing tree cover and **mandating building regulations** towards climate sensitive urban development.
- **Heat vulnerability maps** under different climate scenarios can be used to inform decision-makers of the costs of inaction by correlating data on health impacts, economic productivity loss, and risks of emigration.
- It should provide to **increase awareness on heat stress** to influence long-term adaptation action.

Way Forward

- People retrofit their homes, buildings, and neighbourhoods in response to increasing heat and flood risk, but rarely come together to plant trees and plan for long-term heat resilience. **Behavioral change among people is a key line of** defence **against increasing temperatures.**

- A recent study conducted in poor and vulnerable communities in Surat showed that residents living in poor communities lack the information, awareness, and understanding of the severity of heat risk on their bodies and their lives. **For example,** respondents said they lose an average of 7-8 workdays during extreme summers due to illnesses and exhaustion. Some daily-wage workers reported job loss and the inability to find new jobs once they had recovered. Unfortunately, people still perceive heat as an inconvenience and respond to it by adopting personal comfort habits rather than organize or demand for long-term solutions.
- In most cases, people who are vulnerable to increasing heat have limited or no knowledge of how they can protect themselves from heat stress or treat themselves when exposed to extreme heat. Therefore, awareness should be generated about changing heat trends.
- ICAP is an opportunity for cities to leverage existing adaptation potential in poor communities and channel this towards long-term cooling action. It would do this by way of planting more trees in the neighbourhood, identifying common institutions to be designed as **'cooling shelters**' and mandating improved labour and housing conditions through labour unions, companies, and pro-poor housing authorities.
- **Currently, the most disaster preparedness action focuses on flood risk and other natural disasters (sudden shocks like earthquakes, tsunamis, forest fires etc).** This should change and action plans should be developed for long-term risks like climate change, as well.

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