

# Small Heat Resilience Measures: Big Impact in Small Towns and on Small Businesses in India

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Image: AIDMI.



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## INTRODUCTION

# Small Heat Resilience Measures: Big Impact in Small Towns and on Small Businesses in India

By Mihir R. Bhatt, All India Disaster Mitigation Institute, India

Extreme heat has quietly become one of the most disruptive risks shaping everyday life in India's small towns. And this disruption is avoidable.

Unlike floods or cyclones, heat does not arrive with sirens or headlines. It settles in early, stays longer each year, and steadily erodes health, livelihoods, education, and local economies. For small businesses—food vendors, artisans, home-based workers, repair shops, and market traders—extreme heat is no longer an occasional disruption; it is a recurring condition that determines when, how, and whether work can continue, income can flow, food appears for the next meal, and health remains fit to work.

Small towns in India are particularly exposed to extreme heat. They combine rising temperatures with limited infrastructure, thin municipal capacity, and livelihoods that depend heavily on outdoor or semi-outdoor work. In these settings, heat reduces working hours, damages perishable goods, weakens health, and lowers productivity. For affected people, men and more so women, the choice is often stark: protect health by working less, or earn income at the cost of mounting

“छोटे शहरों में अत्यधिक गर्मी कोई अचानक आने वाली आपदा नहीं, बल्कि रोज़मर्रा की मेहनत को धीरे-धीरे आर्थिक तरीके से कमजोर करने वाला संकट है—और इसका समाधान स्थानीय, छोटे और व्यावहारिक कदमों में छिपा है।”

physical strain. These trade-offs rarely appear in official loss figures, yet they accumulate silently over time among the most actively contributing citizens of India.

This issue of *southasiadisasters.net* starts from a simple but powerful insight coming out of the past three years of activities in 11 small towns of India: small heat resilience measures can make a big difference. Across towns and cities, practical, low-cost actions—shade, ventilation, access to drinking water, reflective surfaces, adjusted work timings, rescheduled meals, and modest workspace improvements—have helped small businesses reduce heat stress while continuing to earn safely. When these measures are locally identified, affordable, and supported early by the affected small

businesses themselves, they prevent illness, stabilise incomes, and build confidence to lead other affected citizens of small towns.

Another key lesson is that resilience is most effective when grounded in local evidence. Urban averages often hide where heat is actually felt and who bears the greatest burden. Enterprise-level and neighbourhood-level insights reveal uneven exposure and help direct support where it matters most. When combined with timely finance—small grants, stabilisation fund, early payments, flexible credit, or insurance—knowledge turns into action, and makes adaptation plans for resilience become impactful for big resilience.

The remarkable contributions in this issue bring together frontline experiences, data-driven insights, and policy reflections mostly by those who are affected to show how enduring extreme heat is possible—not through grand projects alone, but through small practical steps that protect people where they live and work. They demonstrate that adaptation in India's towns does not begin with complexity; it begins with listening, local action, and sustained support for each other. ■

*“Extreme heat in India's small towns is not a future threat; it is a daily reality for small businesses who run the local markets – and small, practical resilience measures are already proving that this loss and damage is avoidable.”*

## Extreme Heat on the Frontlines

By Laasya Khandavalli, AIDMI, India

The ongoing climate change discussion is filled with scientific opinions, adaptation rigidity, and predictable uncertainty. In many ways, it demands a restructured approach to scientific processes that incorporates interdisciplinary frameworks to address current problems. However, it often excludes those who endure this mind-numbingly complex global phenomenon in concrete, visible ways.

While it is helpful to understand and evaluate Western climate change aspiration strategies in comparison to those of Lower Middle Income Countries (LMICs), it is important to understand that the lived experiences of vulnerable communities in LMICs are vastly different and often severely misunderstood. Shifting baselines, public perceptions of temperature

increases are beginning to accept them as the new normal, but active strategic responses are key to adaptation. Normalisation without adaptation leads to consequences. An active effort to understand ground-level experiences and community networks can provide a more holistic approach to mitigating the effects of climate change.

Along with focusing on local organisations, NGOs, and scientific accounts, AIDMI has connected with the people most directly involved and affected by global climate change. In this issue, individual and community-level climate adaptations to extreme urban heat are discussed and evaluated. The narratives presented offer ground-level perspectives of the effects of extreme urban heat on small businesses, families, and community circles.

This issue serves as a platform for the voices of our local community- what they observe, experience, and call for. In combination with scientists, policy drivers, and global experts, the stories and insights of local business owners and workers of a variety of backgrounds and specialisations offer real-world data. It puts the research and metacognitive discussions of natural disaster management into a tangible, real-world context, offering realistic and viable solutions to climate vulnerabilities.

The main message is this: the studies show that extreme heat has already become a severe threat. It has already been known to those on the ground level. They know and *experience* the gaps in policy and infrastructure every day. Here are their frontline stories and what they call for. ■

### ANTICIPATORY GOVERNANCE

## UNDRR Initiatives on Extreme Heat

By AIDMI, India

Extreme heat is now globally recognised by the United Nations Office for Disaster Risk Reduction (UNDRR) as a slow-onset disaster that steadily erodes health, livelihoods, and local economies. The UNDRR has been instrumental in reframing extreme heat from a seasonal inconvenience into a systemic risk that requires early, people-centred action. This shift is especially relevant for India's small towns and small businesses, where exposure is high and resources are limited.

UNDRR's approach emphasises heat risk-informed governance, anticipatory cooling action, and locally led heat resilience. Rather than responding only after temperatures peak, UNDRR promotes acting early—through adjusted work timings, access to drinking water, shade, ventilation, and livelihood protection. These measures are low-cost but high-impact for small businesses working in open and informal settings in small towns of India.

A key lesson from UNDRR evolving initiatives is that resilience does not

depend only on large infrastructure. Small, locally driven actions—such as cool roofs, shade canopies, water storage, and flexible work practices—can significantly reduce heat stress and prevent avoidable losses when supported in time by local authorities.

By foregrounding equity and local solutions, UNDRR reinforces a simple message: early cooling action and small heat resilience measures can deliver big, lasting impact in India's small towns. ■

## Street Selling for Women

By Laasya Khandavalli, AIDMI, India

In a series of focus group discussions consisting of young female street vendors, AIDMI was able to hear the stories of how their livelihoods were affected by climate variance and market dynamics. The conversation began with the women reflecting on how their parents and grandfathers started their small street-selling businesses, a venture and expertise that has been passed down through generations. The businesses operate in an open-air street market, typically selling seasonal goods based on customer demand.

### The Impact of Extreme Heat on Young Female Street Vendors

A major challenge faced by these young vendors is the extreme heat during the summer months. Not only does the heat severely impact their health, causing dizziness, headaches, and even hospitalisations due to vomiting and fainting, but it also affects their ability to operate effectively. Many young women experience significantly longer-term health issues, leading to medical expenses and the need to seek regular medical attention.

### Effects on Children

Not only are the women at high risk, but their children are also increasingly threatened by rising temperatures. As it is socioculturally typical for the mother to take care of her children throughout the day, street vendors' children are especially vulnerable to the realities of extreme heat during the workday. They often bring small children to the market, draping wet cotton cloths on them or crafting a makeshift cloth swing under a lorry to keep them cool. Many women



*Female street vendor discusses heat-related challenges and adaptation strategies, illustrating the community-based networks that enable knowledge sharing and mutual support among vendors. Ahmedabad, July 2025. Photo: AIDMI.*

keep a watchful eye on each other's children, looking out for them as if for their own.

### Business Hours Adaptations

In response to the intense heat, the group of young vendors has adjusted their operating hours to adapt to the harsh conditions. Typically, they sell their goods from 8 AM to 12 PM in the cooler morning hours. Afterwards, from 12 PM to 4 PM, they rest at home to avoid the extreme heat, and then return to their stalls from 4 PM to 8 PM in the late afternoon and evening. During the cooler winter months, street vendors extend their hours and operate throughout the day, as the lower temperatures make it easier to manage.

### Financial Strain Due to Seasonal Challenges

Street vendors face tough financial situations during the summer

months, as their struggle to sell all of their goods results in losses. Decreased customer footfall results in lowered demand, giving customers the right to bargain for even cheaper prices. The absence of refrigerators to store perishables means that any unsold goods are wasted. This cycle creates a lose-lose situation for the sellers, who must lower prices in an effort to sell products quickly, yet still end up with significant losses due to spoilage.

Extreme weather also has an impact on the selling environment. "While heat disrupts the sellers' ability to work efficiently, the monsoon season brings heavy rainfall, forcing us to completely close our shops for long periods", says Kajalben (Vikasbhai Patni). The combination of intense heat, rain, and other weather conditions between mid-February and August creates significant

instability for these street vendors, making it difficult to plan ahead or consistently generate income.

### Potential Solutions for Street Vendors

The vendors shared several ideas that could significantly improve their working conditions. One potential solution is the introduction of larger, community-based shade sails, which could provide coverage for a group of around ten sellers. This would reduce the strain caused by extreme heat and rain, ensuring a more comfortable working environment.

Moreover, a key suggestion from the group of street vendors was the need for a designated selling space provided by the government. Without a proper, stable area to operate from, street vendors face constant disruptions. A license for a dedicated spot would be transformative, say the young women, “like the difference between

“महिला स्ट्रीट वेंडर गर्मी, आजीविका और बच्चों की देखभाल के दोहरे दबाव में काम करती हैं। सामुदायिक सहयोग और लचीले काम के घंटे उनके सबसे प्रभावी अनुकूलन उपाय हैं।”

a renter and a homeowner, but magnified,” as Twinkalben puts it. If a designated space was created for them to sell their goods, it would improve efficiency and safety from climate stress, reduce conflict with other vendors, and provide a sense of security.

