January 2026

NEWSLETTER

THE LATEST NEWS AND UPDATES FROM MEER

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Welcome to January 2026 edition of the MEER Newsletter

As we begin 2026, MEER's work continues to gather pace across India, Africa, and other key regions, with an increasing focus on translating research into durable, real-world cooling solutions. From sustainable rooftop building practices to high-reflectivity canopy systems, our teams are advancing practical engineering approaches designed to reduce heat exposure where it is felt most acutely.

In Africa, MEER is launching a large-scale social and health study focused on the impacts of extreme heat and the urban heat island effect in dense urban communities. Working with a substantial cohort of residents in Freetown, Sierra Leone, the study will examine how chronic heat exposure affects health, wellbeing, and daily life — and how these impacts can be reduced through the cooling interventions MEER is implementing on the ground. This work represents an important step in linking physical cooling solutions directly to measurable social and health outcomes.

In India, research and on-site experimentation are continuing to refine passive rooftop cooling designs, informed by local materials, building practices, and community needs. This work is helping shape scalable approaches to heat adaptation that can be tested, adapted, and replicated across diverse urban environments.

This edition shares updates from these efforts alongside broader engineering developments, team news, and scientific insights from MEER. As climate impacts accelerate, we remain focused on delivering grounded, practical cooling solutions — and on strengthening the partnerships that make this work possible.

NEWS FROM AFRICA

Launching a Major Health & Climate Adaptation Study

The start of 2026 marks an important milestone for MEER's work in Africa. Over the past four weeks, our team in Sierra Leone has formally kicked off a major health monitoring and climate adaptation study in Kroo Bay, Freetown — one of the most heat-exposed urban communities we work in. This first phase focuses on intensive baseline surveys and household assessments, laying the foundation for a year-long study linking passive cooling directly to human health outcomes.

This early work is critical. Before any cooling systems are installed, the team has been gathering detailed demographic, housing, and exposure data across the community to establish a clear picture of current living conditions and heat stress levels. This baseline will allow us to measure real change later — comparing people's conditions before and after climate adaptation interventions are introduced.

Initial findings from the surveys already underline why this project matters. Many residents spend long periods indoors during the hottest parts of the day, often under corrugated metal roofs that trap heat. Women, children, and older adults are particularly exposed, with limited ability to avoid high indoor temperatures. For many households, heat stress is not limited to daytime hours — indoor temperatures often remain high well into the night.

This is exactly the gap this project is designed to address.
In the coming months, MEER will begin installing reflective cooling systems on selected rooftops, while continuing health and environmental monitoring across participating households. By tracking conditions over time, the study will allow us to directly assess how passive cooling affects indoor temperatures, comfort, sleep quality, and physiological stress — something that has rarely been measured in real-world, low-income urban settings.

For our Africa team, the past few weeks have involved long days of surveys, household visits, and community engagement — careful, methodical work that sets the scientific and ethical groundwork for everything that follows. It is also the first step in building out MEER's largest climate adaptation programme in the region to date.

As we begin the new year, there is a great deal ahead: more data collection, installations, monitoring, and analysis. But this January marks the point where that journey truly begins — with strong local participation, rigorous baseline data, and a clear path toward measuring how climate adaptation can improve daily life. There is a lot to do — and a lot to look forward to.

This work is a powerful example of MEER's collaborative model in action. The progress made so far reflects the combined efforts of MEER's global engineering team, our dedicated teams on the ground in Sierra Leone, and our valued community partners. Together, they are building a blueprint for climate adaptation that is rooted in local capability, global expertise, and shared commitment.

We look forward to sharing more updates early next year as the first canopy is installed, the fabrication site becomes fully operational, and this new system begins to support broader climate-resilience efforts across Sierra Leone.

NEWS FROM INDIA

Research Continues in India as MEER Explores Bamboo for Climate Cooling Solutions

MEER's research work in India is continuing into 2026, reflecting the country's central importance in both the climate crisis and the search for practical, scalable solutions. India is experiencing some of the most intense heat stress anywhere in the world, making it a critical setting for the development of climate adaptation and mitigation approaches that are affordable, locally grounded, and capable of operating at scale.

