Cooling Cities, Protecting Citizens

Roundtable Report on Heat-Resilient Infrastructure

1. Introduction

The All India Disaster Mitigation Institute (AIDMI) organised a virtual roundtable on **"Heat-Resilient Infrastructure: Lessons from Emerging Global Experience"** on August 14, 2026. The roundtable was attended by 120 participants from 34 countries, representing cities across Asia, Africa, Europe, North America, South America, and the Middle East, reflecting strong global interest in heat-resilient infrastructure and community-centred climate resilience.

The roundtable was held at a time when extreme heat is increasingly recognised as more than a seasonal weather issue. It is affecting health, livelihoods, housing, schools, hospitals, transport, water systems, power systems, public spaces, and local economies. The session also marked the launch of the special issue of **Southasiadisasters.net** on the same theme, which brought together practical lessons on heat-resilient infrastructure and inclusive heat action.

2. Roundtable at a Glance

Date: August 14, 2026
Time: 4:00 PM to 5:30 PM IST
Format: Virtual Roundtable
Organiser: All India Disaster Mitigation Institute (AIDMI)
Participants: Four speakers and 120 participants from India, South Asia, and other parts of the world
Theme: Heat-resilient infrastructure, humanitarian action, geospatial heat-risk mapping, nature-based cooling, Heat Action Plans, and community-centred resilience
Speakers: Charles Kelly; Er. Kundan Jung Thapa; Dr. Deepa Gavali; and Mihir R. Bhatt
Moderators: Ms. Harakh Patel and Mr. Shridhar Joshi, AIDMI
Report prepared by: Mr. Manish Patel and Ms. Shruti Nair, AIDMI

3. Key Insights from Speakers

Charles Kelly, Secretariat, Extreme Heat Working Group, Global Shelter, Land and Site Coordination Cluster, spoke on humanitarian challenges related to urban heat crises. He noted that extreme heat is not necessarily a slow-onset disaster in the same sense as drought. Rather, it can be slow to be recognised because heat-related illness and deaths are often weakly recorded, even though some types of heat waves can develop rapidly. He explained that this makes extreme heat hard to recognise and hard to manage, and can make it difficult to justify humanitarian assistance even when impacts are serious. He also noted that disasters often destroy the infrastructure people normally use to protect themselves from heat. Tents and plastic sheeting may meet minimum emergency shelter needs, but they do not always provide thermal comfort. He suggested practical responses such as cooling spots, cooling centres, cool sleeping sites, and cool kits, while stressing that these need advance planning.

"Extreme heat is an insidious threat. It is hard to recognise and hard to manage", he said.

Er. Kundan Jung Thapa, Disaster Risk Specialist and Researcher, NAXA Pvt. Ltd., Kathmandu, Nepal, presented on making heat visible through geospatial tools. He explained that heat leaves no debris and no clear boundary on a map, yet its impacts

vary sharply across neighbourhoods. A tree-lined ward and a tin-roofed settlement may experience heat very differently. His presentation showed how GIS, remote sensing, dashboards, sensors, field surveys, and AI can support heat-risk mapping and better infrastructure decisions. He argued that investment should move from guesswork to evidence, with facility-level and household-level planning for schools, health posts, markets, and settlements. He further emphasised that heat-risk assessment should move beyond city, district, and ward-level averages to facility- and household-level assessment. This more granular approach can make heat-resilient infrastructure planning more practical, while also requiring careful attention to the budgetary and financial implications of scaling such assessments. He also highlighted citizen science, low-cost sensors, and local heat and humidity observations as useful data sources for capturing micro-level heat variation and involving youth and local communities in heat monitoring and technology use.

"Without geospatial evidence, infrastructure investment for heat is guesswork", he said.