### Ground-Level Insights

Despite the evidence that climate displacement is already at play for many small businesses and worsened by the insecurity of mobile vending, street vendors’ efforts are often overlooked in policy discussions and urban planning frameworks. Creating a business model that reflected the need for

mobility, flexibility, and adaptation, these young women have transformed street vending into a resilient livelihood that is resistant to instability and climate change. Integrated into this business model is the importance of community networks, which is demonstrated through collaboration, friendship, and strength among the street vendors. It is apparent in the way the women have to evaluate costs and adaptation, weighing heat exposure with their children’s needs. It is apparent in the way the street vendors look out for each other’s businesses and children, emphasising the importance of keeping good relationships with surrounding vendors. Their lived expertise offers not only a blueprint for climate resilience but a powerful reminder that meaningful adaptation strategies and policies start with listening to the voices of those who experience climate impacts firsthand. ■

## NATURE-BASED SOLUTIONS

# Five Questions to Think About Nature-Based Solutions for Extreme Heat in India

By AIDMI, India

**W**here does nature actually cool people’s daily lives?

Are trees, green spaces, water bodies, and shaded corridors located where heat is most felt—near homes, small businesses, markets, schools, and work areas—or only in planned, elite spaces?

**Who maintains and benefits from nature-based cooling?**

Do local communities and affected people have a role in maintaining green and blue assets, and do they directly benefit from the cooling they provide, or is access uneven?

**Can nature-based solutions deliver short-term relief as well as long-term resilience?**

While NbS offer long-term benefits, how can they also provide **immediate cooling** during extreme heat seasons, especially for those facing urgent exposure?

**Are NbS integrated with livelihoods and local economies?**

Do cooling landscapes support livelihoods—through shade for work, water access, or improved microclimates—or are they treated only as environmental add-ons?

**How are NbS embedded in heat governance and disaster risk reduction?**

Are nature-based cooling measures linked to Heat Action Plans, SDMA support, and local disaster preparedness, or do they remain isolated urban beautification projects?

*Nature-based solutions reduce extreme heat most effectively when they are local, accessible, maintained by communities, and embedded in disaster risk governance. ■*

## Heat Resilience Building as Empowering: Findings from City Rewa

By Vaishali Tiwari, AIDMI, Madhya Pradesh, India



BEFORE



AFTER

Suresh Kori, a fresh fruit and vegetable seller from Rewa, Madhya Pradesh, has been working tirelessly for years to earn his livelihood, moving around the city in all kinds of weather, be it the scorching summer sun, the heavy monsoon rains, or the biting winter cold. Selling fruits and vegetables in open spaces without a fixed stall means he is constantly exposed to environmental conditions, particularly during the intense summer months when temperatures rise sharply. Suresh has long been aware that protection from the sun through shade and access to drinking water are essential to safeguard his health and maintain his ability to work. He knew that having an umbrella or canopy to

shield both himself and his vegetables could prevent the produce from spoiling quickly and reduce his direct exposure to harmful heat. Similarly, maintaining an adequate supply of drinking water would prevent dehydration and enable him to continue working without interruption. However, financial limitations had always stood in the way of turning this awareness into action. Like many street vendors in small towns, his daily earnings were just enough to cover household expenses and buy fresh stock for the next day's sales, leaving no extra funds for protective equipment. As a result, before any intervention, Suresh's working conditions were challenging. He would stand for long hours under

the blazing sun without any cover, just a headcap sometimes, which was not enough protection during the peak afternoon heat. Without a water storage option, he was often forced to leave his cart in search of water, losing precious selling time and sometimes customers. These conditions led to frequent headaches, dizziness, and occasional heat exhaustion, reducing his work efficiency and income potential during the very season when demand for fruits and vegetables was high.

This situation changed when Suresh became a beneficiary of the AIDMI Heatwave Mitigation Project for Small Businesses. Through the project, he received targeted financial support of ₹5,000

specifically to help him put their heat protection knowledge into practice. Understanding exactly what he needed, Suresh used the funds to purchase a large umbrella, wide enough to cover both him and his display of fruits and vegetables, and a large water bottle capable of storing a full day's drinking water. This relatively small investment brought a remarkable improvement in his working conditions. The umbrella now shields him from direct sunlight, significantly reducing his exposure to heat and lowering the risk of heat-related illness. His produce also stays fresh for longer, reducing waste and improving sales quality. With his water supply on hand, he no longer needs to interrupt his selling rounds to search for drinking water,

“रीवा के अनुभव दिखाते हैं कि छांव और पानी जैसे छोटे उपाय भी बड़ा फर्क ला सकते हैं। थोड़ी सी वित्तीय सहायता गर्मी से होने वाले नुकसान को रोक सकती है।”

allowing him to serve more customers and increase his daily productivity. These changes have made Suresh's workday more comfortable and sustainable, enabling him to move around the city with greater confidence and without the constant fear of falling sick due to heat exhaustion. Motivated by his own positive experience, Suresh now speaks more confidently with fellow vendors and

community members, sharing practical tips on how to protect themselves from extreme heat. He explains the benefits of shade, hydration, and simple protective measures, encouraging others to adopt these practices.

Suresh's story highlights the common misconception among small businesses that adopting protective measures requires substantial money and effort. Through his journey, AIDMI acted as a mentor, helping him realise that with limited resources, such steps are both practical and achievable; the key lies in the right awareness. This guidance has brought a complete change in his day-to-day life, making his work safer, healthier, and more sustainable. ■

## रीवा शहर से प्रेरक अनुभव

By AIDMI, India

**ऑ** ल इंडिया डिज़ास्टर मिटिगेशन इंस्टिट्यूट (AIDMI) के हीटवेव अनुकूलन उपाय कार्य से उन्हें ₹5,000 की सहायता मिली, जिससे उन्होंने एक बड़ा छाता और पानी की बोतल खरीदी। इस छोटे से निवेश ने उनके कामकाज में बड़ा बदलाव लाया। अब वे धूप से सुरक्षित रहते हैं, उनकी सब्ज़ियाँ ताज़ा रहती हैं और पानी की तलाश में वक्त भी बर्बाद नहीं होता। इससे उनकी कमाई और कार्यक्षमता दोनों बढ़ी हैं।

सुरेश कोरी, रीवा (मध्यप्रदेश) के एक फल और सब्ज़ी विक्रेता हैं। वे सालों से धूप, बरसात और ठंड जैसी कठिन परिस्थितियों में घूम-घूमकर अपना सामान बेचते हैं। गर्मी के मौसम में उन्हें तेज धूप और पानी की कमी से अक्सर सिरदर्द, चक्कर और थकावट जैसी समस्याओं का सामना करना पड़ता था। सुरेश को पता था कि छांव और पानी की सुविधा होना ज़रूरी है, लेकिन आर्थिक तंगी के कारण वह यह उपाय नहीं कर पाते थे।

आज सुरेश अपने अनुभव दूसरों के साथ भी साझा करते हैं और बताते हैं कि साधारण उपायों से भी गर्मी से बचाव किया जा सकता है। उनका अनुभव यह भ्रम तोड़ता है कि सुरक्षा के लिए बहुत पैसा और मेहनत चाहिए। वास्तव में केवल जागरूकता ज़रूरी है, और इसमें AIDMI ने उनके मार्गदर्शक की भूमिका निभाई है। ■

## Small Support Creates Great Livelihood Opportunities

By *Binapani Mishra, Secretary, Society for Women Action Development, Satyabadi, Puri, Odisha, India*

The heat waves in Odisha at present stand as a big disaster in which the vulnerability of the weaker section is increasing day by day. Extreme heat significantly affects the lives and livelihoods of small business owners and artisans. They are suffering from economic loss, reduced working capacity, diseases, and environmental degradation.



Aparijita Pani, the wife of Rajesh Pani, is a dweller of the village of Kanjia under the Penthapada Gramapanchayat of the Satyabadi block, Puri district, Odisha, and is a PATTACHITRA-making artisan. Her family consist of five members, including two daughters, her husband, and her mother-in-law. Her husband is a private lorry driver; he cannot get a regular salary from that occupation. At present, most expenses are covered by Aparijita's earnings. Aparijita is trained in Pattachitra drawing, depicting traditional Hindu Gods and Goddesses, various animals, and images of dancing girls in different poses, with an artistic touch. She has very small place in her house which

is used by her as work shed, she also engaged other three girls for helping her in making the Pattachitra, the work shed covered with asbestors, in March to May they feel extreme heat, they cannot work properly in the summer under the work shed and stop working due to so much of sweating and heat. Suffering is high, so work capacity is decreasing, as are working hours; she cannot supply the product on time.

