

Extreme Heat is a Slow-Onset and Unequal Urban Disaster



Extreme heat creates unequal risks for outdoor workers, small businesses, and low-income communities. Photo: AIDMI.



southasiadisasters.net

Promoting Disaster Risk and Climate Resilience Awareness Across South Asia Since 2005.



Mobilising Social Investment for Urban Heat Resilience in Asia: Reflections from the AVPN Climate x Health Community of Practice

By *Melissa Ananthraj*, Director, Programs, Climate Action, AVPN, Asia

Extreme heat is rapidly emerging as one of Asia's most significant, yet under-recognised, urban disasters. Unlike floods or cyclones that trigger immediate emergency response, heat is a slow-onset hazard that quietly intensifies over time, affecting health, livelihoods, productivity, and social equity. Yet its impacts are far from equal. Women, particularly those working in informal economies, home-based enterprises, caregiving roles, and small businesses, often experience disproportionate exposure while carrying additional unpaid care responsibilities. With limited access to cooling, healthcare, financial protection, decision-making, extreme heat is increasingly becoming not only a climate challenge, but also a gender and development challenge.

These reflections draw on insights from the **AVPN Climate x Health Community of Practice**, seeded by [Autodesk Foundation](#) which brings together innovators, investors, governments, researchers, philanthropies and healthcare practitioners to explore how climate and health solutions can be scaled across Asia. Drawing on insights from innovators, investors, governments, researchers, philanthropies, and healthcare practitioners across the region, the paper concludes that Asia's greatest challenge is no longer a shortage of innovative solutions. Rather, it is creating the enabling ecosystems, financing mechanisms, and

partnerships that allow proven solutions to reach scale.

It identifies extreme heat as a priority requiring a shift from reactive response towards prevention. Cities must invest upstream in early warning systems, heat surveillance, adaptive urban planning, community cooling infrastructure, and workplace protection measures that reduce exposure before people become ill. These interventions not only save lives but also protect livelihoods, strengthen labour productivity, and improve urban resilience.

Despite growing innovation across Asia, many heat resilience solutions remain trapped in the pilot phase. Fragmented financing, limited procurement pathways, and weak integration into public systems continue to prevent successful innovations from reaching the communities that need them most. This is where social investment has an essential role to play. Philanthropy, family offices, impact investors, and corporate social investment can provide catalytic capital that enables experimentation, strengthens local organisations, generates evidence, and de-risks solutions for larger public and private investment.

Equally important is ensuring that investment is guided by equity. Heat exposure is not evenly distributed across cities. Women street vendors, waste pickers, market traders, delivery riders, construction workers, and owners of micro and

small enterprises frequently face the highest levels of exposure while remaining largely invisible in urban planning. Social investment should therefore support locally led and gender-responsive solutions that recognise women not simply as beneficiaries of resilience programmes, but as entrepreneurs, caregivers, community leaders, and innovators whose knowledge is critical to effective adaptation.

Better integration of climate, health, gender, and socioeconomic data can also help cities identify hidden vulnerabilities and direct resources where they are needed most.

As Asia's cities continue to warm, mobilising social investment is about far more than financing individual projects. It is about building resilient urban systems that protect lives, sustain livelihoods, and reduce inequality. By aligning capital with prevention, equity, and long-term systems change, social investors can help transform extreme heat from a growing urban risk into an opportunity to build healthier, more inclusive, and climate-resilient cities. The challenge now is not whether solutions exist, but whether we can mobilise the partnerships and capital needed to ensure they reach the people who need them most.

Acknowledgements: This article draws on insights from the AVPN Climate x Health Community of Practice, an initiative of the [AVPN](#) Climate Action team, made possible through the support of the Autodesk Foundation. ■

The Mind in the Heat: Mental Health Among Ahmedabad's Mobility Workforce

By Rohan Trivedi, AIDMI, India

At a busy Ahmedabad bus terminal, the heat is not invisible. It sits on the steering wheel, rises from the road, enters the bus cabin, and follows the driver through every signal. At an auto-rickshaw stand in Maninagar, a driver wipes his face, checks the road for passengers, and waits. The city is moving, but the heat is moving with it.

Extreme heat does not only raise body temperature. It also raises irritability, anxiety, sleep disruption, and psychological strain among mobility workers who spend long hours on the road. For them, heat is not only a public health issue. It is an occupational safety issue.

AIDMI's findings show this clearly. Among 716 bus drivers surveyed, 458, or 64%, reported that extreme heat has a mental effect on them. Among 103 auto-rickshaw drivers, 64, or 62%, reported a similar burden while driving, including irritability, anxiety, or disturbed sleep. Mukeshbhai Rana, a rickshaw driver from Maninagar, explains it simply: "Driving a rickshaw in this heat is not only hard on the body. Sometimes the mind also feels tired. We feel irritated and worried, but for daily income, we still have to stay on the road."

The auto-rickshaw data gives the picture in sharper detail. Forty-five drivers reported increased irritability or anger while driving. Another 45 reported heat-disrupted sleep, and 39 reported anxiety about meeting daily income targets. Only 38% said heat has no major mental impact.

One can imagine the strain: a driver feels dizzy, the cabin is hot, passengers are fewer, fuel and repair costs are rising, and the day's income is still uncertain.

From a disaster risk reduction perspective, the strongest finding is the dose-response pattern between physical symptoms and mental impact. Among auto-rickshaw drivers, mental-impact reporting rises from 0% among those with zero or one physical symptom, to 47% among those with two symptoms,

and to 78% among those with three or more symptoms. The bus driver pattern is similar, rising from 43% to 67%, 78%, and then 100% as symptoms accumulate. As the body struggles, the mind also carries the load.

Longer exposure makes the burden heavier. Among auto-rickshaw drivers working more than eight hours a day in extreme heat, 67% reported a mental impact, compared with 36-40% among those working fewer hours. This matters for



“અતિશય ગરમીમાં રિક્ષા ચલાવવું માત્ર શરીર માટે જ મુશ્કેલ નથી. ક્યારેક મન પણ થાકી જાય છે. ચીડિયાપણું આવે છે, ચિંતા થાય છે, છતાં રોજની આવક માટે રસ્તા પર રહેવું જ પડે છે.”

