November 2025

NEWSLETTER

THE LATEST NEWS AND UPDATES FROM MEER

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MEER team members speak to community groups in Freetown

Welcome to November's edition of the MEER Newsletter

This month, ideas are taking shape in new and inspiring ways across communities. In Freetown, MEER is partnering with the Sierra Leone National Dance Group to create a shared space where cultural expression meets environmental innovation — a place where women and young people are learning to turn discarded plastic bottles into cooling materials that can protect against extreme heat. In India, families are already experiencing the comfort and relief of reflective cooling sheets during the season's peak heat. And across Sierra Leone, new collaborations are emerging to bring these community-built innovations into schools and health facilities, helping protect people from rising temperatures.

Together, these efforts reflect MEER's mission in action: turning research into resilience, and transforming simple, sustainable materials into life-changing climate adaptations.

NEWS FROM AFRICA

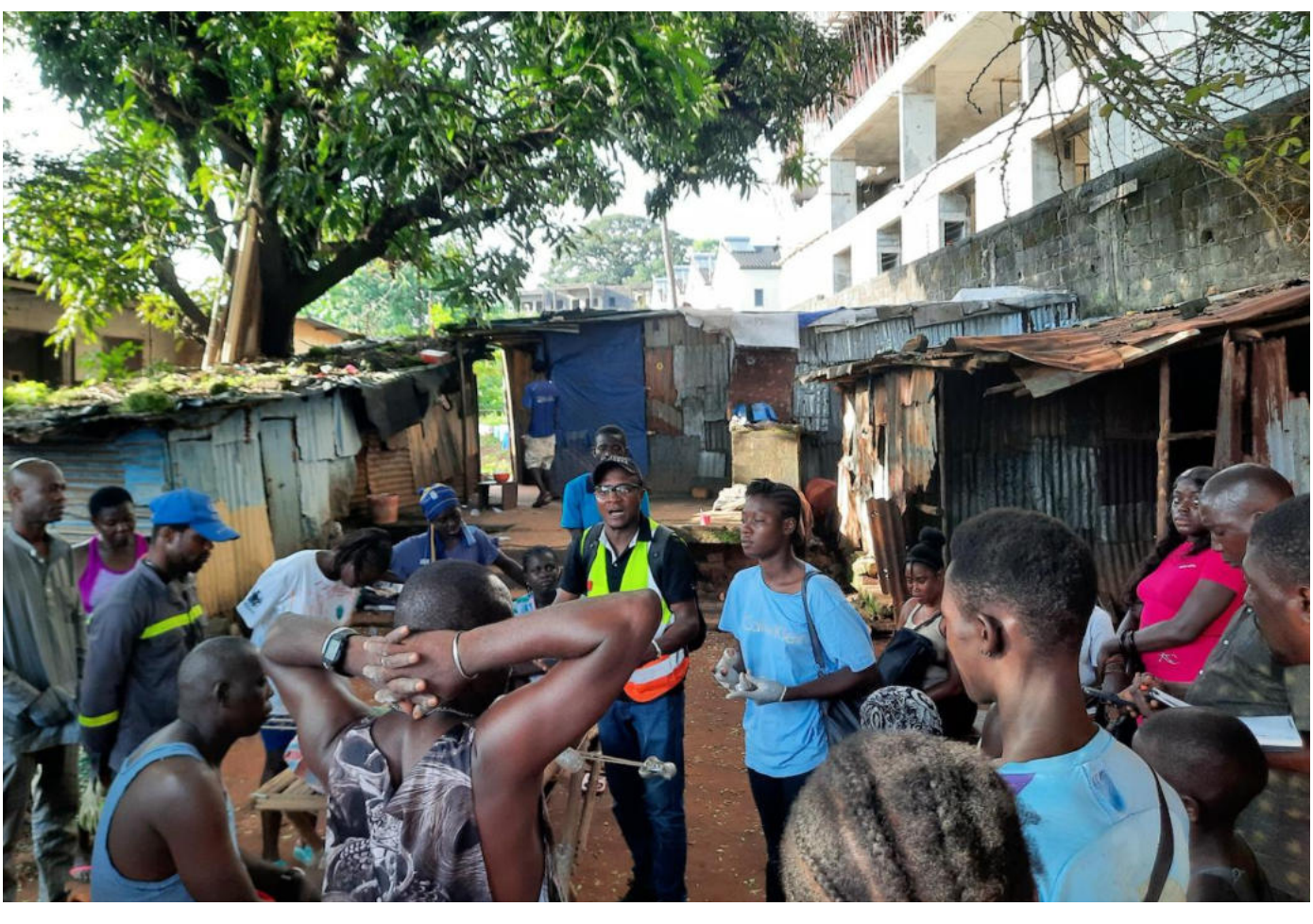
A New Collaboration in Freetown: MEER and the Sierra Leone National Dance Group