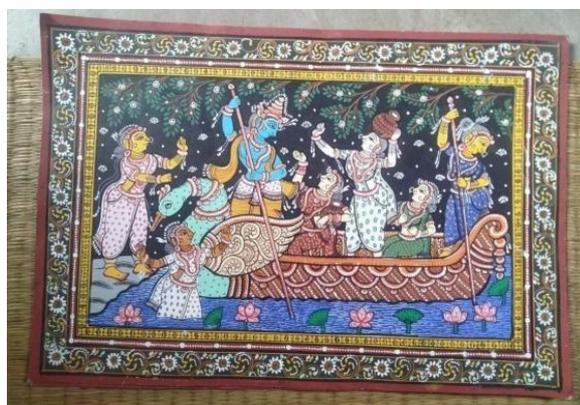
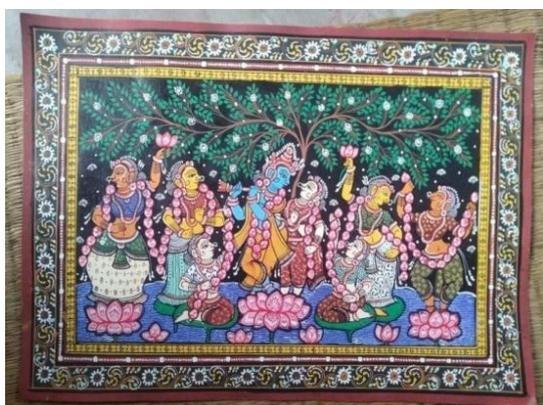
She has her own artisan card, but due to the heat, she cannot access any government support to reduce the risk of heat waves.

In the year 2025, she received support of Rs. 5000/-, supported by

AIDMI, Gujarat, under the scheme "Odisha Heatwave Risk Mitigation and Management." She invested this money by buying a table fan for her work shed and raw materials of Patachitra, like Patti and colours.

This year, the young girls are continuing their work in the summer also. Aparijita can get the opportunity to run her work in full swing, and her earnings have increased by up to 25000/- compared to last year in these months.

She is very happy and views the small support as helping her in a great way. ■



“ओडिशातील एका कारागीर महिलेसाठी लहान आर्थिक मदतीने मोठा बदल घडवला. वेळेवर मिळालेला आधार उपजीविका टिकवण्यासाठी निर्णायक ठरतो.”

## Artisanal Experiences in the Heat

By Laasya Khandavalli, AIDMI, India

Poonamben belongs to the Chitara family of skilled artisans, engaged in the preservation and practice of a 750-year-old painting tradition known as *Mathaji Di Pachadi*, which means “behind the mother goddess.” These paintings historically evolved from *kandit*, or portable idol images, developed when Hindu temples were destroyed during the Mughal period. During British colonial rule, these portable icons allowed people excluded from temples by caste-based barriers to worship at home. Today, these historically rich artworks serve both spiritual and artisanal decorative purposes and are sold to both tourists and institutional clients.

Poonamben’s multi-generational business has remained rooted in local traditions, yet it has also been presented to overseas recipients. Their registered business is well-known to the local Gujarat government, with approved patents for their craft and artwork. Occasionally, the government will commission the Chitara family’s business to present their artwork as gifts to guests, even for such high-profile events like the G20 Summit, which took place in India in 2023. While the Chitara family’s work sometimes receives these large orders, their livelihood remains deeply vulnerable to seasonal weather shifts. Their rooftop workshop is built with stones and a metal roof, with no air conditioning and open windows. Between the occasional commissioned orders, the artisans sell their

artwork at street markets to get by. Poonamben reports that her monthly income during uncommissioned work months is around.

The summer heat resulted in long periods of illness for some members of the family. Unable to work, the painters were not able to create many artworks during the summer. This was especially concerning for the family because the dry summer months are their peak season for output. This year alone, they faced a 5000 rupee loss during the summer months. Cotton cloth, the primary raw material on which they create paintings, gets damaged if wet, and the increased humidity affects drying, paint quality, and line precision. These conditions make the monsoon season suboptimal for painting work, hence the dependence on the dry season. Even transitional weather periods cause enough humidity to compromise the artwork. The family is often forced to halt work when members fall sick,

such as last year when Poonamben’s father was ill for the entire dry season, severely reducing their painting output.

To cope with these seasonal stresses, the family has adopted a number of heat and weather adaptation measures. The family installed makeshift roof insulation using cardboard, white wash, and green curtain nets to reduce internal temperatures at home and in the workshop. Cotton street umbrellas are used while selling artwork outdoors to protect from direct sunlight. Long-term seasonal planning has proved critical to their business, maximising production during the dry season despite the risks of heat illness in order to build their inventory ahead of the rainy months.

When evaluating the different small businesses and Poonamben’s accounts, a common experience was felt in the seasonal difference between the dry, hot summer and the humid, rainy monsoon. The dry season is physically strenuous but allows them to work more. The monsoon season, although somewhat cooler, often damages goods and significantly limits mobility due to high humidity. This means that for some businesses, such as the Chitara painters, braving the extreme heat is necessary for their business’s survival, regardless of the health consequences. That is why it is imperative to find effective climate adaptation strategies for such small businesses. ■



*Skilled artisans share that braving the extreme heat is necessary for their business’s survival, regardless of the health consequences. Photo: AIDMI.*

## Building Heat Resilience: Small Businesses in Ernakulam

By Ashna MS, AIDMI, Kerala, India



**B**ackground  
Kunjammini Kumar, a 54-year-old cloth seller, lives in Ponnuruni, Ernakulam. Living in a rented house with her elderly mother, son, and his family, Kunjammini has been the backbone of her household ever since she was widowed 25 years ago. While her son works at a lottery shop, Kunjammini contributes to the family income by running a stall in the Ernakulam Broadway market, where she sells innerwear. On average, she earns around ₹ 5,000 per month, which helps meet essential household expenses.

### Climate Vulnerability and Challenges

Kunjammini's business is highly exposed to climate-related risks that threaten her limited income:

- **Heatwaves:** Prolonged exposure to extreme heat makes working conditions uncomfortable, discourages customers from visiting the market, and can cause wear and tear to her stall setup.
- **Heavy Rains and Flooding:** The Broadway market area is prone to waterlogging during the monsoon

season, which deters customers and risks damaging her stock.

### Financial Support and Training Program Participation

Kunjammini received ₹ 5,000 as a grant under the Green Finance Fund programme aimed at strengthening the resilience of informal workers against climate disruptions. She invested this amount in a new cart for her business – a simple yet impactful upgrade that lets her display her goods more effectively, attract more customers, and work more efficiently.

### Application of Support and Outcomes

Her stall now remains operational even during moderate rains, ensuring business continuity. Protected storage reduces the risk of damage to her products, saving her from potential losses. The measures have given her greater confidence to

operate during varying weather conditions, rather than closing early and losing sales.

### Satisfaction and Outlook

Kunjammini is highly satisfied with the program's support, expressing gratitude for the opportunity to make improvements she could not have afforded on her own. She feels more prepared to face adverse weather and is optimistic about maintaining her livelihood despite future climate uncertainties.

### Conclusion

Kunjammini Kumar's story illustrates how small-scale, targeted interventions can significantly strengthen the disaster resilience of vulnerable vendors. By investing in protective infrastructure and secure storage, she has safeguarded her business, stabilised her income, and enhanced her capacity to cope with climate-related disruptions. Her story reflects how even modest support, when used wisely, can strengthen resilience and ensure livelihoods continue in times of uncertainty. ■

“केरळमधील फेरीवाले उष्णता आणि मुसळधार पावसाच्या दुहेरी संकटाला सामोरे जात आहेत. लहान पायाभूत सुधारणा व्यवसायाची सातत्यता टिकवू शकतात.”

## A Plastic Sheet Against the Sun: Disrupting Kolkata's Cycle of Heat Vulnerability

By *Pratiti Sasmal*, AIDMI, West Bengal, India

Kolkata, an ever-growing metropolitan, characterised by a dense and diverse network of small-scale enterprises, has undergone a significant transformation in its temperature patterns. The very group that sustains the small-scale informal economy in this densely populated city is seen to be bearing the greatest impact of the ever-rising temperatures. The impact is very well understood from the case of Rozida Khatoon.

Rozida Khatoon, a widow residing in Liluah, Kolkata, earns her livelihood by selling steel utensils – a trade she has sustained for over five years, yet with no fixed place but a first-come, first-occupy system operating in her market. When we first engaged with her, we observed her setting up her small roadside shop entirely without any protective shade from the scorching sun. In the course of our interaction, Rozida openly shared the significant challenges she faces. Her income, derived solely from the irregular sale of steel utensils, is unpredictable. Consequently,

whatever meagre earnings she manages to generate are carefully reserved almost entirely for her son's education, leaving practically nothing for other essential needs. The simple necessity of purchasing a shade structure remains sadly out of reach financially.

This distressing financial constraint and the social setup of the market forces Rozida into prolonged, direct exposure to the sweltering sun throughout her long working hours. Given her situation, she feels compelled to remain at her stall even during the peak afternoon temperatures when the heat becomes truly unbearable. For Rozida, closing shop early is not an option; it directly translates to a diminished daily income she simply cannot afford to lose. As a result, it has taken a severe toll on her health. She reported suffering from recurrent heat-related illnesses, such as heat rash, heat cramps, and episodes of heat exhaustion. Rozida described experiencing cramps spreading across her body on a near-daily basis,

and on certain days, she also experienced difficulty breathing.

For Rozida Khatoon, falling ill is not an option. Each day absent from her shop translates directly into lost income she desperately needs. Yet, this harsh reality creates a cruel paradox – taking preventative breaks to avoid illness would also mean forfeiting crucial earnings. Furthermore, investing in even basic protective measures to reduce her health risks, like shade or cooling, would require drawing from her meagre and painstakingly accumulated savings, set aside for her son's future.