“Driving a rickshaw in extreme heat is not only hard on the body. Sometimes the mind also feels tired. We feel irritated and worried, but for daily income, we still have to stay on the road.”

— Mukeshbhai Rana, Rickshaw-driver, Maninagar, Ahmedabad, Gujarat, India. Photo: AIDMI

concentration, road safety, passenger safety, and daily functioning.

Financial strain adds another layer. Drivers facing serious difficulty paying EMI or rent reported mental impact at 100%. Those with moderate difficulty reported it at 50%, while those without payment strain reported no mental impact. Drivers with rising maintenance costs also reported higher mental impact, 65%, compared with 53% among those without rising costs.

Ahmedabad's heat action must therefore see the worker behind the wheel. Drinking water, ORS, shade, rest, warnings, welfare support, and safer working conditions are not extras. They are risk reduction measures for a city that must keep moving, even in rising heat during every harsh summer afternoon in Ahmedabad.

References:

1. **Psychological symptoms among heat-exposed workers**
Venugopal, V. et al. "Climate induced heat stress and its psychological effects among South Indian workers." *Archives of Environmental & Occupational Health*, Vol. 80, No. 9, 2025.

2. **Labour-hour and economic losses from heat in India**
"India's Informal Workers Struggle Amid Rising Heat Waves." *Down to Earth*, citing Lancet Countdown 2024 estimates.
<https://www.tandfonline.com/doi/full/10.1080/19338244.2025.2545778>
3. **Heat stress among gig and app-based transport workers**
"Extreme heat stress draining India's gig workforce." *Policy Circle*, citing Indian Federation of App-based Transport Workers, 2024 survey.
<https://www.downtoearth.org.in/climate-change/sweat-for-survival-how-long-can-indias-informal-labour-bear-the-heat>
<https://www.policycircle.org/opinion/extreme-heat-stress-gig-work/>
4. **Heat Action Plan coverage gap for informal workers**
"It is time to protect India's workers from the heat." *The Hindu*, 10 May 2025, reviewed via Chahal Academy.
<https://chahalacademy.com/the-hindu-editorial-analysis/10-may-2025/1841>

Heat and Mental Health: Key Findings

- **64% of bus drivers and 62% of auto-rickshaw drivers** reported mental health effects linked to extreme heat.
- Common impacts included **irritability, anxiety, disturbed sleep, and stress about daily income**.
- Mental strain increased as physical heat-related symptoms accumulated.
- Among auto-rickshaw drivers working more than eight hours a day, **67% reported mental impacts**.
- Financial pressures, including rent, loan instalments, fuel, and vehicle maintenance costs, added to heat-related stress.
- Drinking water, ORS, shaded rest areas, regular breaks, heat warnings, and welfare support should be treated as essential occupational risk-reduction measures.

Extreme Heat and Unequal Risks for Workers

By **Sharon Block**, Professor of Practice, Executive Director, Center for Labor and a Just Economy, Harvard Law School, United States

As in India, heat waves in the U.S. do not visit the same hardships on everyone, even when people are exposed to the same temperatures. While well-paid 2026 World Cup soccer players got frequent paid "hydration breaks", too many low-paid workers – who are disproportionately women in the US and in India -- are compelled to work during extreme heat, putting their bodies and their livelihoods at extreme risk. We know that to be effective, measures to protect workers must address three dimensions: the need for:

1. Water, rest, and shade to protect workers physically;
2. Wage or income replacement to cover times when work is not safe; and
3. Measures to reduce heat in workers' homes so that they get the recovery and rest they need to work safely the following day.

Participatory Knowledge and Extreme Heat: Strengthening People-Centred Local Urban Resilience

By *Piyush Poddar*, Lead-Programmes, Martha Farrell Foundation, New Delhi, India

To escape the unbearable summer heat in Delhi, a woman domestic worker began carrying wet clothes with her while travelling to work. Another shared that unlike previous years, she could no longer sleep on the floor during summer nights because the heat trapped inside her one-room house had become unbearable. In another instance, a domestic worker had to purchase an additional fan to cope with rising temperatures, increasing household expenses without any corresponding increase in family income.

The [Martha Farrell Foundation](#), an organisation working on issues of safety and gender based violence in Delhi and Haryana, conducted a participatory study with 200 women domestic workers and 80 adolescents in four areas of Delhi namely Noornagar, Jasola Vihar and Taimoornagar in South-East Delhi, and Mukherjee Nagar in North Delhi, to understand the impact of excessive heat on their lives. Through community discussions, collective reflection and lived experiences, women documented how climate stress was reshaping their daily realities.

The study found that rising temperatures have increased household electricity consumption, leading to higher utility expenses without a corresponding increase in wages, thereby reducing the net incomes of domestic workers. Women also reported an erratic and lower water supply, which increased their burden as the key providers of



Community leader from Taimoornagar in South-East Delhi facilitating a discussion with women domestic workers to understand the impacts of climate change.

household water needs. In some cases, women lost working hours waiting for water and adolescent girls had to skip school to fetch and store water. To cope with excessive heat, domestic workers reported placing wet clothes on their bodies while cooking or sleeping to stay cool. However, this frequently resulted in rashes and other health concerns, adding to their out-of-pocket medical expenses. The lived realities of women domestic workers reveal dimensions of climate vulnerability that are often absent in technical discussions on urban resilience. In Taimoornagar one participant reflected, "There are more fights at home during heat waves, as more heat means more anger."