In Freetown, MEER is preparing to begin a new kind of partnership — one that brings together culture, creativity, and climate action in the same space.

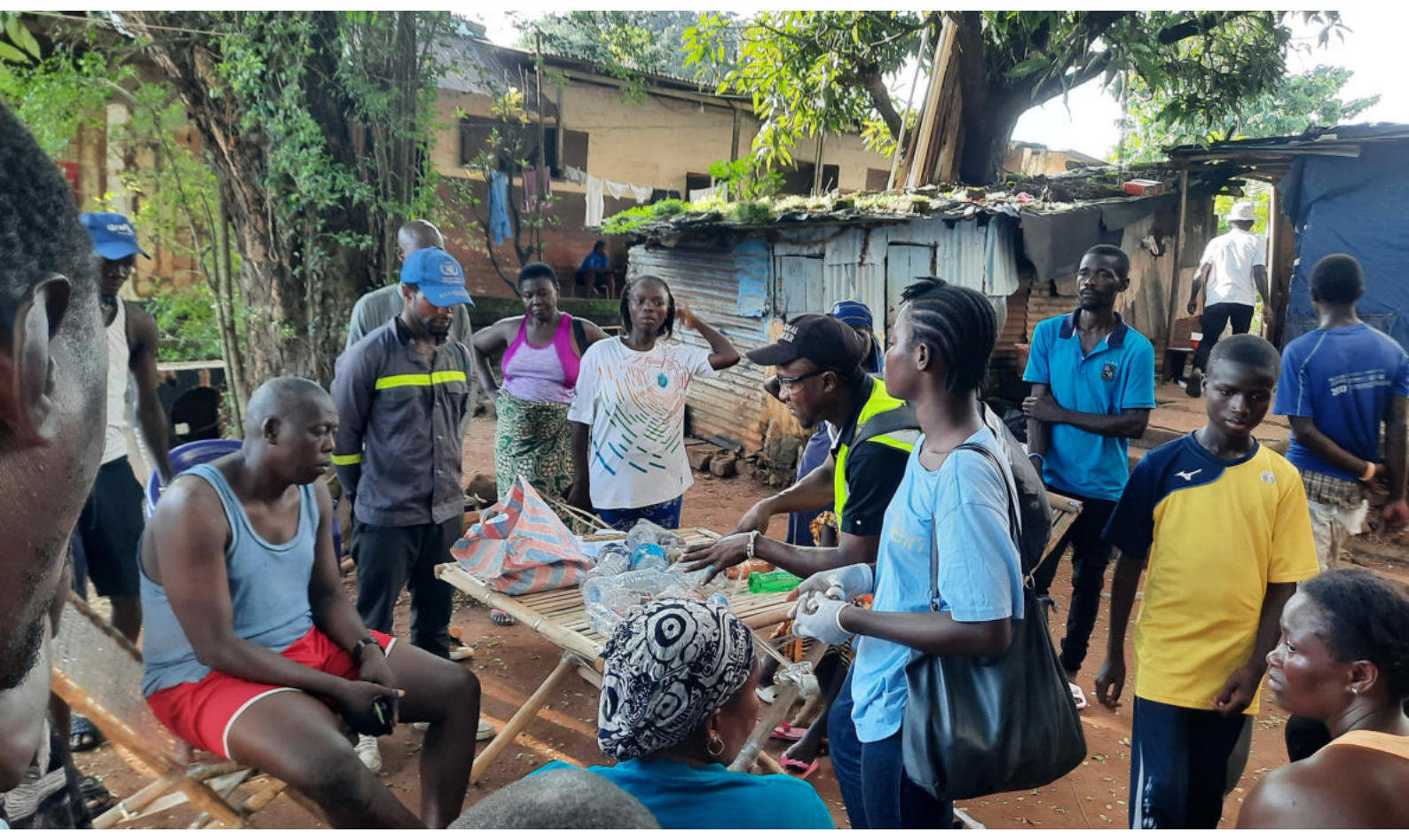
The Sierra Leone National Dance Group (SLNDG) has long been known for its strength as a women-led community rooted in music, performance, and local pride. Their compound, a lively gathering place filled with rhythm and movement, will soon take on an additional role: as a training ground for environmental innovation.