Recognising this inescapable and interlinked cycle of vulnerability, where health protection undermines financial security and vice versa, the AIDMI team stepped in to assist Rozida to buy a large plastic sheet serving as a shade cover, which was designed to be movable, allowing her to reposition the protective cover daily as she set up her stall. Rozida states, "This shade is like a blessing. Now, I can sit through the day



*Rozida Khatoon with her son at their shop before AIDMI stepped in.*



*Rozida Khatoon and her son are at their shop, sitting under the shade, after installing the plastic sheet with AIDMI's assistance.*

without fear and can even stay longer to earn a little more, without my body giving up. It seems very simple, but it is strong and effective."

Rozida Khatoon's struggle represents how Kolkata's intensifying urban heat islands overpower its informal workforce. Trapped between health risks and income loss, her vulnerability highlights an urgent need for targeted, context-sensitive solutions. AIDMI's intervention with a simple, portable shade offers more than relief to Rozida. It demonstrates

“एक साधारण प्लास्टिक शीट ने स्वास्थ्य और आय के बीच फँसे एक परिवार को राहत दी। यह दिखाता है कि सही समय पर छोटा समाधान भी बड़ा बदलाव ला सकता है।”

that practical support can break the inescapable cycle of vulnerability for those powering the city's economy under the sweltering sun.

#### Summary

कोलकाता की बढ़ती हीटवेव (गर्मी की लहरें) छोटे पैमाने के श्रमिकों, जैसे कि स्टील के बर्तन

बेचने वाली रोज़ीदा खातून, को असमान रूप से प्रभावित करती हैं। सुरक्षात्मक छाया के बिना लंबे समय तक धूप में रहने के कारण उनकी भेद्यता पैदा होती है, जो उन्हें एक विनाशकारी चक्र में फंसा देती है: काम छोड़ने से आय का नुकसान होता है (स्वास्थ्य का धन पर प्रभाव), जबकि सुरक्षात्मक उपाय करने से बचत खत्म हो जाती है (धन का स्वास्थ्य पर प्रभाव)। एआईडीएमआई (AIDMI) ने हस्तक्षेप कर इस चक्र को तोड़ा और एक लाभदायक सायबान प्रदान की। ■

#### CITY HEAT LEADERSHIP

## Ahmedabad City and Extreme Heat: Key Initiatives and Way Ahead for 2026

By AIDMI, India

Ahmedabad stands as India's pioneer city in responding to the growing threat of extreme heat. Since the devastating 2010 heatwave that claimed more than a thousand lives, the city has made sustained efforts to turn lessons into action. Its **Heat Action Plan (HAP)**—the first of its kind in South Asia—has become a global model, reducing heat-related mortality and demonstrating how early warnings, health preparedness, and public awareness can save lives.

Key measures include temperature-based alert systems, training for healthcare and municipal workers, and multilingual communication campaigns that target vulnerable groups, such as older adults, construction workers, and street vendors. Schools, community halls, and temples have been identified as temporary cooling shelters. The **Cool Roofs Initiative**, reflective paints on low-income homes, and misting systems at bus stops are practical, low-cost interventions that bring measurable relief. Ahmedabad's **Climate Resilient City Action Plan (CRCAP)** now incorporates these measures into long-term strategies that involve green corridors, nature-based cooling, and enhanced urban design.

The **All India Disaster Mitigation Institute (AIDMI)** has been a key partner in shaping, documenting, and advancing Ahmedabad's leadership on extreme heat resilience. Working closely with the Ahmedabad Municipal Corporation, AIDMI has supported awareness campaigns, field-level pilots, and microinsurance design to protect small businesses and informal workers from heat-related loss and damage. AIDMI's research and field engagement have helped demonstrate that climate resilience must be both community-led and evidence-driven.

Yet, challenges remain—rapid urban growth, maintenance gaps, and unequal access to cooling infrastructure persist in informal settlements. To deepen resilience, Ahmedabad must invest in **neighbourhood-level heat mapping, community-driven cooling solutions**, and sustained funding for maintenance. Financing innovations—such as **parametric heat insurance** and **public-private partnerships for cooling infrastructure**—can complement municipal resources.

As India faces more frequent and severe heat events, Ahmedabad's experience—supported by AIDMI and its partners—offers both inspiration and direction. It demonstrates that proactive local action, grounded in collaboration and community leadership, can transform a silent and invisible disaster into an opportunity for adaptation, equity, and resilience. ■

## Heatwaves and Ladakhi Sellers: Small Business on the Frontline of Resilience

By Tashi Yangdol, Ladakh, India

Ladakh, known as the cold desert of India, has been experiencing unusual heatwaves in recent years. These heatwaves are having a significant impact on small businesses. The extreme heat has become an obstacle in the daily lives of vendors whose livelihoods depend on outdoor labour and local markets. Vegetable and fruit sellers, cobblers, clothes vendors, etc., provide all essential services to the Ladakh town.

### Impact On Health and Livelihood

I met around 100 vendors in Ladakh, and everyone has the same complaint about the rising temperature. Sitting and working long hours in the market physically drains them. They face dehydration, headaches, and fatigue by midday. They said that in the past, Ladakh used to have pleasant summers, but now the weather is becoming harsher every year. They often reduce their working hours to avoid peak hours, which reduces their selling time. Vegetables like green leafy examples, spinach, lettuce, coriander, tomatoes, etc., and fruits like apricots and apples and other perishable items deteriorate faster in the extreme heat. Fewer people visit the market during the midday heat. For the cobbler, extreme heat means fewer customers as people prefer to avoid coming out during the peak midday.

### Local Adaptation Efforts

Despite the extreme heat, the vendors have adapted to the challenges they are facing and developed their own local solutions to minimise the damage and losses.

They, in order to avoid the extreme heat, use umbrellas, tarpaulin sheets, and clothes to protect themselves from the extreme sunlight. In Leh's main market, the government have installed permanent shaded roofs for the vegetable vendors. Vegetable sellers keep greens fresh by sprinkling water at intervals. Vendors have also shifted their selling hours to early morning and late evening to avoid the harsh sunlight. They keep water bottles and thermos flasks to stay hydrated throughout the day and also wear cotton clothes, hats and scarves to reduce heat.

### Conclusion

The increasing temperatures in Ladakh due to climate change are

affecting not just the vendors but also the region's water supply, agriculture, and overall livelihood. Rapid glacier melt, drying streams, and increased flash floods are some of the environmental impacts of rising temperatures in Ladakh. Ladakhi people need to adapt further to mitigate the impacts of the extreme heat. Strategies like improving water management, adopting climate-resilient crops, and enhancing market practices could help vendors cope with these challenges. Government and NGOs should recognise the problems of the vendors and support them by providing them with a better solution to help them sustain themselves. ■



“लद्दाख जैसे ठंडे माने जाने वाले क्षेत्र भी अब गर्मी से प्रभावित हो रहे हैं। स्थानीय विक्रेताओं के सरल उपाय बदलते मौसम में जीवन रेखा बन रहे हैं।”

A local vegetable vendor shielded her produce from the extreme heat under a cotton cloth.

# Loss & Damage Due to Extreme Heat: Lessons from AIDMI's Experience in India

By AIDMI, India

Extreme heat is increasingly shaping the lived reality of cities and small towns across India. While floods, cyclones, and earthquakes are widely recognised within loss and damage discussions, extreme heat often remains under-acknowledged—despite causing persistent and cumulative harm. AIDMI's experience over multiple years of working with affected people and small businesses shows that heat-related loss and damage is real, measurable in everyday life, and largely preventable if addressed early.

## Loss Builds Before It Is Recognised

One of the most significant challenges with extreme heat is that loss accumulates **silently and gradually**. Reduced working hours, declining productivity, heat-related illness, damage to goods, and increased household expenses rarely appear as disaster losses. These impacts often fall below formal thresholds for relief or compensation, yet together they erode economic security. By the time losses become visible, they are already deeply entrenched.

## Livelihood Loss Is Central to Heat Damage

AIDMI's field engagement consistently shows that for affected people, extreme heat is not only a health issue—it is a **livelihood crisis**. Small businesses experience declining footfall, shortened operating hours, spoilage of goods, and increased operating costs. Income loss during prolonged heat spells forces households to cut consumption, postpone essential

*“Heat-related loss accumulates slowly and often remains invisible in formal systems. Early, local adaptation can prevent this loss from turning into permanent damage.”*

expenses, or take on debt. These livelihood losses represent a core component of heat-related loss and damage.

## Coping Often Shifts Loss to the Future

People are not passive in the face of heat. They adapt by working fewer hours, altering schedules, borrowing money, or drawing down savings. However, these coping strategies often **shift loss forward in time** rather than eliminating it. Deferred medical care, postponed repairs, and mounting debt increase vulnerability to future shocks. What appears as short-term coping frequently translates into long-term damage.

## Absence of Preventive Support Converts Loss into Damage

Where early support is missing, avoidable losses become irreversible damage. AIDMI has observed that without timely cooling measures, flexible finance, or institutional

backing, small businesses may shut down permanently, health impacts may become chronic, and households may exit local economies altogether. The lack of preventive investment transforms manageable heat stress into lasting economic and social damage.

## Local Adaptation Can Reduce Loss and Damage

At the same time, AIDMI's experience also demonstrates that **loss and damage from extreme heat is not inevitable**. Simple, locally driven cooling actions—such as shade, ventilation, water access, and adjusted work practices—can significantly reduce exposure. When supported early through small grants, technical guidance, or institutional endorsement, these measures prevent income loss and health decline. Local adaptation, when enabled in time, acts as a powerful form of loss and damage prevention.