As part of this effort, MEER's team in Pune has been exploring the use of bamboo as a potential construction material for passive cooling systems. Bamboo is widely available across many parts of India and has long been used in local building traditions, making it a promising candidate for low-carbon cooling structures such as shading canopies and rooftop installations.

Recent market research focused on identifying which bamboo species are most commonly available and suitable for experimental builds. The team found that *Dendrocalamus strictus* is the most prevalent species in local supply chains, reinforcing its potential role in future trial projects. The research was aimed not at procurement, but at understanding availability, consistency, and practical suitability for on-the-ground experimentation.

This work forms part of MEER's broader approach to climate adaptation: developing solutions that respond to local conditions and make use of materials that communities already understand and can access. By grounding design choices in real-world availability, the team aims to ensure that future cooling systems can be replicated and maintained without reliance on complex or imported components.

Looking ahead, MEER plans to carry out further bamboo-based experiments in India over the coming year, testing how these materials can be integrated into passive cooling designs alongside reflective and shading elements. India's scale and climate exposure make it a crucial partner in this work, not only as a site of risk, but as a source of innovation and leadership in climate-resilient design.

MEER's continued research in India reflects a commitment to climate solutions that are practical, adaptable, and rooted in local knowledge—an approach increasingly recognised as essential in a warming world.

From Kashmir to Guwahati: HCI–MCF University Workshops Advance Climate Innovation

In mid-October, the Healthy Climate Initiative (HCI), in partnership with the Mahabahu Climate Forum (MCF), held a series of university workshops across India's Himalayan belt — from Kashmir to Assam — to promote climate innovation, reflection research, and youth-led environmental leadership.

Guwahati Workshop – Cotton University

On 17 October, HCI and MCF organized a major workshop at Cotton University's MCB Auditorium, supported by the Centre for Clouds and Climate Change Research and the Assam Climate Change Management Society.

Speakers included Dr. Rahul Mahanta, who opened the session with a call for urgent climate resilience and university action, and Dr. Soumitra Das, HCI Founder and President, who presented the latest scientific evidence of global warming and discussed innovative pathways such as solar reflection and albedo enhancement technologies.

Rituraj Phukan, MCF Convenor and HCI Director, delivered a powerful presentation on climate justice and grassroots leadership, encouraging students to take ownership of local climate solutions and contribute to Mahabahu's expanding climate communication network.

Following lively group discussions, students presented their ideas for addressing climate challenges from both regional and global perspectives. The workshop concluded with reflections from Dr. Mahanta and Dr. Das, who encouraged continued collaboration and innovation among young climate researchers.

Kashmir Workshop – Islamic University of Science & Technology

Two days earlier, on 15 October, a companion HCI Leadership Workshop on Climate Action and Innovation was held at the Islamic University of Science and Technology (IUST) in Awantipura, Kashmir, in collaboration with The Nature University.

Vice Chancellor Prof. Shakil A. Romshoo emphasized the Himalayan region's vulnerability to climate change and called for localized adaptive research. Dr. Das presented HCI's global work on cooling technologies and reflective interventions, underscoring the need for greater investment in solar radiation management and surface-based cooling research within India.

Environmental lawyer Nadeem Qadri, founder of The Nature University, highlighted environmental governance and participatory conservation, while Rituraj Phukan spoke passionately about climate justice for Himalayan and indigenous communities, presenting Climate Justice 101: Empowering Community Leadership.

A Shared Commitment to Climate Cooling

Together, these workshops bridged India's western and eastern Himalayas, building scientific and academic momentum around reflection-based climate solutions.

MEER (Mirrors for Earth's Energy Rebalancing) has been collaborating with HCI to advance these shared goals of reflective cooling and equitable climate adaptation. MEER hopes to expand this collaboration with HCI and university partners across India, supporting research, training, and field projects that demonstrate the potential of surface-based cooling technologies to protect vulnerable communities and ecosystems.

As the Himalayan region faces escalating climate risks, this partnership model — uniting science, innovation, and local engagement — offers a promising path toward real-world climate resilience and restoration.