Together, MEER and SLNDG are working to create a small workshop and shaded area where women and young people can learn new hands-on skills while earning an income. The work itself is simple but transformative — collecting discarded plastic bottles from surrounding neighborhoods and turning them into reflective materials that can cool buildings and protect people from extreme heat.

This collaboration is as much about people as it is about technology. It's about providing a safe, welcoming place to learn, share, and build something that belongs to the community. Each bottle collected tells a story of renewal; each ring or cord produced represents care for both the environment and the people living in it.



The partnership also reflects a shared belief that climate action doesn't have to come from large institutions — it can start in the places where people already come together. By linking the creative energy of SLNDG with MEER's practical engineering, the project celebrates how cultural and environmental leadership can grow side by side.



For the women and families involved, this initiative will mean new opportunities for work, for learning, and for pride in contributing to something visible and lasting. For MEER, it marks an important step toward showing that climate solutions can be built from the ground up — by communities who understand both the challenges they face and the beauty of their surroundings. This collaboration is a reminder that when people come together with shared purpose, small beginnings can spark lasting change.

NEWS FROM INDIA

Expanding Climate Resilience in India: A Visit to MEER's Experimental Site

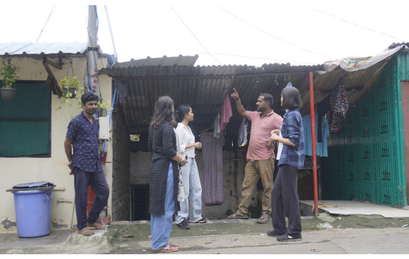
As temperatures continue to rise across South Asia, the impacts of extreme heat are being felt most acutely by those living in vulnerable communities. Traditional homes, often built with tin or concrete roofs, absorb and trap heat, turning indoor spaces into ovens during the hottest months of the year. At the same time, the monsoon brings intense rains that can leave homes damp and uninhabitable.

MEER's passive cooling technology — lightweight reflective sheets that both deflect sunlight and withstand rain — offers a new way forward. By reducing indoor heat stress without the need for air conditioning, these sheets provide an accessible, sustainable solution to protect health and livelihoods while cutting energy demand and emissions.

The Visit

This week, members of the MEER India team visited one of our experimental sites where the cooling sheets have already been installed on several family homes. The visit was an opportunity to listen directly to residents about how the technology is performing in real-world conditions.

The team met **Mr. Rajput**, brother of a local resident whose home was recently climate-adapted with MEER sheets. Standing under the shade of the adapted roof, he shared how his sister's home now remains significantly cooler during the sweltering afternoons — a difference that has made daily life more bearable and healthier for her family.



Community Feedback

What stood out during the visit was the enthusiasm from Mr. Rajput and other community members. They were not only impressed with the results but also hopeful about the possibility of seeing the technology scaled up to reach more families.

As Mr. Rajput put it:

"When the heat is so strong, you cannot even rest inside your own house. But this makes it possible. It is good for everyone, not just for one home."

Others echoed his sentiment, pointing out that relief from both heat and rain would make a significant difference for families struggling to cope with increasingly harsh weather conditions. For many, passive cooling represents dignity and resilience — the ability to stay safe and comfortable in their own homes.

