On India's 'heat action plans'

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The story so far: Come summer, we are used to seeing heat alerts from the India Meteorological Department (IMD) for various parts of India. This year, these alerts began in February itself. Parts of the northeast and western India have already reported appreciably warm temperatures (3.1-5 degrees Celsius above normal) before the start of summer. The IMD has also predicted an increase in the maximum temperature and the frequency of heatwave conditions in the forthcoming days over eastern and southern India, raising the question of India's readiness to face this hazard.

What is a heatwave?

According to the IMD, the definition of a heatwave depends on the physiography of regions. The IMD will declare a heatwave if the maximum temperature recorded at a station is 40 degrees Celsius or more in the plains, 37 degrees Celsius or more in the coast, and 30 degrees Celsius or more in the hills.

A heatwave's severity is determined by its departure from normal temperature. There is a 'normal heatwave' when the departure is by 4.5-6.4 degrees Celsius and a 'severe heatwave' if the departure is greater. Heatwave declaration could also be based on actual maximum temperature: a 'heatwave' is when this figure is greater than 45 degrees Celsius and a 'severe heatwave' when greater than 47 degrees Celsius. The IMD takes the latter two 'routes' only when at least two stations in a meteorological subdivision report such a high maximum or when at least one station has recorded a corresponding departure from the normal for at least two consecutive days.

How are we tackling heatwaves?

With the severity and frequency of heatwaves increasing across the country, governments at various levels — State, district, and city — have prepared heat action plans (HAPs). HAPs aim to increase preparedness and lower the adverse impacts of extreme heat by outlining strategies and measures to prepare for, address, and recover from heatwaves. The National Disaster Management Authority and IMD are reported to be working with 23 States to develop HAPs. There is no centralised database on HAPs, but at least 23 HAPs exist at the State and city level, with a few States, such as Odisha and Maharashtra, laying out district-level HAPs.

HAPs in India follow a general pattern. They provide a snapshot of regions' heat profile, including information on the number of past heatwave events, yearly trends in the summer maximum temperature, land surface temperature, and so on, followed by a vulnerability assessment which maps out regions that require immediate attention and a response plan. This plan presents recommendations for mitigating and addressing heatwave impacts before, during, and after a heatwave and outlines the roles and responsibilities of various line departments, such as the disaster management authority, labour department, and police.

What do the HAPs recommend?

HAPs typically suggest a combination of measures such as using forecasts and early warning systems to alert the public and relevant authorities about heatwaves, educating the public

through campaigns that provide information on risks associated with heatwaves, building heat shelters and cooling centres, and providing clean drinking water to avoid dehydration.

HAPs provide directives for hospitals to be well equipped with supplies and an adequate number of trained healthcare workers to recognise and treat a large influx of patients with heat-related illnesses. HAPs also suggest long-term measures such as adopting urban planning strategies that promote tree planting, using heat-resistant building materials to reduce urban heat island effect, and using cool roofing technologies to reduce solar absorption, thereby decreasing indoor temperatures. In addition, HAPs push for effective coordination among stakeholders, including government agencies, healthcare providers, community organisations, and emergency services.

What debilitates HAPs from addressing the problem effectively?

While HAPs are excellent guidelines that have brought into focus the problem of heatwaves and the need to address them, much work remains to make them practical to the highly variable weather conditions and the diversity of socio-economic conditions prevailing in the country.

The local context: A national threshold is what determines a heatwave today. However, heatwaves will have to be determined at disaggregated scales such as States, districts, and cities. Many cities have been reeling under extreme temperatures, although no heatwave has been declared. Aspects such as the urban heat island effect, the type of roofing, and proximity to water or green bodies are important influences on the local temperature in addition to humidity. Further, the lived local experience is an important aspect to be considered. Therefore, the scope of a heatwave needs to be expanded to accommodate humid heat and warmer nights in addition to extreme dry heat. This requires the development of a heat index that accounts for multiple factors beyond temperature. Regional variations also need to be considered, as HAPs that are tailored to specific climatic conditions, demography, and a region's infrastructure can lead to the formulation of strategies and interventions suited to the local context.

Inconsistent methods: While most HAPs have conducted vulnerability assessments during the development of the plans, the methods adopted are inconsistent. It is, therefore, time to transition to a robust, full-fledged climate risk assessment that can identify the likelihood of heatwaves in different areas and estimate the exposure of people and important assets to heatwaves while factoring in inherent vulnerabilities. Also, hotspot mapping for prioritising and formulating targeted interventions is needed, which is now possible with easy-to-access geospatial data.

Vulnerable populations: All HAPs prioritise the protection of vulnerable populations such as low-income communities, children, and the elderly. But what is missing are targeted interventions that account for the varying needs of populations based on local social and demographic factors, in addition to infrastructure elements that could exacerbate heat. Over 90% of India's economy is informal and starkly visible when we step out of our homes, be it a pushcart vendor, a chaiwala, household help, or sanitation worker. If we acknowledge heatwaves as a public health concern, targeted strategies need to be formulated by recognising various socio-economic differences.

Resource allocation: The implementation of HAPs can vary significantly depending on the priorities of local governments and the capacities available. Hence, there is a need to allocate dedicated budgets for HAPs. Further, it is of utmost importance to hold dialogues between the

state, civil society organisations, and worker unions to co-plan a financial mechanism that can allow informal workers to be indoors during a heatwave while not losing their incomes.

Breaking down silos: HAPs currently are stand-alone plans with limited finance. Pooling in resources would be possible if they are integrated with broader action plans promoting urban resilience and climate adaptation. Such an integration will likely have a bearing on the overall effectiveness of HAPs and their implementation and prompt improvements in data collection and monitoring systems, which are essential to help assess the effectiveness of HAPs over time.

Finally, while HAPs mention long-term measures, they are limited to building infrastructure (especially cool roofs), with a cursory mention of green and blue spaces. For HAPs to be effective, focused planning on including nature-based solutions to address extreme heat in hotspots is a must.

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