In the communities where the study was conducted, women have formed solidarity groups to collectively

respond to the impacts of climate stress and other forms of injustice. These groups, consisting of nearly 80–100 women, act as first responders in cases of violence, support women in demanding fair wages and create collective support systems within their settlements. In response to rising household expenses, women domestic workers have collectively negotiated with employers for salary increases that reflect the growing cost of living. To address water shortages, women's collectives have written letters and met municipal authorities and elected representatives to demand a regular and predictable water supply. In one such effort in Mukherjee Nagar in North Delhi, sustained engagement resulted in water tankers arriving on time and in multiple batches. The collectives have also raised awareness and

concerns regarding the unequal burden of climate impacts on women and girls. Through regular meetings, participatory activities women have documented local challenges and identified collective solutions.

While climate justice is often discussed globally in terms of historical emissions and responsibility, it must also be understood through its unequal impact on vulnerable communities. The experiences of domestic workers and adolescents living in informal settlements like Taimoornagar are equally important forms of climate evidence. Yet their experiences rarely

shape urban climate planning. Participatory research becomes important in this context because it allows communities to become producers of knowledge rather than passive recipients of policy decisions. The lived realities of women domestic workers reveal dimensions of climate vulnerability that are often absent in technical discussions on urban resilience.

As cities develop Heat Action Plans and urban resilience strategies, communities most affected by climate stress must not remain excluded from decision-making processes. As the climate changes,

urban responses must also change, from top-down approaches to people-centred resilience rooted in lived experiences.

Reference: Martha Farrell Foundation. (2024). Unseen and unprotected: How extreme weather events affect the work and dignity of women domestic workers and their children.

https://www.marthafarrellfoundation.org/uploads/article_category/1728626287_Unseen_and_Unprotected_A%20study_on_impact_of_climate_change.pdf

COOLING, CARE, JUSTICE

Extreme Heat as a Slow-Onset and Unequal Urban Disaster

By Jyoti Mackwan, General Secretary, SEWA, India

Introduction

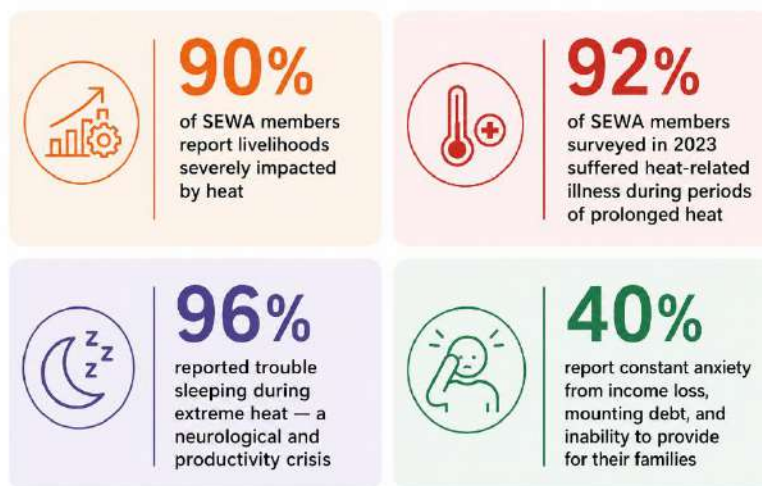
For the 3.8 million informal women workers represented by Self Employed Women's Association (SEWA), extreme heat is not measured in degrees Celsius or global averages — it is measured in meals missed, pregnancies lost, sleep stolen, and bodies pushed past every safe limit. Extreme heat is not simply a weather event. It is a slow-onset, compounding, and deeply unequal disaster — one that cascades through bodies, households, economies, and generations. It falls hardest on those our systems were not designed to protect.

Why "Slow-Onset" Matters — and Who Bears the Burden

Unlike floods or storms, extreme heat rarely produces immediate and visible losses. Its impacts accumulate over time through reduced labour productivity, adverse health outcomes, maternal health risks, and

increased household expenditures. As a result, many of its consequences remain poorly captured by conventional disaster assessment frameworks. This creates a problem of measurement rather than impact. Losses of income during prolonged heatwaves are seldom recorded as losses related to disasters. Institutional frameworks are better

placed to measure discrete events and direct damages than the cumulative and dispersed effects of heat. The consequences of this undercounting extend to policy and finance. Indicators used to guide adaptation planning and resource allocation tend to prioritise losses that are easily observable and quantifiable. This is reflected in





Salt pan workers farming salt in the Little Rann of Kutch, Gujarat, India. Photo: SEWA.

climate finance patterns: despite growing evidence linking climate change and public health, health-focused interventions continue to receive a very small share of multilateral climate finance.

These impacts are also unevenly distributed. Exposure to extreme heat is mediated by existing socioeconomic inequalities, including poverty, informal employment, and gender. Workers in the formal sector may have access to workplace protections, flexible schedules, or cooled environments. Informal workers generally lack such safeguards and are more likely to experience income losses, productivity declines, heightened health risks, and increased financial vulnerability.

Women in the informal economy suffer from the double burden of paid work and unpaid domestic

labour, both of which are exacerbated during heatwaves. Women are often housed in thermally inefficient housing — usually tin-roofed, densely packed and poorly ventilated — where heat builds up during the day and continues to linger at night, weakening the body's ability to recover between bouts of exposure.

Informal sector workers often work long hours under the relentless sun, and are at significant risk of heat stress, heat exhaustion, and heat

"Some members took high-interest loans from local moneylenders due to the heat crisis. When they couldn't repay, they were harassed and asked for favours no woman should endure. This is climate and gender injustice."

— SEWA Grassroots Leader

stroke. Many SEWA members either do not have access to clean drinking water or sanitation facilities. The decreased water intake which makes them susceptible to dehydration and urinary tract infections. Many outdoor workers suffer from several dermatological issues including burns, ulcers, fungal infections, and rashes in their palms and soles.