## Conclusion

Extreme heat challenges conventional understandings of disaster loss and damage because it is slow, everyday, and uneven. AIDMI's experience underscores the need to expand loss and damage frameworks to recognise gradual livelihood erosion and cumulative harm. More importantly, it shows that early, local, and practical adaptation can reduce both loss and damage. As heat becomes a defining feature of the climate crisis, recognising and addressing its impacts must move from the margins to the centre of policy and practice. ■

### Key Points:

- **Loss is cumulative** – heat causes slow, often invisible, livelihood and health losses.
- **Coping shifts damage** – short-term coping pushes losses into the future.
- **Early cooling prevents damage** – local action can stop loss from becoming permanent.

## Value Data and Finance in Managing Extreme Heat Risk and Adaptation: Emerging Findings from AIDMI

By Rohan Trivedi and Avani Panchal, AIDMI, India

Across multiple Indian cities, small businesses are experiencing climate-related hazards such as extreme heat, flooding, and infrastructure stress as recurring disruptions rather than isolated disaster events. Field-based evidence generated through AIDMI's work, covering 2,723 small businesses across 11 cities, shows that these hazards consistently affect income continuity, health, and daily business operations. This pattern underscores the need to position livelihoods at the centre of disaster risk reduction (DRR). Localized, enterprise-level data reveals how disaster risk accumulates through everyday conditions. Exposure varies by work environment, housing quality, and hazard type, with repeated heat stress, waterlogging, and humidity contributing to productivity loss and income interruption. Systematic tracking of preparedness and business continuity shows measurable improvements where low-cost adaptation measures are adopted. These include ventilation and cooling arrangements, protective coverings, improved storage, and minor structural repairs. When documented over time, such measures allow disaster risk to be understood as a dynamic condition that can be monitored and progressively reduced through targeted intervention.

These observations align with the Government of India's increasing emphasis on disaster risk reduction, as reflected in the National Disaster Management Plan and the expansion



Earlier, the road burned my feet. With an umbrella, the heat is reduced, and working conditions have improved. Photo: AIDMI.

of Heat Action Plans, which prioritise risk-informed, preventive measures and livelihood continuity alongside emergency response. Access to timely and flexible financial support plays a critical role in enabling these risk reduction actions. Rapid financial assistance allows small businesses to respond to identified risks without resorting to high-interest borrowing or asset depletion. Observed outcomes include reduced duration of income disruption and faster stabilization following periods of climate stress. Women-led and home-based

*“Local, enterprise-level data reveals where heat risk actually builds. When paired with flexible finance, it enables timely and effective adaptation.”*

enterprises, which constitute a substantial share of the businesses covered, show notable gains in preparedness when financial access aligns with their specific work and household conditions.

Taken together, the evidence demonstrates a clear linkage between data and finance within DRR practice. Data enables precise identification of risk, while finance supports the implementation of appropriate protective measures. Applied together, they strengthen preparedness, continuity, and recovery at the livelihood level, reinforcing disaster risk reduction as a continuous, evidence-driven process embedded in everyday economic life rather than a response activated only after major disasters.

## Social Impacts of Green Finance Fund Support to Extreme Heat-Affected Small Business Owners in Ahmedabad

By Kalpesh Prajapati, AIDMI, Gujarat, India

Extreme heat disproportionately affects small business owners such as street vendors, waste pickers, rickshaw pullers, and home-based workers. Without formal infrastructure, social security, or access to affordable credit, their livelihoods and health are at constant risk during prolonged heatwaves. In this context, green finance funds can play a transformative role by promoting both resilience and social equity.

By channelling resources into affordable cooling solutions—such as solar-powered fans, shaded vending zones, water stations, and heat-resilient workspace designs—green finance can reduce health risks like dehydration, heat stroke, and

*“Green finance strengthens not only climate resilience but also dignity and income stability. It links cooling solutions with social justice for vulnerable workers.”*

lost productivity. This not only safeguards incomes but also lowers medical costs for families who otherwise struggle to access healthcare.

Moreover, green finance support creates social cohesion by fostering community-based resilience projects, empowering local cooperatives, and encouraging women and

marginalised groups to actively participate in climate adaptation strategies. Access to climate-linked insurance and micro-credit also enhances financial security, reducing the cycle of poverty triggered by climate shocks.

Overall, green finance fund support improves dignity, health, and income stability for extreme heat-affected small businesses while aligning economic inclusion with climate resilience. This strengthens social justice and builds a more sustainable foundation for vulnerable urban and rural economies. ■

## ગ્રીન ફાઇનાન્સ ફંડ દ્વારા અતિશય ગરમીથી પ્રભાવિત નાના વેપારીઓને સહાયતાના સામાજિક પ્રભાવો

કલ્પેશ પ્રજાપતિ, AIDMI, ગુજરાત, ભારત

અતિશય ગરમી અનૌપચારિક નાના વેપારીઓ જેમ કે લારીવાળા, કચરો વીણનારા, રિક્ષા ચાલકો અને ઘર-આધારિત કામદારોને અસમાન રીતે અસર કરે છે. ઔપચારિક માળખા, સામાજિક સુરક્ષા અથવા સસ્તી લોનની સુવિધા વગર, લાંબા સમય સુધી ચાલતા હીટવેવ (ગરમીના મોજા) દરમિયાન તેમની આજીવિકા અને સ્વાસ્થ્ય સતત જોખમમાં રહે છે. આ પરિસ્થિતિમાં, ગ્રીન ફાઇનાન્સ ફંડ સ્થિરતા અને સામાજિક સમાનતા બંનેને પ્રોત્સાહન આપીને પરિવર્તનકારી ભૂમિકા ભજવી શકે છે.

સુલભ ઠંડક માટેના ઉપાયો—જેમ કે સૌર ઊર્જા સંચાલિત પંખા, છાંયડાવાળા વેચાણ વિસ્તારો, પાણીના સ્ટેશનો અને ગરમી-પ્રતિરોધક કાર્યસ્થળની ડિઝાઇનમાં—નાણાકીય સંસાધનોનું નિર્માણ કરીને, ગ્રીન ફાઇનાન્સ નિર્જલીકરણ (dehydration), હીટ સ્ટ્રોક અને ઓછી ઉત્પાદકતા જેવા સ્વાસ્થ્ય જોખમોને ઘટાડી શકે છે. આ માત્ર આવકને સુરક્ષિત કરતું નથી, પરંતુ એવા પરિવારો માટે તબીબી ખર્ચ પણ ઘટાડે છે જેઓ અન્યથા આરોગ્ય સંભાળની સુવિધા મેળવી શકતા નથી.

વળી, ગ્રીન ફાઇનાન્સ સહાય સમુદાય-આધારિત સ્થિરતાના પ્રોજેક્ટ્સને પ્રોત્સાહન આપીને, સ્થાનિક સહકારી સંસ્થાઓને સશક્ત બનાવીને, અને મહિલાઓ તથા સીમાંત જૂથોને આબોહવા અનુકૂળન (climate adaptation) વ્યૂહરચનાઓમાં સક્રિયપણે ભાગ લેવા પ્રોત્સાહિત કરીને સામાજિક સુમેળ બનાવે છે. આબોહવા-સંબંધિત વીમા અને માઇક્રો-ક્રેડિટની સુલભતા પણ નાણાકીય સુરક્ષામાં વધારો કરે છે, જેનાથી આબોહવાના આંચકાઓ દ્વારા ઉદ્ભવતા ગરીબીના ચક્રને ઘટાડી શકાય છે.

એકંદરે, ગ્રીન ફાઇનાન્સ ફંડની સહાય આબોહવા સ્થિરતા સાથે આર્થિક સમાવેશને જોડીને અતિશય ગરમીથી પ્રભાવિત અનૌપચારિક કામદારો માટે ગૌરવ, સ્વાસ્થ્ય અને આવકની સ્થિરતા સુધારે છે. આ સામાજિક ન્યાયને મજબૂત બનાવે છે અને નબળી શહેરી અને ગ્રામીણ અર્થવ્યવસ્થાઓ માટે વધુ ટકાઉ પાયો બનાવે છે. ■

# Urgently Addressing Heat Exposure in India's Workforce

By Akash Yadav, AIDMI, India

Rising temperatures and more frequent heatwaves are pushing India's outdoor and factory workers into dangerous conditions. Heat stress layered on physically demanding labour elevates the risk of heat exhaustion, heatstroke, and long-term cardiovascular strain, hurting both health and productivity. Yet current labour protections are too generic to keep pace with climate realities.

## What the Data Shows (PLFS 2023 + MET)

Using PLFS 2023 and Metabolic Equivalent of Task (MET) standards, occupations were classified by exertion and exposure:

- **Scope of exposure:** 38% of NCO occupations (192 of 506) involve heat (outdoor work or hot factory floors). Examples: construction, agriculture, street vending, metal foundries, brick kilns, and glass manufacturing.
- **Within heat-exposed jobs:**
  - **52% are moderate intensity (MET 3-6):** sustained activity with breaks (e.g., security guards, farm supervisors, transport workers). Risks: dehydration, heat exhaustion, cumulative strain.
  - **29% are heavy intensity (MET >6):** continuous high exertion (cultivators, construction/mining labourers) with acute heat-illness risk.
- **Contrast (non-heat jobs):** only 7.3% require heavy labour;

68.2% are light intensity – showing the disproportionate heat burden on outdoor/factory workers.