Why This Matters

The urgency could not be clearer. India is now experiencing longer and hotter heatwaves than ever before. According to the Indian Meteorological Department, average maximum temperatures have been rising steadily, with many regions regularly surpassing 45°C in summer. At the same time, air conditioning — often unaffordable for lower-income families — drives up electricity demand, exacerbates emissions, and leaves millions without access to safe cooling.

Passive solutions like MEER's reflective sheets fill this critical gap. They are low-cost, scalable, and designed to integrate seamlessly into existing community structures. Beyond cooling, they help reduce rainwater intrusion, offering dual protection against two of the most pressing climate stressors.

Next Steps

The visit underscored both the promise of the technology and the importance of partnership with communities. Scaling up deployment in India will involve:

- Expanding pilot projects to cover more households across different regions.
- Monitoring performance data to capture long-term cooling and durability impacts.
- Working with local leaders and families to ensure that installations meet community needs.
- Exploring supply chains and local fabrication to keep costs affordable while creating local jobs.

MEER's vision is to take small-scale success stories — like the Rajput family — and turn them into community-wide resilience programs. Each adapted home becomes a beacon of possibility, showing how climate challenges can be addressed through grounded, practical innovation.

Looking Ahead

Our conversations during this visit reminded us of a simple but powerful truth: climate resilience starts at home. When families feel safer and more comfortable under their own roofs, it creates a foundation for broader community strength.

Mr. Rajput's call to expand the technology reflects a wider demand for solutions that are not only effective but equitable. With continued collaboration and support, we believe MEER's passive cooling technology can become a cornerstone of community-based climate adaptation — in India and far beyond.

Goodbye to electricity bills-in Brazil !

A homemade solar heater made from plastic bottles has already changed thousands of lives

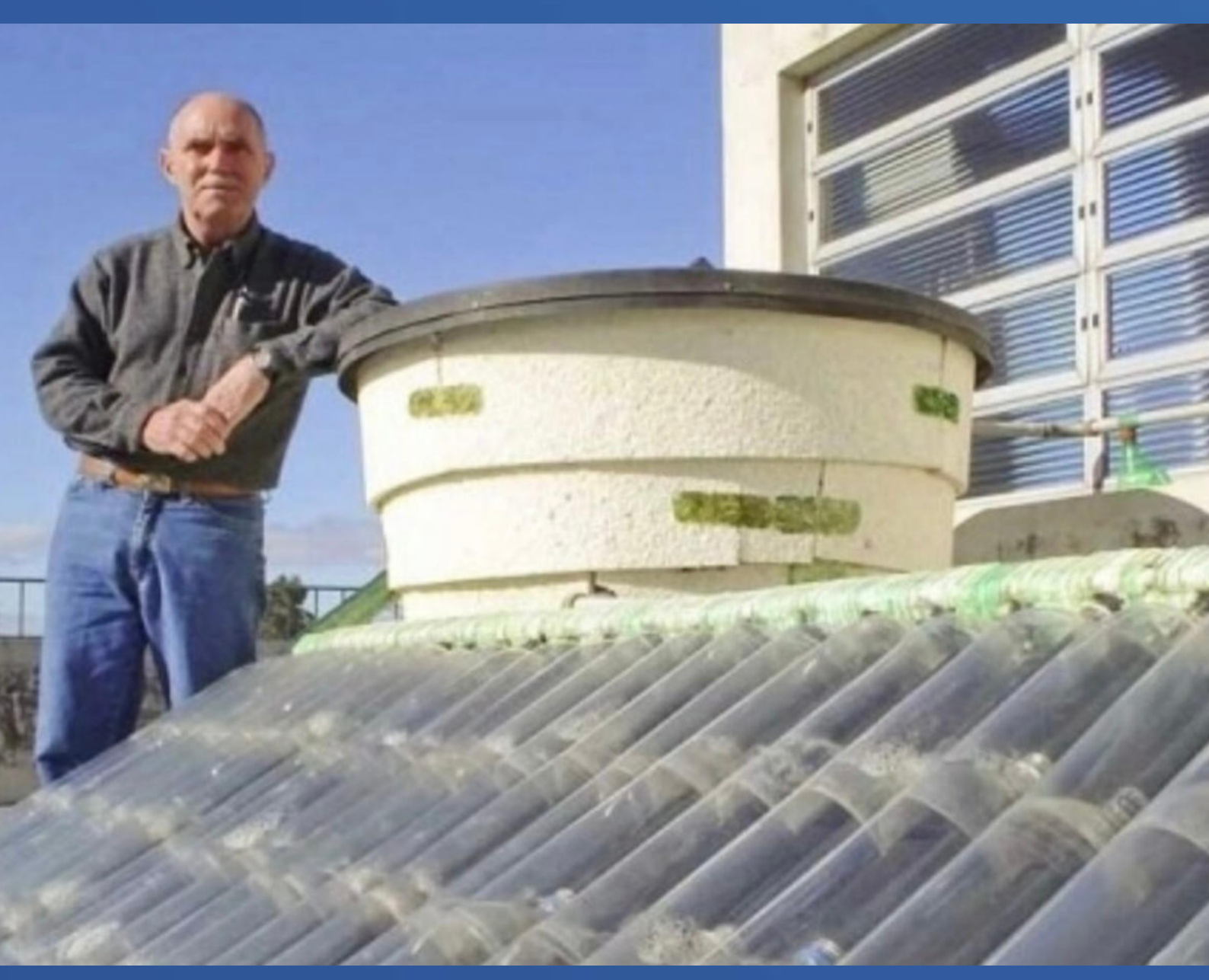
Sometimes the best ideas are born in the simplest way. That was what José Alano, a retired mechanic from Tubarão, Brazil, demonstrated when in 2002 he decided to give a new use to the plastic bottles and milk cartons that filled the trash in his city. Nobody could imagine it but with them he created a homemade solar heater, cheap and effective, that today is already used by thousands of families and allows them to save up to 30% of energy!