40% of SEWA members report constant anxiety from income loss and mounting debt. When income collapses and moneylender debt accumulates at extremely high interest rates, family dynamics fracture along predictable lines of gender and power. SEWA grassroots leaders document an associated rise in domestic violence, substance abuse, and in some communities, suicides. These are not peripheral impacts — they are the downstream consequences of a thermal climate shock meeting a system with no buffers. ■

Extreme Heat and Equitable Anticipatory Action: Progress and Challenges in Communities of India

By *Santhosh Srikanth Pattar*, Country Director, ADRA India

Extreme heat is rapidly emerging as one of India's most pervasive climate risks. The year 2024 was the warmest on record, and heatwaves are becoming more frequent, intense, and prolonged across the country. Their impacts extend far beyond discomfort, affecting health, livelihoods, water security, food systems, and urban infrastructure. However, the burden of extreme heat is not shared equally. Informal workers, migrants, women, children, older persons, farmers, and residents of informal settlements face disproportionate risks due to limited access to cooling, safe housing, healthcare, and social protection.

In this context, anticipatory action (AA) offers a promising approach. Rather than waiting for heatwaves to cause harm, AA enables governments, humanitarian organizations, and communities to act on forecasts and early warnings before impacts fully materialize. The growing recognition of heatwaves as a disaster management priority has led to important progress in India. National and state-level Heat Action Plans, improved forecasting by the India Meteorological Department, and increasing collaboration among disaster management authorities, civil society organizations, and scientific institutions have strengthened preparedness efforts.

ADRA India has helped operationalize anticipatory action on the ground. In 2025, ADRA India implemented an anticipatory heatwave response across Delhi-NCR, Gujarat, Maharashtra, and Madhya Pradesh, working with disaster management authorities and

local stakeholders to reduce health and livelihood risks before peak heat conditions occurred. The initiative combined early-warning dissemination, community awareness, hydration support, cooling measures, and targeted assistance for vulnerable populations, demonstrating how forecast-based action can translate into tangible protection for at-risk communities.

Recent pilot initiatives have shown how anticipatory action can reduce heat-related risks for vulnerable populations. Measures such as establishing cooling shelters, installing water and cooling infrastructure, creating shaded public spaces, training frontline workers, and conducting targeted risk communication campaigns have helped improve thermal comfort and community preparedness. These interventions demonstrate that relatively low-cost actions, when implemented before peak heat conditions, can protect lives and livelihoods.

While India has made significant progress through Heat Action Plans, improved forecasting, and city-level

preparedness measures, the next frontier for anticipatory action lies in making these systems more community-centred. Most heatwave triggers and response actions continue to be institutionally driven. There remains considerable scope to involve informal worker groups, resident welfare associations, women's collectives, community volunteers, and local leaders in identifying heat risks, validating triggers, and defining context-specific early actions. Such participation can improve the relevance, ownership, and effectiveness of anticipatory measures, particularly for populations most exposed to heat stress.

Another challenge is the uneven availability of localized heat-risk data. While national forecasting systems have improved, translating forecasts into neighbourhood-level action remains difficult. Heat vulnerability assessments, community mapping, and locally defined triggers for action are still limited in many districts. Sustainable financing for anticipatory action also remains inadequate, despite recent policy provisions that allow the use



of disaster management funds for heatwave mitigation measures.

Moving forward, India's heat resilience agenda must place equity at its centre. Anticipatory action should prioritize those facing the highest exposure and the lowest coping capacity. Equally important is the institutionalization of anticipatory action within local governance systems. Current heatwave responses often remain seasonal and project-based, relying on awareness campaigns, cooling centres, water distribution, and public advisories. Sustained implementation requires deeper integration within Urban Local Bodies, Panchayati Raj Institutions, health systems, and frontline workers such as ASHAs and Anganwadi Workers. Building local

capacities, clarifying responsibilities, and establishing pre-agreed early action protocols can help transform heatwave preparedness into a systematic and predictable governance function.

This requires stronger community participation, localized risk assessments, gender-responsive planning, investment in cooling and water infrastructure, and integration of heat resilience into urban development and social protection systems. Extreme heat is no longer a future threat; it is a present reality. Equitable anticipatory action offers a pathway to reduce losses, protect vulnerable populations, and build resilience before disasters unfold. An equity-centred approach also requires moving beyond awareness and cooling measures toward

livelihood protection. Existing interventions provide important support through risk communication, hydration assistance, and cooling infrastructure, but often fail to address the economic realities of street vendors, construction workers, sanitation workers, gig workers, and daily wage labourers. As India's anticipatory action agenda evolves, stronger linkages with social protection schemes, adaptive work arrangements, contingency financing, and livelihood support mechanisms can enable vulnerable households to act on early warnings without compromising income security. This will be critical to ensuring that anticipatory action reaches those who face the greatest risks and the fewest options for adaptation. ■

अत्यधिक गर्मी: धीमी और असमान शहरी आपदा

By AIDMI Team, India

अत्यधिक गर्मी अब केवल मौसम की समस्या नहीं रही, बल्कि शहरों में गरीब, अनौपचारिक कामगारों, महिलाओं, बच्चों और कमजोर समुदायों के लिए गंभीर आपदा बन रही है। गर्मी बाढ़ या चक्रवात की तरह तुरंत दिखाई नहीं देती, लेकिन धीरे-धीरे स्वास्थ्य, आय, नींद, पानी, शिक्षा और जीवन की गरिमा पर असर डालती है।

Heat Action Plan को केवल चेतावनी तक सीमित नहीं रखना चाहिए। इनमें पानी, छाया, ठंडक, सुरक्षित आवास, स्वास्थ्य सेवा और कामगार सुरक्षा को शामिल करना जरूरी है। राजकोट का उदाहरण बताता है कि जल सुरक्षा के बिना गर्मी से बचाव अधूरा है। दिल्ली, मुंबई और अहमदाबाद के अनुभव दिखाते हैं कि गर्मी गरीब बस्तियों, घरेलू कामगारों और अनौपचारिक महिला कामगारों पर सबसे अधिक असर डालती है।