India's current regulatory framework does not treat heat as a core occupational hazard. The Factories Act, 1948, lacks explicit mandates for cooling measures, hydration stations, or rest schedules calibrated to thermal stress, and Section 55's 30-minute break after five hours is not heat-specific. Compounding these shortcomings, there is no national system to track heat-related illnesses, which obscures the true burden on workers and hinders targeted interventions.

## Policy Actions

For moderate-intensity work (MET 3-6), protections should focus on reducing cumulative heat load through frequent, guaranteed hydration breaks with ubiquitous access to potable water; ventilation and shading upgrades at worksites; and a shift to breathable, heat-appropriate PPE. Scheduling should avoid peak heat by moving starts earlier, splitting shifts, or instituting a deliberate midday slowdown,

*"A large share of India's workforce faces dangerous heat exposure without adequate protection. Heat must be recognised as a core occupational hazard in labour policy."*

allowing the body to recover while maintaining productivity.

For heavy-intensity work (MET >6), stronger, time-bound controls are essential. Employers should provide mandatory cooling breaks in shaded or actively cooled rest areas and trigger temperature-based task rotation or temporary stoppages once safe thresholds are exceeded. Sites must be prepared for acute incidents with trained responders, first-aid supplies, and rapid referral protocols. Given the sustained high risk in sectors such as construction, metal foundries, and brick kilns, India should evaluate and adopt clear, sector-specific temperature thresholds modelled on global best practices.

## Enforcement That Works

Effective enforcement means making heat risk management routine, measurable, and transparent. Heat audits should be integrated into regular labour inspections using clear checklists that verify temperature-safety thresholds, hydration access, shaded rest areas, and ventilation standards. Inspectors of the PLFS Data need training to identify heat hazards and confirm tangible evidence, such as break logs, water availability, and the presence and functioning of cooling infrastructure, while public compliance dashboards can create reputational pressure and help authorities target seasonal hotspots for intensified oversight. ■

## Night Shelters in Chennai: A Challenging Safety Net

By Prof. I. Arul Aram, Former Professor & Head, Dept. of Media Sciences, Anna University, Tamil Nadu, India

Chennai, like many large urban centres, faces a pressing challenge in housing its homeless population. Despite efforts by the Greater Chennai Corporation and NGOs, night shelters remain insufficient both in number and facilities, especially given the city's estimated 9,000+ homeless residents.

The problems of the shelter system include a shortage of adequate shelters, limited funding, and uneven distribution across the city. The city currently has 48 operational shelters, each housing up to 50 inmates. Separate shelter homes operate for men, women, boys, and girls. There are also shelter homes for transgender people. Additionally, 35 modern shelters are planned, with even facilities to support the most vulnerable groups, including the aged, disabled, and mentally ill.

Shelters are designed as short-stay homes, with people allowed to stay up to six months. Currently, more than 1,600 individuals are housed in shelters managed by NGOs, with the operational expenses borne by the Corporation. Beyond basic needs like food and clothing, psychosocial support is offered with weekly counselling.

Unlike some parts of the country, Chennai does not experience extreme heat and cold waves. Most people accommodated in shelter homes are those who become homeless due to certain circumstances. Many go to work, or some beg, during the daytime. Efforts are being made to reintegrate them with their homes or rehabilitate them with gainful employment and an independent place to stay. After reintegration or rehabilitation, too, follow-up activities are undertaken



“रात्रीचे निवारे बेघर नागरिकांना सुरक्षितता आणि सन्मान देतात. मात्र वाढत्या शहरी जोखमींसाठी त्यांचा विस्तार आणि गुणवत्ता सुधारण्याची गरज आहे.”

An old homeless man is relaxing at a shelter in Chennai after lunch.

to ensure sustainability. There are instances of educated young women coming to Chennai from rural areas in search of jobs but becoming helpless and homeless; in such cases, shelter homes not only provide them with a place to stay but also mediate with institutions for jobs. In fact, when people are vulnerable, shelter homes give them a roof and food and protect them from abuse and violence.

The Tamil Nadu Urban Livelihood Mission supports these efforts by linking shelter residents to government welfare schemes such as PDS, pensions, education, and affordable housing. Special provisions are also made within shelters for vulnerable groups such

as people with mental health issues or those with health issues. Old people or mentally ill people lacking in family support are referred to permanent shelters meant for them.

According to K. Logesh, Projector Coordinator for the Loyola Shelter Home for Homeless Men, there is a surge in people during the rainy season for short stays, as low-lying areas are marooned and poorly-maintained low-income houses leak. Once the rains stop and/or the floodwaters recede, they return to their homes.

Indeed, night shelters help treat the homeless not just as a problem of shelter, but as citizens entitled to dignity, safety, and opportunity. ■

## Locating Equity and Inclusion in Climate Policies and Heat Action Plans in Indian Cities

By *Tamanna Dalal*, Senior Research Associate, Adaptation and Resilience, Sustainable Futures Collaborative, India

Cities across India are witnessing a higher number of intense heatwave days, which come earlier than usual and stay for a longer part of the year. It is taking a toll on people's health, economy, and livelihoods. According to official estimates, India saw 48,000 cases of suspected heatstroke in 2024, with some estimates putting the death toll at 159, though the actual number is likely much higher.

Heat has also shaken day-to-day life. Schools close when classrooms become too hot to teach in. Street vendors and construction workers push through sweltering afternoons because losing a day's income is not an option. Homes in informal settlements trap heat well into the night, leaving little relief for those without fans or air conditioners. Livelihoods in farming, fishing, construction, waste picking, and other outdoor sectors are particularly exposed. This could have a substantial impact on the country's economy, with the International Labour Organisation estimating that by 2030, heat stress could lead to work-hour losses equivalent to 34 million jobs, reducing India's GDP by up to 2.4 per cent.

Heat impacts are felt unequally. Vulnerability is shaped by where people live, what work they do, whether they can afford cooling, and whether they have access to reliable water, electricity, and healthcare. Those without adequate social security nets or access to state services are the most at risk and usually left to fend for themselves.

India's main policy tool for managing extreme heat is the Heat Action Plan (HAP), developed at the state, district, and city levels. These plans outline actions to be taken by various implementing departments before, during, and after heatwaves. Short-term actions include issuing heat advisories, setting up drinking water stations, and adjusting work or school timings. Longer-term actions include increasing tree cover, promoting cool roofs, and building permanent cooling shelters.

While the list of solutions is impressive, major gaps remain in implementation. First, HAPs fall short in studying local impacts, whether in understanding the type of heat a region experiences or identifying the most at-risk populations. A CPR review of 37 HAPs found that most were ill-suited to the local context, and only two included a vulnerability assessment that could help identify and target the most vulnerable.

Second, the idea of who is most at risk is handled with vagueness. Most plans identify broad categories such as children, the elderly, outdoor workers, and pregnant women as vulnerable. They do not account for overlapping disadvantages that

could make some within these groups more vulnerable than others. For example, informal outdoor workers face worse heat impacts than those with workplace protections. Similarly, a migrant woman living in informal settlements may face greater risks at work, during her commute, and at home. Such intersectional vulnerabilities, as well as others such as caste and age, are rarely addressed in the plans.

The situation on the ground is similar. Our recent report assessing heat actions in nine of the most at-risk cities found that more than 70 per cent of reported measures were short-term, such as awareness campaigns, temporary water provision, and altered work schedules. Only 13 per cent qualified as long-term, and even these were often fragmented or implemented without explicit heat resilience goals. For example, greening initiatives were common but rarely targeted at neighbourhoods with low tree cover or designed using species most effective for cooling. Short-term measures were also usually not targeted toward specific groups, missing the mark and creating space for inefficient use of government resources. Some important long-term measures were entirely absent, such as improving cooling access for the most vulnerable or integrating social protection measures like affordable health insurance for informal workers. Implementation, then, seems to be passing the vulnerable by. This will probably

*"Most Heat Action Plans fail to identify who is most at risk. Without equity-focused targeting, heat policies risk leaving the most vulnerable behind."*

have long-term effects on equity in these communities.

Some things have started to change. The NDMA recently released guidelines on protecting informal and gig workers, asking employers to ensure drinking water and cooling at workplaces. But it will take more than an advisory to change conditions on the ground. A few innovative solutions have emerged, such as parametric insurance to cover wages lost due to heat, and community-focused dissemination of heat advisories. However, scaling these will require careful planning by the state.

As the planet continues to warm up, these risks will only grow, and short-

term fixes will not keep pace. Without long-term targeted interventions for vulnerable communities, existing inequalities will deepen, and the health and economic costs of heat will escalate. There is an urgent need to rethink how we develop in a warming world, whether it is the way we build our cities, our houses, and our public health systems, and to prioritise those most at risk explicitly.