What began as a personal solution to a waste problem ended up becoming a social and environmental project that has inspired entire communities. But... How did he do it?!

How the idea was born

Alano realized that in Tubarão there was no recycling system, and that this caused more and more garbage in the city. Unable to accept that so much plastic and cardboard ended up in landfills, he decided to look for a way out. With the help of his wife he gathered 100 PET bottles and 100 milk cartons, and with that he built the first prototype. The result exceeded his expectations, the system really worked, it used the accumulated waste and also reduced the electricity bill in his house. A true novelty for his neighbors, who began to pay attention.

Little by little he became “famous” in his community and local media, even winning an ecology award from the magazine Superinteressante. From there, his story and his invention went viral.



How the invention works

The system uses the basic principles of solar thermal energy. The transparent bottles work as conduits that concentrate solar radiation. The cartons painted black absorb the heat and transmit it to the water that circulates through connected pipes.

It seems like real madness but the design is simple and anyone can build it at home with recycled materials! Each heater means less waste in the city and lower electricity bills for the families who install it. We like that, since electricity has been very expensive lately!

The impact on communities

Over time, Alano’s invention spread throughout southern Brazil, especially in Santa Catarina, where he himself has given workshops and talks in schools and community centers.

Beyond economic savings, the project helped create a recycling culture in a region where there was hardly any selective garbage collection. Even the city of Tubarão itself adopted periodic collection programs thanks to the popularity of this system.

A green innovation with a human face

Alano has shown that to create his heater you do not need a big laboratory or a lot of money, only the will and creativity. With determination you can achieve a real impact on people’s lives!

Each installed system is equivalent to hundreds of bottles and cartons that will not end up polluting rivers or landfills, and knowing how we are leaving the planet with waste is more than incredible, in addition to the fact that these families save on electricity consumption.