कूलिंग स्टेशन, कूल रूफ, पानी, शौचालय, आराम की जगह, ORS और सोलर पंखे जैसे उपाय उपयोगी हो सकते हैं। नागरिक-आधारित निगरानी और कामगारों के अनुभवों को नीति में शामिल करना जरूरी है। स्थानीय समुदायों, महिला समूहों और कामगार संगठनों की भागीदारी से Heat Action Plan अधिक व्यवहारिक और न्यायपूर्ण बन सकते हैं।

यह भी जरूरी है कि गर्मी को सार्वजनिक स्वास्थ्य, श्रम सुरक्षा और शहरी नियोजन के मुद्दे के रूप में देखा जाए। केवल तापमान की जानकारी देना काफी नहीं है; लोगों तक समय पर सहायता, सुरक्षित स्थान और आर्थिक सुरक्षा भी पहुंचनी चाहिए। शहरी गर्मी से निपटने की शुरुआत सबसे जोखिमग्रस्त लोगों से होनी चाहिए। ■

Heat Inequity in Mumbai: A Silent, Invisible Public Health Crisis Among Urban Poor

By Nidhi Jamwal, Climate Journalist, Mumbai, India

Rubina Bibi is a 37-year-old widow who lives in a congested slum in Andheri (West) in Mumbai, India's financial capital. Like most of the fellow slum dwellers, her home is a compact one-room of plastered brick walls and a tin roof. The room has no window. The door is made out of a discarded tin-shed. At a corner of this tiny room, is placed a stove on which Rubina cooks food for her three children and old mother.

"Our room is nothing but a *bhatti* [large oven]. Summers become unbearable as the heat and high humidity in Mumbai makes it claustrophobic and suffocating. The tin roof adds to the heat," said Rubina, who is a migrant worker from Murshidabad in West Bengal. She works as a domestic worker in nearby skyscrapers to make a living. The monthly rent of her hot-oven-room-home is Rs 7,000.

During summers, a proper night sleep is what Rubina and her children crave the most. She often gets scolded for coming late to work because almost the entire night she is unable to sleep, which affects her productivity and leads to loss of wages.

"My room has no window. At night we have to close the tin door, as I have two teenage daughters and cannot risk their safety," she said. "Five of us spread mattresses on the floor and sleep. We cannot even spread our legs properly due to lack of space. Cooking inside the room adds to the heat. I feel sick all the time," she narrated.

The plight of Rubina and her family is the story of millions of urban poor



A congested slum in Mumbai. Representational image. Photo Credit: Nidhi Jamwal.

in Mumbai and other metropolises of India, who live in cramped informal settlements where heat gets trapped and there is no ventilation to provide minimum relief.

Research and lived experiences of communities tell us that ambient temperature in unplanned slum settlements is often a couple of degrees higher than the planned, swanky neighbourhoods in cities. Some neighborhoods and communities can feel hotter than others in the same city on the same day.

A study by World Resources Institute (WRI) India, published in 2020, reported that slum settlements in Mumbai are five to six degrees warmer than their neighbouring housing societies, while 37 per cent of the city's buildings with metal roof structures are exposed to a risk of high rise in temperatures or heat risk post monsoon.

This heat inequity is recorded in Municipal Corporation of Greater Mumbai's (MCGM) report titled [*Implementation Pathway for Addressing Heat Risks in Buildings Sector for Identified Hotspots in Mumbai*](#). It notes that some areas in the metropolis were observed to be 6-8°C warmer than the nearby residential zones, which could be attributed to high density construction, low green cover, use of heat-retaining building materials and urban heat island effect. The choice of building materials and prevailing design practices significantly contribute to indoor and outdoor heat gain.

Nature-based solutions (trees), and low-cost cooling options like solar-reflective roofs, khus curtains, cross-ventilation designs, etc can help bring down the temperature in slum households. It is imperative that heat inequity and thermal comfort of marginalised and vulnerable communities must be central to all urban planning and climate action projects. ■

Extreme Heat and Priority Areas for Building Equal Resilience in India

By *Priyanka Thirumurthy*, Head of Communications, Asar Social Impact Advisors, Karnataka, India

In a single-room home in New Delhi, a middle-aged woman stands over a chulha, trying to finish cooking lunch before the afternoon heat becomes unbearable. Outside, temperatures have crossed 40°C. Inside her tin-roofed home, the heat is even more intense. She has fainted twice in recent weeks while cooking. Her husband, whose work requires long hours outdoors, has been falling ill more frequently as temperatures rise. Together, they face a cruel reality: the activities that expose them to dangerous heat - cooking, working, and earning a livelihood - are not optional.

Their experience illustrates a fundamental truth about extreme heat in India - while everyone experiences the rise in temperatures, the risks are not shared equally. Those with access to cooling, healthcare, insurance, and flexible work arrangements can often reduce their exposure. But those without such protections face growing threats to their health, income, and dignity. Building resilience to extreme heat, therefore, requires addressing the inequalities that determine who is most exposed and least protected.

Protect Outdoor Workers

[Around three-quarters](#) of India's workforce works in heat-exposed conditions, and the country could lose the equivalent of [34 million full-time jobs](#) to heat stress by 2030. [Research](#) on informal workers in Delhi found that net earnings fell by nearly 40% during heatwaves. [In Bengaluru](#), a study of waste workers showed that 60% suffered from headaches, dizziness and rashes due to working in extreme heat. But the

Occupational Safety, Health and Working Conditions Code, 2020 does not require heat protection - it leaves it to the government to decide. Binding work-rest standards, wage-loss protection, and parametric heat insurance can ensure that life and dignity is not threatened by extreme heat.

Heat Resilient Neighbourhoods

India must prioritise investing in heat-resilient housing and neighbourhoods. [Studies](#) from Chennai, Ahmedabad and Hyderabad show that indoor temperatures can remain 2-5°C hotter than outdoors at night, denying vulnerable residents relief from daytime heat exposure. While affordable interventions such as cool roofs and low-cost cooling materials have been shown to significantly reduce indoor temperatures, broader reforms are equally critical. Building by-laws and city planning must incorporate and enforce heat resilience through better ventilation standards, permeable paving, ventilation corridors, ward-level thermal mapping and community cooling spaces. Yet these measures remain thinnest in the low-income neighbourhoods where heat risks are greatest, making targeted public investment essential.