A MESSAGE FROM DR. YE TAO

A New Year, New Trainees, and a Transformative Chapter Ahead

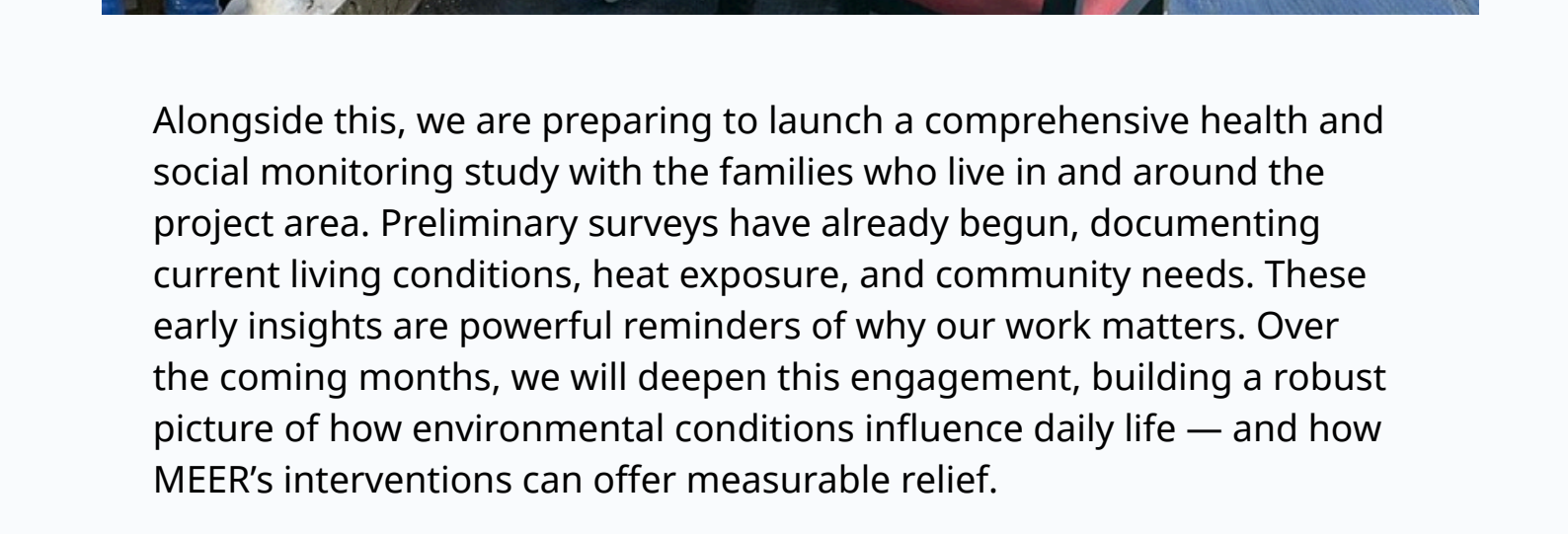
Hi everyone,

As we begin a new year, I want to express my deepest gratitude for your continued support, dedication, and belief in MEER's mission. The year ahead is already shaping up to be one of the most significant in our organisation's history.

In Sierra Leone, we recently completed the training period for ten new MEER trainees, including members of local disability groups. This diverse cohort brings fresh energy, new perspectives, and a shared commitment to climate adaptation. The photos in this briefing capture our time together — sitting in a circle, learning, discussing, and preparing for the remarkable work they will soon undertake. These trainees will now join our existing team on the ground, strengthening our capacity at a moment when we need it most.

This year, MEER will embark on several major initiatives, including one of our largest projects to date: a one-hectare-scale rooftop climate adaptation programme in Freetown. This effort will demonstrate, at community scale, what is possible when reflective cooling technologies are paired with local craftsmanship, participatory design, and strong community partnerships. The work will not only transform the physical environment — reducing heat exposure and improving comfort — but will also empower residents to lead climate solutions in their own neighbourhoods.

Alongside this, we are preparing to launch a comprehensive health and social monitoring study with the families who live in and around the project area. Preliminary surveys have already begun, documenting current living conditions, heat exposure, and community needs. These early insights are powerful reminders of why our work matters. Over the coming months, we will deepen this engagement, building a robust picture of how environmental conditions influence daily life — and how MEER's interventions can offer measurable relief.