When the small transforms the big

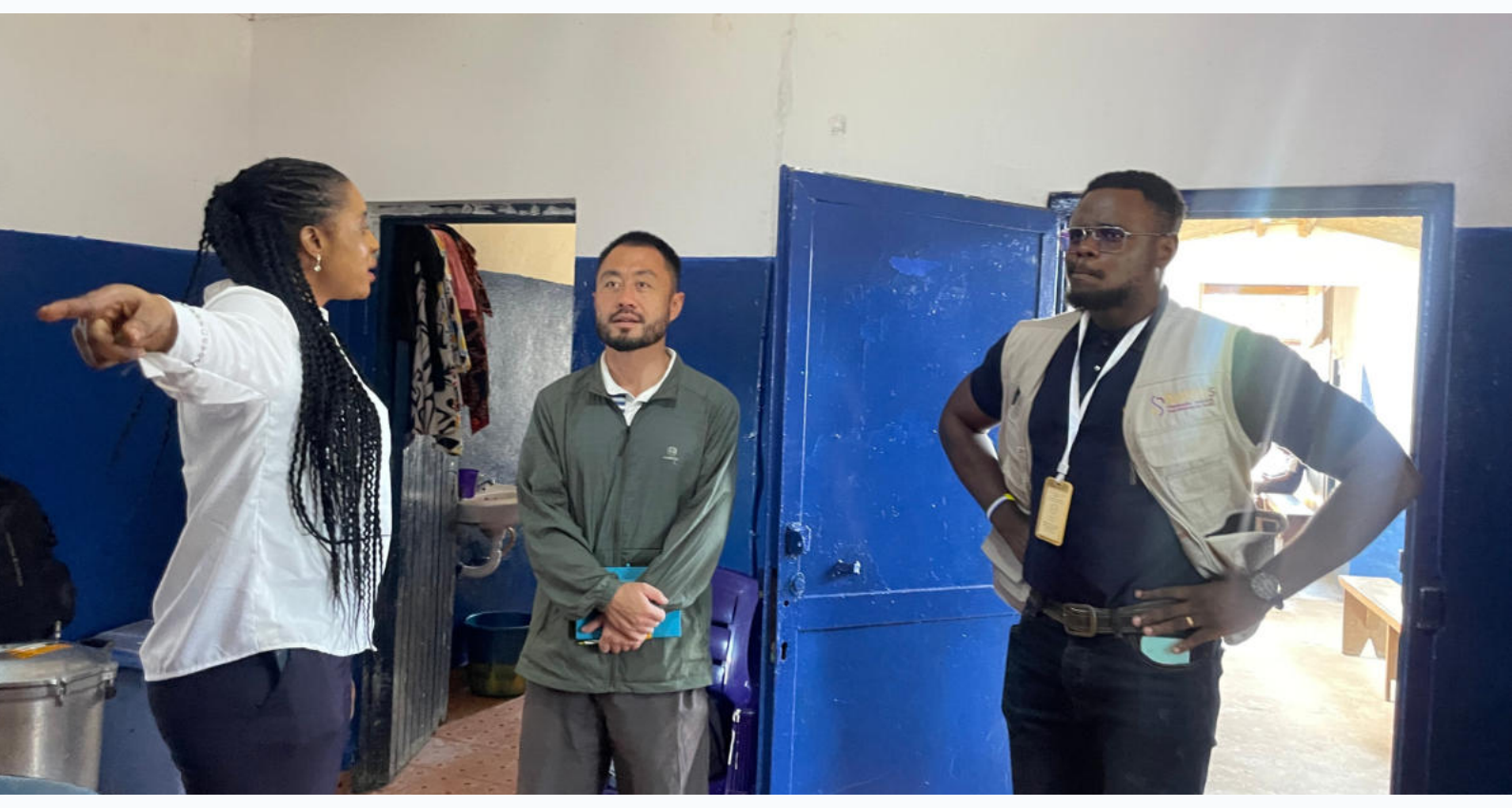
The invention of José Alano is much more than hot water. It is environmental awareness, it is savings and hope. What began in a retired man’s workshop ended up giving relief to thousands of Brazilian homes. And this is the example that whoever wants to change things, changes them, it is enough to look at the trash and give it a new life. High technology is not needed, big brands are not needed, but the certainty that you can change someone’s life!