Heat must be treated as a public health emergency

[An analysis](#) of the Union Budget's spending on heatwaves shows that there is no budgetary scheme for heat emergency preparedness or mitigation in the health sector. It also highlights low spending under the Health Sector Disaster Preparedness and Response scheme. Rs 14.92 cr was spent in 2024-25 against the allocation of Rs 94 cr. Heat-related

illnesses and deaths, meanwhile, remain underreported and poorly understood. India certifies only deaths from direct heatstroke, capturing a fraction of the true toll; [independent monitoring](#) recorded more than 700 heat-related deaths across 17 states in a single summer that official figures missed. Without data disaggregated by occupation, gender and caste, the most vulnerable stay invisible to the very plans meant to protect them. Strengthening heat-health surveillance, training frontline healthcare workers, linking forecasts to public health action and protecting vulnerable groups must become central components of India's heat response.

Recognise Heat as a slow-onset Disaster

Finally, India must formally recognise extreme heat as a slow-onset disaster at the national level. Unlike floods or cyclones, heat rarely leaves visible destruction in its wake. Instead, it gradually erodes health, productivity, livelihoods, educational outcomes and wellbeing. The absence of a national disaster classification limits access to dedicated resources and institutional attention. Recognising heat as a slow-onset disaster would acknowledge the scale of the crisis and enable a coordinated and adequately funded response that prioritises those most at risk.

As extreme heat becomes a defining feature of India's future, success should not be measured by the number of Heat Action Plans adopted, but by whether the most vulnerable people can live, work, and thrive safely despite rising temperatures. ■

HeatWatch and Citizen-Led Monitoring: Making Urban Heat Inequality Visible

By Ananya Tiwary and Apekshita Varshney,
Project Associates, HeatWatch, Maharashtra, India

Extreme heat is a silent disaster, impacting those who are least able to protect themselves the most.

Heat has already led to major, far-reaching consequences for India's labour force. The Lancet Countdown's 2025 India data estimates that, in 2024, people in India were exposed to an average of 19.8 heatwave days, and heat exposure led to the loss of 247 billion potential labour hours, 124% higher than the 1990–1999 baseline (Romanello et al., 2025). The associated potential income loss from reduced labour capacity was estimated at US\$194 billion in 2024 (Romanello et al., 2025).

However, such macro-level estimates cannot fully explain how different worker groups are exposed to heat differently, what occupational safeguards are missing, how heat is impacting different workers' health and to what extent. Through conducting worker-centric research, HeatWatch, an India-based

non-profit working at the intersection of heat, public health and labour, documents the lived experience through which heat affects health, income and dignity of workers. HeatWatch has conducted research with [gig workers](#), [construction workers](#), [Accredited Social Health Activists \(ASHAs\)](#), [waste workers](#), [garment workers](#), and exposed critical data gaps in national heatstroke fatality counts in [2024](#) and [2025](#). We [found](#) that in 2024 alone, India had over 700 suspected heatstroke deaths – a figure that might be much higher than the official toll.

HeatWatch's research places workers' experiences and recommendations at the centre, recognising workers not only as custodians of knowledge but also as agents of change in shaping policy and employer action. Such evidence can strengthen guidelines such as heat action plans by going beyond generic advisories towards occupation-specific and gender-

sensitive interventions. For instance, in the context of construction and waste workers, mandatory rest breaks and work hours rescheduling are important interventions; while for indoor garment workers, improved ventilation and reduced production targets would be necessary steps. However, such workplace measures must be backed by stronger social protection, as climate impacts deepen existing vulnerabilities such as unstable wages and limited access to social security benefits.

In April 2026, HeatWatch and the Indian Federation of App-Based Transport Workers reached a key milestone by getting a [letter](#) signed and submitted to the Ministry of Labour and Employment, seeking mandatory heatwave protections for gig workers. The letter sought mandatory heatwave protections for gig workers under the Code on Social Security, 2020, and was a positive development towards



framing actionable heat-resilient policies for workers.

HeatWatch has also tried to make heat inequality visible in innovative ways. Our heat dashboard, developed in collaboration with [Open Supply Hub](#), connects heat and humidity data with garment production facilities across India,

helping identify where workers and supply chains are most exposed. Further, our ongoing initiative to map cooling centres across India responds to another basic gap: cooling infrastructure cannot serve vulnerable communities unless made accessible to its intended users.

Citizen-led monitoring and research must therefore become central to India's response to extreme heat. It is the starting point from which we can generate robust evidence essential to demonstrate the true magnitude of the crisis, as well as frame bottom-up policies that address the unique challenges faced by vulnerable groups due to extreme heat. ■

हीटवॉच आणि नागरिकांच्या सहभागातून उष्णतेचे निरीक्षण: शहरी उष्णता असमानता दिसून आणणे

अत्यंत उष्णता ही शांतपणे परिणाम करणारी आपत्ती आहे. तिचा सर्वाधिक परिणाम अशा कामगारांवर होतो, ज्यांच्याकडे स्वतःचे संरक्षण करण्यासाठी पुरेशी साधने, सुरक्षित कामाच्या अटी किंवा सामाजिक सुरक्षा नसते. भारतात उष्णतेमुळे कामगारांच्या आरोग्यावर, उत्पन्नावर आणि सन्मानावर गंभीर परिणाम होत आहेत.

2024 मध्ये भारतातील लोकांना सरासरी 19.8 उष्णतेच्या लाटेचे दिवस अनुभवावे लागले. उष्णतेमुळे 247 अब्ज संभाव्य कामाचे तास गमावले गेले आणि त्यामुळे सुमारे 194 अब्ज अमेरिकी डॉलर इतक्या संभाव्य उत्पन्नाचे नुकसान झाले. परंतु अशा मोठ्या आकडेवारीत वेगवेगळ्या कामगार गटांवर उष्णतेचा नेमका कसा परिणाम होतो, कोणत्या सुरक्षेची कमतरता आहे आणि कोणत्या आरोग्य समस्या निर्माण होतात, हे पूर्णपणे समजत नाही.