Thank you for standing with us as we enter this defining year. I look forward to sharing our progress with you as 2026 unfolds, and to continuing our collective effort to build cooler, safer, and more resilient communities.

Warm regards,
Dr. Ye Tao
Founder and Chief Scientist, MEER

WATCH DECEMBER'S MEERTALK !

MEERTalk with

DR. JACKIE KADO

Climate Change and Health in Africa:

Insights from a NASAC Publication

WATCH NOW

CLIMATE NEWS

The Yakhchal: Ancient Persian Mastery of Passive Cooling

Long before the invention of mechanical refrigeration, desert communities in ancient Persia engineered a remarkable solution to one of the harshest environmental challenges: how to create and preserve ice in regions where summer temperatures soared above 40°C. Their answer was the Yakhchal—a sophisticated structure built more than 2,500 years ago that combined material science, thermodynamics, and architectural intelligence to deliver consistent cooling without the use of energy.

A Yakhchal, meaning “ice pit” in Persian, was typically a massive dome rising above an underground chamber. Its walls, sometimes over two meters thick, were constructed from sarooj, a durable mixture of clay, sand, lime, ash, and even egg whites. This material offered exceptional insulation and water resistance, ensuring the stable preservation of ice through the intense desert heat. The dome’s curved geometry minimized surface exposure to sunlight while maximizing the dissipation of absorbed heat.

During winter nights, when desert temperatures dropped sharply, shallow pools of water around the Yakhchal were left to freeze naturally. The resulting ice was then stored in the subterranean section of the structure. This underground chamber remained cool throughout the year through a combination of thermal mass, radiative cooling, and the ingenious use of ancient Persian windcatchers. These windcatchers, directed cooler night air toward the interior, creating a steady flow that enhanced evaporative cooling while allowing warm air to escape through higher vents.

What makes the Yakhchal scientifically striking is that it maintained near-freezing conditions through the hottest months of the year using entirely passive means. The system relied on predictable diurnal temperature swings, minimal heat transfer through thick insulating walls, and the principle that underground spaces maintain more stable thermal conditions compared to surface structures. Every element was optimized for thermal performance long before the emergence of modern climate engineering.

Today, as the global community seeks sustainable solutions to rising temperatures and energy-intensive cooling demands, the Yakhchal offers important lessons. Its design demonstrates that passive cooling, thoughtful use of natural materials, and a deep understanding of local climate patterns can produce surprisingly effective outcomes. In an era of climate stress—where many countries, including those in Africa and Asia, face escalating heat risk—the revival or reinterpretation of such ancient engineering principles is gaining renewed attention.

The Yakhchal stands as a reminder that innovation is not always new; sometimes it is rediscovered. Its enduring functionality invites modern architects, climate scientists, and sustainability planners to re-examine traditional knowledge systems that once mastered the art of living harmoniously with extreme environments.

MEERTalk

Paul Gambill

Carbon Removal Pioneer and Co-founder of Nori

Carbon Removal Won't Scale in Time

THURSDAY
JAN 8, 2026

2:00PM EST
7:00PM GMT

TO JOIN LIVE EVENT:
TINYURL.COM/MEERTALK

ELIOT JACOBSON

The Climate Reality Check

ON THE

MEER

PODCAST

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Thank You for Being Part of Our Journey

As we begin 2026, we want to sincerely thank everyone who continues to follow our work, support our mission, and stand alongside the communities at the centre of what we do. The past year has been one of significant progress, learning, and partnership-building — and none of it would be possible without your ongoing engagement and trust.

MEER's work is grounded in collaboration, rigorous science, and lived community experience. As climate impacts intensify, these foundations matter more than ever. In the year ahead, we will be expanding our most ambitious field trials to date, deepening research partnerships, and strengthening the evidence base linking cooling interventions to real health and social outcomes.

We are grateful for how far we've come together, and we are energised by what lies ahead. Thank you for being part of this journey and for helping turn practical climate adaptation into reality.

We look forward to sharing the next chapter with you in the months ahead.

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JANUARY 2026 NEWSLETTER

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