A MESSAGE FROM DR. YE TAO

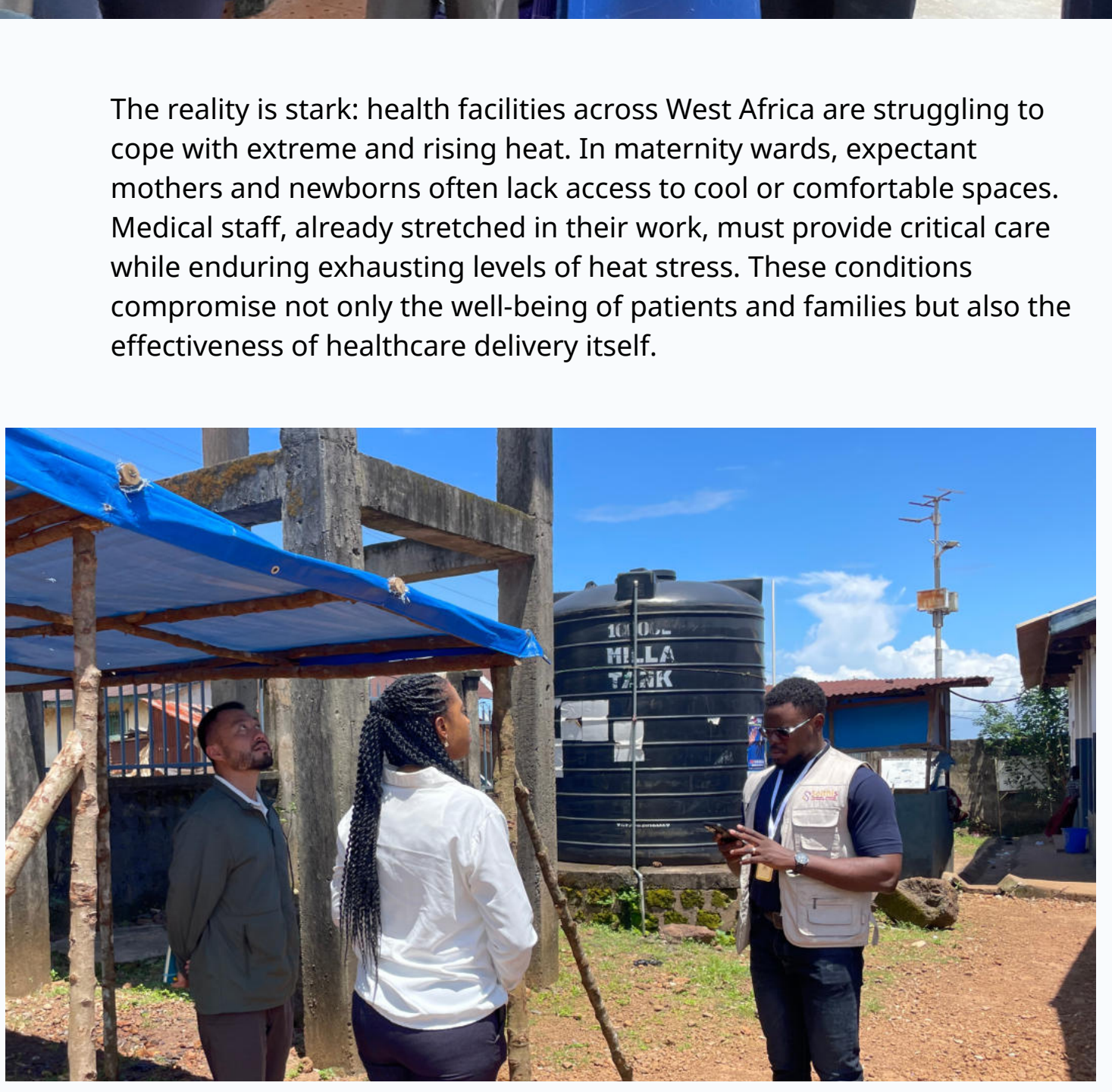
Building Partnerships for Health and Climate Resilience