HeatWatch ही भारतातील संस्था उष्णता, सार्वजनिक आरोग्य आणि कामगार हक्क यांच्या संगमावर काम करते. या संस्थेने गिग कामगार, बांधकाम कामगार, आशा कार्यकर्त्या, कचरा कामगार आणि वस्त्र उद्योगातील कामगार यांच्यासोबत संशोधन केले आहे. या अभ्यासातून असे दिसते की उष्णतेचा परिणाम केवळ शारीरिक त्रासापुरता मर्यादित नाही, तर तो उत्पन्न, कामाचे तास, आरोग्य खर्च आणि कामगारांच्या सन्मानावरही परिणाम करतो.

HeatWatch च्या मते, कामगार हे केवळ माहिती देणारे नाहीत, तर धोरण घडविणारे महत्वाचे ज्ञानधारक आणि बदलाचे भागीदार आहेत. त्यांच्या अनुभवांवर आधारित पुरावे Heat Action Plans अधिक प्रभावी करू शकतात. सर्वांसाठी एकसारख्या सूचना देण्याऐवजी कामाच्या प्रकारानुसार आणि लिंग-संवेदनशील उपाय आवश्यक आहेत. उदाहरणार्थ, बांधकाम व कचरा कामगारांसाठी अनिवार्य विश्रांती आणि कामाच्या वेळेत बदल गरजेचा आहे; तर वस्त्र उद्योगातील कामगारांसाठी चांगले वायुवीजन आणि उत्पादन लक्ष्य कमी करणे आवश्यक आहे.

एप्रिल 2026 मध्ये HeatWatch आणि Indian Federation of App-Based Transport Workers यांनी गिग कामगारांसाठी उष्णतेपासून संरक्षण अनिवार्य करण्याची मागणी करणारे पत्र कामगार आणि रोजगार मंत्रालयाला सादर केले. हे कामगार-केंद्रित आणि कृतीक्षम उष्णता संरक्षण धोरणाकडे महत्वाचे पाऊल आहे. HeatWatch ने उष्णतेतील असमानता दिसून आणण्यासाठी हीट डॅशबोर्ड आणि कूलिंग सेंटर्सचे मॅपिंग यांसारखे उपक्रमही सुरू केले आहेत. त्यामुळे कोणते कामगार आणि पुरवठा साखळ्या उष्णता व आर्द्रतेच्या सर्वाधिक धोक्यात आहेत हे ओळखता येते.

भारताच्या अत्यंत उष्णतेवरील प्रतिसादात नागरिकांच्या सहभागातून निरीक्षण आणि कामगार-केंद्रित संशोधन अत्यावश्यक आहे. यामुळे संकटाचे खरे स्वरूप समजते आणि असुरक्षित गटांसाठी तळागाळातून न्याय्य व प्रभावी धोरणे तयार करता येतात. ■

– Marathi translation by AIDMI

Citizen Power for Community Heat Resilience: Small Businesses Taking Collective Action

By Pallavi Rathod, AIDMI, India

Extreme heat is becoming part of daily life in many parts of India. For people who earn their living outdoors, the impact is direct. Small businesses, fruit and vegetable sellers, painters, and other self-employed workers often spend long hours in the sun. This can lead to exhaustion and illness, reduce the number of hours they are able to work, and make it harder to earn a steady income.

Financial support, shaded workspaces, drinking water, and heat-resilient infrastructure are all important. But communities also need strong relationships and practical ways to support one another during periods of extreme heat.

With this in mind, the All India Disaster Mitigation Institute organised the Citizen Power for Heat-Resilient Small Businesses: Power and Character Workshop in Vasna, Ahmedabad. The workshop brought together 20 small business owners from communities exposed to high heat risk. They had previously taken part in AIDMI's heat-risk assessment and support programme for small businesses.

The workshop looked beyond general heat awareness. It encouraged participants to think about the role they could play in keeping themselves, their businesses, and their neighbourhoods safer. Sessions focused on personal responsibility, community leadership, cooperation and practical action.

Participants identified local resources, mapped people and organisations that could provide support, and worked on their observation and listening skills. They also developed simple action plans



Community members participate in a group discussion on collective action and practical measures to strengthen resilience to extreme heat. Photo: AIDMI.

for responding to heat at the neighbourhood level.

These activities helped participants understand that heat resilience is more than just infrastructure. It also has to do with trust, with communication, with people being willing to help each other.

One of the most useful discussions focused on what neighbours and workers can do during very hot days. Participants shared simple actions that could make a real difference. These included offering drinking water, checking on older people and others who may be at greater risk, helping fellow vendors find shade, sharing heat warnings, and supporting anyone who shows signs of heat-related illness.

One point was made clear and loud in the discussion. Heat safety isn't just an individual thing. People are safer when neighbours, workers, community groups, and local leaders stay connected and look out for one another.

At the end of the workshop, participants made both individual and group commitments to improve heat safety in their businesses and communities. Many said they felt more confident about taking responsibility, supporting others, and working with their neighbours to address local problems.

As one participant said: "I realised that even an ordinary citizen has the power to bring change in the community."

Extreme heat is not only an environmental issue. It is also a health, social, and livelihood concern. Responding to it requires informed citizens, stronger local relationships, and practical cooperation.

The workshop showed that small actions, when taken together, can help protect people and livelihoods. Physical adaptation is still important, but communities are also safer when people are confident, know what to do, and are supported to work together. ■

Active Heat Justice Must Shape Urban Resilience

By *Mihir R. Bhatt, AIDMI, India*

Extrême heat is here and no longer a future risk for Indian cities. It is already changing how people work, travel, sleep, earn, cook, relax, care, and survive. This issue of southasiadisasters.net shows that heat is not only a temperature event. It is a slow-onset and unequal urban disaster that builds quietly across homes, roads, markets, trees, workplaces, and bodies.