**Recommendations**

Localised vulnerability assessments to identify high-risk groups and areas at the neighbourhood level, considering housing, occupation, gender, and access to services

Targeted interventions linked to social protection and development schemes such as MGNREGA, PM Awas Yojana, and crop insurance, ensuring that support reaches the most vulnerable

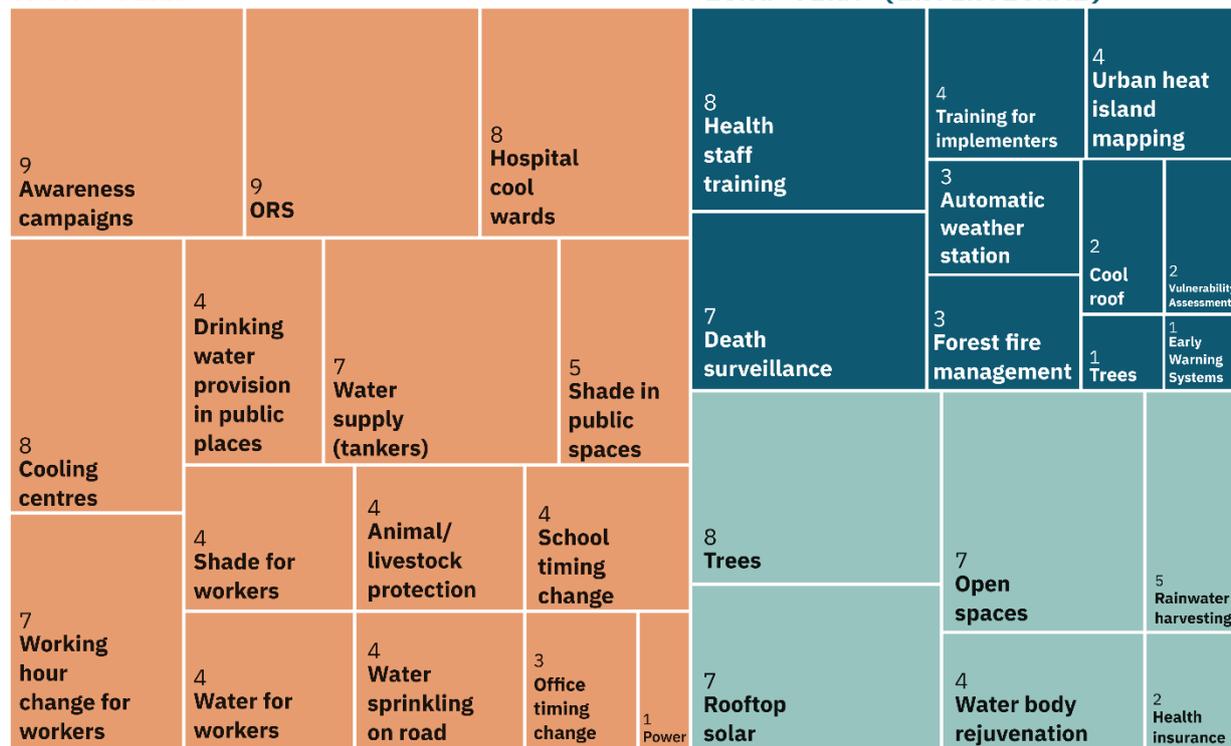
Inclusive governance through regular community stakeholder engagement in the design and review of HAPs

Institutional and legal strengthening by giving HAPs legal authority, dedicated funding, and clearly defined departmental roles

Capacity building for implementers to understand and respond to the needs of at-risk populations across sectors. ■

**SHORT-TERM**

**LONG-TERM (INTENTIONAL)**



"Reported heat actions (n=150) are mostly short-term. Many potential long-term measures fall into the 'incidental' category and do not target high-risk groups. 'Intentional' actions are few, especially once health system responses (focused on managing effects, not prevention) are excluded. The figure in the diagram shows the number of cities (out of nine) reporting each action."

# Cooling Cities for the Summer of 2026: Actions, Institutions, and National Direction for India

By AIDMI, India

Extreme heat has become a defining condition of urban life in India. Each summer now arrives earlier, lasts longer, and places increasing strain on health systems, livelihoods, and local economies. As the summer of 2026 approaches, effective cooling requires alignment between **immediate actions, state-level institutional support, and national policy direction**. Together, these form the foundation for enduring extreme heat in cities.

## Key Cooling Actions for the Summer of 2026

The most urgent cooling actions for 2026 are those that can be implemented **before and during peak heat**, using existing systems and local capacity. First, cities must act early, treating heat as a **seasonal risk** rather than an emergency. Cooling measures—such as water access, shade, ventilation, and service adjustments—should be in place before temperatures cross danger thresholds.

Second, cooling must be prioritised **where heat is actually felt**: dense neighbourhoods, market areas, transport hubs, public service points, and poorly ventilated housing. Place-based action is more effective than citywide averages.

Third, cities should scale **low-cost, high-impact measures**. Simple interventions—shade structures, reflective surfaces, improved airflow, and cooling spaces—can significantly reduce heat stress when applied widely. These actions work best when affected people and small

### Key Points:

- **Act early** - plan cooling before heat peaks.
- **Target hotspots** - cool where heat is felt.
- **Enable local action** - support simple cooling solutions.

businesses are supported to adopt them proactively.

## How and Where SDMA's Can Support Local Cooling Initiatives

State Disaster Management Authorities (SDMA's) play a critical enabling role in turning cooling intent into action. SDMA's can support local cooling initiatives by **translating heat warnings into operational guidance**, issuing clear standard operating procedures that specify what districts and cities should do as temperatures rise.

SDMA's can also enable the **preventive use of disaster management funds** for cooling measures before peak heat, recognising cooling as disaster risk reduction rather than post-impact relief. Their coordination mandate allows them to align health, urban development, water, labour, and

housing departments around shared cooling priorities.

In terms of location, SDMA support is most impactful in **high-exposure urban areas, small-business and livelihood zones, public and community spaces, and housing with high indoor heat stress**, especially where night-time temperatures remain high.

## Top Three Cooling Directions from NDMA of India

The **National Disaster Management Authority (NDMA)** provides clear national direction that underpins these efforts.

First, NDMA emphasises **preparedness over response**, calling for anticipatory planning and early action.

Second, it stresses **prioritised protection** of those most exposed to heat, recognising unequal risk.

Third, NDMA highlights the need to **integrate cooling into everyday governance**, embedding heat management within routine service delivery rather than treating it as a stand-alone intervention.

## Conclusion

Cooling for the summer of 2026 is not about inventing new solutions; it is about acting early, targeting wisely, and aligning local action with state support and national direction. When cities, SDMA's, and NDMA priorities work together, cooling becomes not just an emergency response but a sustained strategy for enduring extreme heat.

“२०२६ च्या उन्हाळ्यासाठी आत्ताच कृती करणे आवश्यक आहे. स्थानिक कृती, राज्यांचा पाठिंबा आणि राष्ट्रीय दिशा एकत्र आणणे गरजेचे आहे.”

## From Small Measures to Systemwide Resilience in India

By Mihir R. Bhatt, AIDMI, India

The evidence is clear: extreme heat is now a defining condition of urban and small-town life in India. The way ahead must therefore move beyond emergency response and awareness campaigns toward sustained, affected local, people-centred adaptation—especially for millions of small businesses that thousands of anchor local urban (and rural): that is what the contributions in the previous pages suggest. Let me enlist the top six lessons that state authorities, donors, CSR teams, and local leaders can pick up for action.

**First, heat must be treated as a major development risk.** Heat Action Plans have saved lives, but their impact depends on how deeply heat management is integrated into everyday governance. Plan, per se, is not preparedness. Cooling must be planned alongside housing, water, markets, labour regulation, transport, market federation, and public health. Acting early—before temperatures peak—should become routine, not exceptional, in each small town of India.

**Second, local adaptation should be the backbone of heat resilience.** The stories in this issue show that small measures work. Shade, airflow, hydration, cool surfaces, and flexible work hours reduce exposure immediately. Scaling these does not require sophisticated technology; it requires enabling affected people to adopt solutions they already know and trust, with timely technical and financial support.

**Third, livelihoods must sit at the centre of extreme heat cooling governance.** For small businesses, heat is as much an economic threat as a health hazard. When coping means shutting down or cutting hours, losses accumulate quietly and deepen vulnerability. Cooling that allows people to work safely is not a welfare expense—it is economic protection to the individual small businesses, local markets, and the small towns.

**Fourth, heat data and cooling finance must work together.** Local data identifies hotspots and tracks what works; flexible finance enables preventive action before losses occur. Separately, each is insufficient. Together, they turn extreme heat risk awareness into resilience.

**Fifth, equity must be explicit.** Heat impacts are unequal. Women

workers, migrants, bus drivers, small businesses, the homeless, artisans, and those in poorly ventilated housing face layered risks. Broad labels of “vulnerable groups” are not enough, and are misleading, cover up the reality of the extreme heat’s impact diversity. Targeted, locally created approaches are essential to avoid leaving the most exposed in small towns behind.

**Finally, all institutions must enable community action.** State and national, and urban systems play a vital role in setting direction and providing resources. But enduring resilience emerges when institutions support, legitimise, and scale what communities are already doing to protect themselves, making up their loss and damage and mobilising the merger resources for anticipatory cooling action.