Dr. Deepa Gavali, Executive Secretary, Gujarat Ecology Society, spoke on old trees, green cover, and urban cooling. Using Ahmedabad as an example, she showed how urbanisation, concretisation, and loss of green cover increase heat exposure. She highlighted that school children, street vendors, cart pullers, bicycle riders, and senior citizens are especially affected. Old trees provide shade, evapotranspiration, surface-temperature reduction, carbon storage, air-quality improvement, biodiversity support, and cultural value. Her message was clear: mature trees should be protected as living cooling infrastructure.

"Old trees are not decoration. In extreme heat, they are public infrastructure", she said.

Mihir R. Bhatt, AIDMI, in his concluding remarks, said that heat must be made visible in planning, budgets, policy, and everyday decisions. Heat may be invisible in the landscape, but it is visible in people's lives through exhaustion, income loss, sleepless nights, unsafe homes, interrupted work, health costs, and care burdens. He noted that data can show where heat is high, but communities show where heat hurts most.

"The test of resilience is not what we build. The test is who remains protected by the infrastructure when conditions become difficult", he said.

Key Themes Emerging from the Roundtable

The roundtable highlighted that extreme heat is not necessarily a slow-onset disaster in the same sense as drought. Rather, it can be slow to be recognised because heat-related illness and deaths are often weakly recorded, while some types of heat waves can develop rapidly. It may not create visible destruction like floods or earthquakes, but it affects health, income, sleep, care work, mobility, public services, and daily survival.

The discussion also showed that heat-resilient infrastructure must protect people, not only assets. Roads, buildings, power systems, schools, hospitals, and transport networks matter, but so do shaded bus stops, cool classrooms, ventilated homes, worker rest spaces, drinking water points, cooling spots, cool sleeping sites, and old trees.

Another key theme was the need to move from heat mapping to heat action. Heat maps, satellite data, sensors, dashboards, and early warning systems are useful only when they guide practical local decisions.

Facility- and household-level heat-risk assessment can make evidence-based investment, nature-based solutions, and humanitarian preparedness more practical and locally actionable.

Concluding Reflection

The roundtable showed that extreme heat is already testing cities, services, institutions, and households. It affects homes, schools, hospitals, transport, water systems, power systems, public spaces, and local economies. It also affects dignity and everyday continuity, especially for people who cannot easily escape heat.

A central message was that heat action must move from knowledge to protection of infrastructure. Warnings must lead to preparedness. Infrastructure must remain usable during extreme heat. Nature must be protected as infrastructure. Finance must reach community-scale solutions of cooling by small, local, micro infrastructure.

Way Ahead

1. Strengthen reporting of heat-related illness and deaths so that heat impacts are recognised in health and humanitarian systems related to infrastructure design.
2. Move from city- and ward-level heat plans to facility- and household-level action, using satellite data, local sensors, field surveys, citizen science, and community observations to identify risks and costs at schools, health posts, markets, settlements, and vulnerable households.
3. Recognise facility- and household-level assessment as the point where evidence, nature-based solutions, and humanitarian preparedness come together, making heat investment, cooling measures, and local preparedness more practical and targeted.
4. Treat old trees, green corridors, wetlands, parks, and water bodies as essential cooling infrastructure at all levels.
5. Include thermal comfort, cooling centres, water access, and cool sleeping spaces in humanitarian and disaster preparedness tools and infrastructure.
6. Place women workers, informal workers, children, older persons, persons with disabilities, and small businesses at the centre of heat planning and cooling infrastructure.

Suggested Follow-Up Actions

1. **Develop a working session or technical note** on facility-level heat-risk assessment methodology, combining satellite data, local sensors, field surveys, and community observations.
2. **Initiate collaborative work on standard measurement protocols** for topography-driven micro-variation in heat exposure, especially for mountainous and highly varied terrains across South Asia.
3. **Create a shared South Asian repository or short compendium** of locally derived heat thresholds from India, Nepal, and other contexts, so municipalities can use locally relevant standards instead of relying only on global or borrowed benchmarks.

The roundtable concluded that heat-resilient infrastructure must be cooler, greener, more local, more inclusive, and more just.