The way ahead is clear. Heat action must move from seasonal response to year-round risk reduction. A city cannot prepare for heat only when alerts are issued. Preparedness must begin before summer, continue during the heat season, and remain part of urban planning after temperatures fall. Heat Action Plans must be annual plans with matching budgets. Heat must be addressed through housing, water, health, labour, transport, social protection, and local governance.

First, Heat Action Plans must become people-centred. The number of plans is growing, but their quality must now deepen and reach the affected people. Plans should identify who is most exposed, where they live and work, and what they need to reduce risk. Street vendors, construction workers, domestic workers, gig workers, bus drivers, rickshaw drivers, sanitation workers, waste workers, migrants, homeless, older persons, children, and residents of informal settlements must be central to planning.

Second, heat is linked with water security. Advising people to drink

more water has limited value where safe, affordable, and reliable water is not available. Heat Action Plans must connect with city water balance plans, sanitation systems, wastewater treatment, stormwater management, rainwater harvesting, and restoration of waterbodies. Water is not only a relief measure; it is urban cooling infrastructure for today and for all days to come.

Third, cooling must be treated as public infrastructure. Shade, rest spaces, cool roofs, green cover, drinking water points, toilets, cooling centres, and safer work conditions are not optional welfare measures. They are practical disaster risk reduction actions. Cities must invest in cooling where heat exposure is highest, not only where visibility is highest. Cooling must be community infrastructure, local infrastructure.

Fourth, heat-health systems must include mental health and occupational safety. AIDMI's evidence from Ahmedabad's

Heat justice must begin where heat risk is highest – with workers, women, children, commuters, migrants, and low-income communities who carry the greatest burden but have the least protection.

mobility workforce shows that heat affects concentration, sleep, anxiety, irritability, road safety, and daily income. Public health systems must recognise these links and prepare frontline workers, employers, unions, and local institutions to act early.

Fifth, communities are knowledge partners. Women's collectives, worker groups, citizen monitors, and local leaders already know where heat risks are concentrated and which solutions work. Their lived experience must shape warnings, triggers, cooling measures, and follow-up action. Citizen-led monitoring can make invisible heat inequality visible.

Finally, financing must reach those most at risk. Anticipatory action, wage-loss protection, heat insurance, social protection, and local adaptation funds can help vulnerable households act before harm deepens. Without income security, many workers cannot follow heat advisories even when they understand the risk.

The test of urban heat resilience is not whether a city has a Heat Action Plan. The real test is whether the most exposed people can live, work, travel, and care safely during extreme heat. The way ahead is to make heat action local, inclusive, adequately financed, and accountable to those who carry the greatest burden. Heat justice must urgently become central to urban resilience. ■

CONTRIBUTORS

1. **Mobilising Social Investment for Urban Heat Resilience in Asia: Reflections from the AVPN Climate x Health Community of Practice**
Melissa Ananthraj, Director, Programs, Climate Action, AVPN, Asia 2
2. **The Mind in the Heat: Mental Health Among Ahmedabad's Mobility Workforce**
Rohan Trivedi, AIDMI, India 3
3. **Extreme Heat and Unequal Risks for Workers**
Sharon Block, Professor of Practice, Executive Director, Center for Labor and a Just Economy, Harvard Law School, United States 4
4. **Participatory Knowledge and Extreme Heat: Strengthening People-Centred Local Urban Resilience**
Piyush Poddar, Lead-Programmes, Martha Farrell Foundation, New Delhi, India 5
5. **Extreme Heat as a Slow-Onset and Unequal Urban Disaster**
Jyoti Mackwan, General Secretary, SEWA, India 6
6. **Extreme Heat and Equitable Anticipatory Action: Progress and Challenges in Communities of India**
Santhosh Srikanth Pattar, Country Director, ADRA India 8
7. **अत्यधिक गर्मी: धीमी और असमान शहरी आपदा**
AIDMI Team, India 9
8. **Heat Inequity in Mumbai: A Silent, Invisible Public Health Crisis Among Urban Poor**
Nidhi Jamwal, Climate Journalist, Mumbai, India 10
9. **Extreme Heat and Priority Areas for Building Equal Resilience in India**
Priyanka Thirumurthy, Head of Communications, Asar Social Impact Advisors, Karnataka, India 11
10. **HeatWatch and Citizen-Led Monitoring: Making Urban Heat Inequality Visible**
Ananya Tiwary and Apekshita Varshney, Project Associate, HeatWatch, Maharashtra, India 12
11. **Citizen Power for Community Heat Resilience: Small Businesses Taking Collective Action**
Pallavi Rathod, AIDMI, India 14
12. **Active Heat Justice Must Shape Urban Resilience**
Mihir R. Bhatt, AIDMI, India 15

The views expressed in this issue are those of the respective authors of each article.

For Personal and Educational Purposes only.

Editor: Mihir R. Bhatt, All India Disaster Mitigation Institute, India

Editorial Advisors:

Anoja Seneviratne

Disaster Management Centre of
Government of Sri Lanka

Denis Nkala

South-South Cooperation and United Nations
Development Programme, USA

G. Padmanabhan

Former Emergency Analyst, UNDP, India

Dr. Ian Davis

Global Leader on Disaster Risk Reduction, UK

Dr. Prabodh Dhar Chakrabarti

Formerly Secretary NDMA and Executive Director
NIDM, India

Dr. Satchit Balsari, MD, MPH

Harvard FXB Center for Health and Human Rights,
USA



ALL INDIA DISASTER MITIGATION INSTITUTE

411 Sakar Five, Behind Old Natraj Cinema, Ashram Road, Ahmedabad-380 009 India.

Tele/Fax: +91-79-2658 2962

E-mail: bestteam@aidmi.org, Website: <http://www.aidmi.org>, www.southasiadisasters.net

Follow us on: @AIDMI_ORG AIDMI.ORG aidmi_org All India Disaster Mitigation Institute