The way we live in and build our towns and homes, extreme heat will continue to intensify. The choice before policymakers and practitioners, planners and managers, is whether to absorb silent, cumulative losses—or to act early, locally, and inclusively. Small heat resilience measures at a small town level, when supported systematically, can protect livelihoods, strengthen local economies, and make adaptation tangible. Enduring extreme heat is not about enduring suffering; it is about enabling citizens of India to live and work safely in a warming world. ■

*“Extreme heat is no longer an emergency to be managed seasonally in India’s small towns; it is a development condition that must be governed daily. When small, people-led cooling measures are supported systematically—through local data, timely finance, and inclusive institutions—they protect livelihoods, strengthen small-town economies, and turn adaptation from an abstract goal into lived safety and dignity.”*

# छोटे उपायों से भारत में समग्र सहनशीलता की ओर

— मिहिर आर. भट्ट, ऑल इंडिया डिज़ास्टर मिटिगेशन इंस्टिट्यूट (AIDMI), भारत

**सा**क्ष्य अब स्पष्ट हैं: अत्यधिक गर्मी भारत के शहरों और छोटे कस्बों के जीवन की एक स्थायी स्थिति बन चुकी है। ऐसे में आगे का रास्ता केवल आपातकालीन प्रतिक्रिया या जागरूकता अभियानों तक सीमित नहीं रह सकता। ज़रूरत है प्रभावित लोगों के नेतृत्व में, स्थानीय स्तर पर और निरंतर अनुकूलन (adaptation) की—विशेषकर उन लाखों छोटे व्यवसायों के लिए जो स्थानीय शहरी और ग्रामीण अर्थव्यवस्था की रीढ़ हैं। इस अंक में शामिल लेख और अनुभव यही संदेश देते हैं। इन्हीं के आधार पर राज्य सरकारों, दानदाताओं, CSR टीमों और स्थानीय नेतृत्व के लिए छ प्रमुख सीखें सामने आती हैं।

पहला, अत्यधिक गर्मी को एक **मुख्य विकास जोखिम** के रूप में स्वीकार करना होगा। हीट एक्शन प्लान्स ने जानें बचाई हैं, लेकिन उनकी प्रभावशीलता इस बात पर निर्भर करती है कि गर्मी प्रबंधन को रोज़मर्रा के शासन में कितनी गहराई से शामिल किया गया है। योजना बनाना ही तैयारी नहीं है। शीतलन (cooling) को आवास, जल, बाज़ार, श्रम नियमों, परिवहन और सार्वजनिक स्वास्थ्य के साथ जोड़कर देखना होगा। तापमान चरम सीमा पर पहुँचने से पहले कार्रवाई करना हर छोटे नगर की नियमित प्रक्रिया बननी चाहिए, न कि अपवाद।

दूसरा, **स्थानीय अनुकूलन** ही गर्मी सहनशीलता की रीढ़ होना चाहिए। इस अंक के लेख दिखाते हैं कि छोटे उपाय काम करते हैं और सफल होते हैं। छाया, हवा का प्रवाह, पीने का पानी, ठंडी सतहें और लचीले कार्य समय तुरंत जोखिम घटाते हैं।

इन्हें अपनाने के लिए उन्नत तकनीक नहीं, बल्कि प्रभावित लोगों को वही समाधान अपनाने में सक्षम बनाना ज़रूरी है जिन पर वे भरोसा करते हैं—समय पर तकनीकी और वित्तीय सहायता के साथ।

तीसरा, **आजीविका को गर्मी शासन के केंद्र में रखना** होगा। छोटे व्यवसायों के लिए गर्मी केवल स्वास्थ्य संकट नहीं, बल्कि एक आर्थिक खतरा भी है। जब बचाव का मतलब काम बंद करना या समय घटाना होता है, तो नुकसान चुपचाप बढ़ता जाता है। सुरक्षित रूप से काम जारी रखने में मदद करने वाला शीतलन कोई कल्याण खर्च नहीं, बल्कि स्थानीय बाज़ारों और कस्बों की आर्थिक सुरक्षा है।

चौथा, **गर्मी से जुड़े डेटा और शीतलन वित्त** को साथ-साथ काम करना होगा। स्थानीय डेटा यह बताता है कि जोखिम कहाँ और किस पर सबसे अधिक है, जबकि लचीला वित्त नुकसान होने से पहले कार्रवाई को संभव बनाता है। अलग-अलग, दोनों अधूरे हैं; साथ मिलकर ही वे जागरूकता को वास्तविक सहनशीलता में बदलते हैं।

पाँचवां, **न्याय और समानता** को स्पष्ट रूप से शामिल करना होगा। गर्मी का असर

“अत्यधिक गर्मी अब केवल मौसमी आपदा नहीं, बल्कि भारत के छोटे शहरों और कस्बों की रोज़मर्रा की विकास चुनौती है। जब भारत के नागरीक के नेतृत्व वाले शीतलन उपायों को स्थानीय डेटा, समय पर वित्त और समावेशी संस्थागत समर्थन मिलता है, तब वे आजीविका, स्वास्थ्य और सम्मान की रक्षा करते हुए वास्तविक सहनशीलता बनाते हैं।”

समान नहीं होता। महिला श्रमिक, प्रवासी, बस चालक, छोटे व्यवसायी, बेघर लोग, कारीगर और खराब वेंटिलेशन वाले घरों में रहने वाले लोग कई स्तरों पर जोखिम झेलते हैं। केवल “कमज़ोर वर्ग” जैसे व्यापक शब्द वास्तविक विविधता को छिपा देते हैं। इसलिए स्थानीय स्तर पर लक्षित और सह-निर्मित उपाय अनिवार्य हैं।

अंततः, सभी संस्थानों को **समुदाय आधारित कार्रवाई को सक्षम बनाना** होगा। राज्य और राष्ट्रीय प्रणालियाँ दिशा और संसाधन दे सकती हैं, लेकिन स्थायी सहनशीलता तब बनती है जब संस्थाएँ उन प्रयासों को समर्थन, मान्यता और विस्तार देती हैं जो समुदाय पहले से अपने स्तर पर कर रहे हैं—नुकसान और क्षति की भरपाई करते हुए और अग्रिम शीतलन कार्रवाई के लिए संसाधन जुटाते हुए।

हम जिस तरह अपने कस्बों और घरों का निर्माण और उपयोग करते हैं, यदि उसमें बदलाव नहीं हुआ तो अत्यधिक गर्मी और तीव्र होती जाएगी। नीति-निर्माताओं और कार्यकर्ताओं के सामने विकल्प साफ है: या तो चुपचाप बढ़ते नुकसान को स्वीकार करें, या फिर समय रहते, स्थानीय और समावेशी कार्रवाई करें। छोटे कस्बों में छोटे गर्मी-सहनशीलता उपाय, यदि व्यवस्थित समर्थन पाएँ, तो आजीविका की रक्षा कर सकते हैं, स्थानीय अर्थव्यवस्था को मज़बूत बना सकते हैं और अनुकूलन को ठोस रूप दे सकते हैं। अत्यधिक गर्मी को सहना मतलब पीड़ा को सहना नहीं है—बल्कि भारत के नागरिकों को एक अति तप्त होती दुनिया में सुरक्षित और सम्मानजनक ढंग से जीने-काम करने में सक्षम बनने देना है।

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- 1. Small Heat Resilience Measures: Big Impact in Small Towns and on Small Businesses in India**  
*Mihir R. Bhatt, All India Disaster Mitigation Institute, India* 2
- 2. Extreme Heat on the Frontlines**  
*Laasya Khandavalli, AIDMI, India* 3
- 3. UNDRR Initiatives on Extreme Heat**  
*AIDMI, India* 3
- 4. Street Selling for Women**  
*Laasya Khandavalli, AIDMI, India* 4
- 5. Five Questions to Think About Nature-Based Solutions for Extreme Heat in India**  
*AIDMI, India* 5
- 6. Heat Resilience Building as Empowering: Findings from City Rewa**  
*Vaishali Tiwari, AIDMI, Madhya Pradesh, India* 6
- 7. Small Support Creates Great Livelihood Opportunities**  
*Binapani Mishra, Secretary, Society for Women Action Development, Satyabadi, Odisha, India* 8
- 8. Artisanal Experiences in the Heat**  
*Laasya Khandavalli, AIDMI, India* 9
- 9. Building Heat Resilience: Small Businesses in Ernakulam**  
*Ashna MS, AIDMI, Kerala, India* 10
- 10. A Plastic Sheet Against the Sun: Disrupting Kolkata's Cycle of Heat Vulnerability**  
*Pratiti Sasmal, AIDMI, West Bengal, India* 11
- 11. Ahmedabad City and Extreme Heat: Key Initiatives and Way Ahead for 2026**  
*AIDMI, India* 12
- 12. Heatwaves and Ladakhi Sellers: Small Business on the Frontline of Resilience**  
*Tashi Yangdol, Ladakh, India* 13
- 13. Loss & Damage Due to Extreme Heat: Lessons from AIDMI's Experience in India**  
*AIDMI, India* 14
- 14. Value Data and Finance in Managing Extreme Heat Risk and Adaptation: Emerging Findings from AIDMI**  
*Rohan Trivedi and Avani Panchal, AIDMI, India* 15
- 15. Social Impacts of Green Finance Fund Support to Extreme Heat-Affected Small Business Owners in Ahmedabad**  
*Kalpesh Prajapati, AIDMI, India* 16
- 16. Urgently Addressing Heat Exposure in India's Workforce**  
*Akash Yadav, AIDMI, India* 17
- 17. Night Shelters in Chennai: A Challenging Safety Net**  
*Prof. I. Arul Aram, Former Professor & Head, Dept. of Media Sciences, Anna University, Tamil Nadu, India* 18
- 18. Locating Equity and Inclusion in Climate Policies and Heat Action Plans in Indian Cities**  
*Tamanna Dalal, Senior Research Associate, Adaptation and Resilience, Sustainable Futures Collaborative, India* 19
- 19. Cooling Cities for the Summer of 2026: Actions, Institutions, and National Direction for India**  
*AIDMI, India* 21
- 20. From Small Measures to Systemwide Resilience in India**  
*Mihir R. Bhatt, AIDMI, India* 22

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