Dear Members and Supporters,

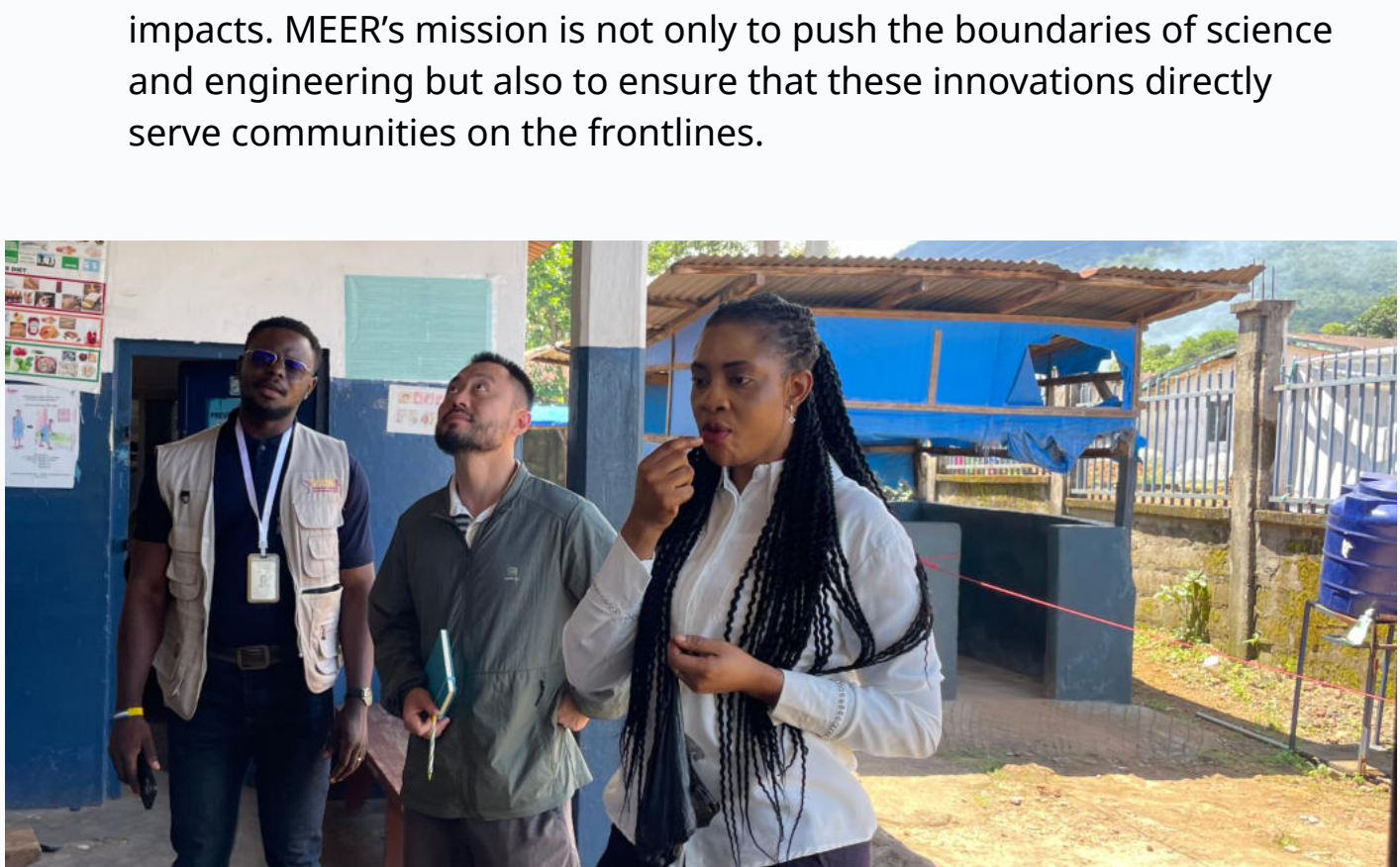
Last month, I had the privilege of visiting Solthis, a respected international medical NGO working in Freetown, Sierra Leone. Their team warmly welcomed me and guided me through their healthcare center, allowing me to see firsthand the challenges faced by patients and staff as they deliver essential medical care under increasingly difficult conditions.



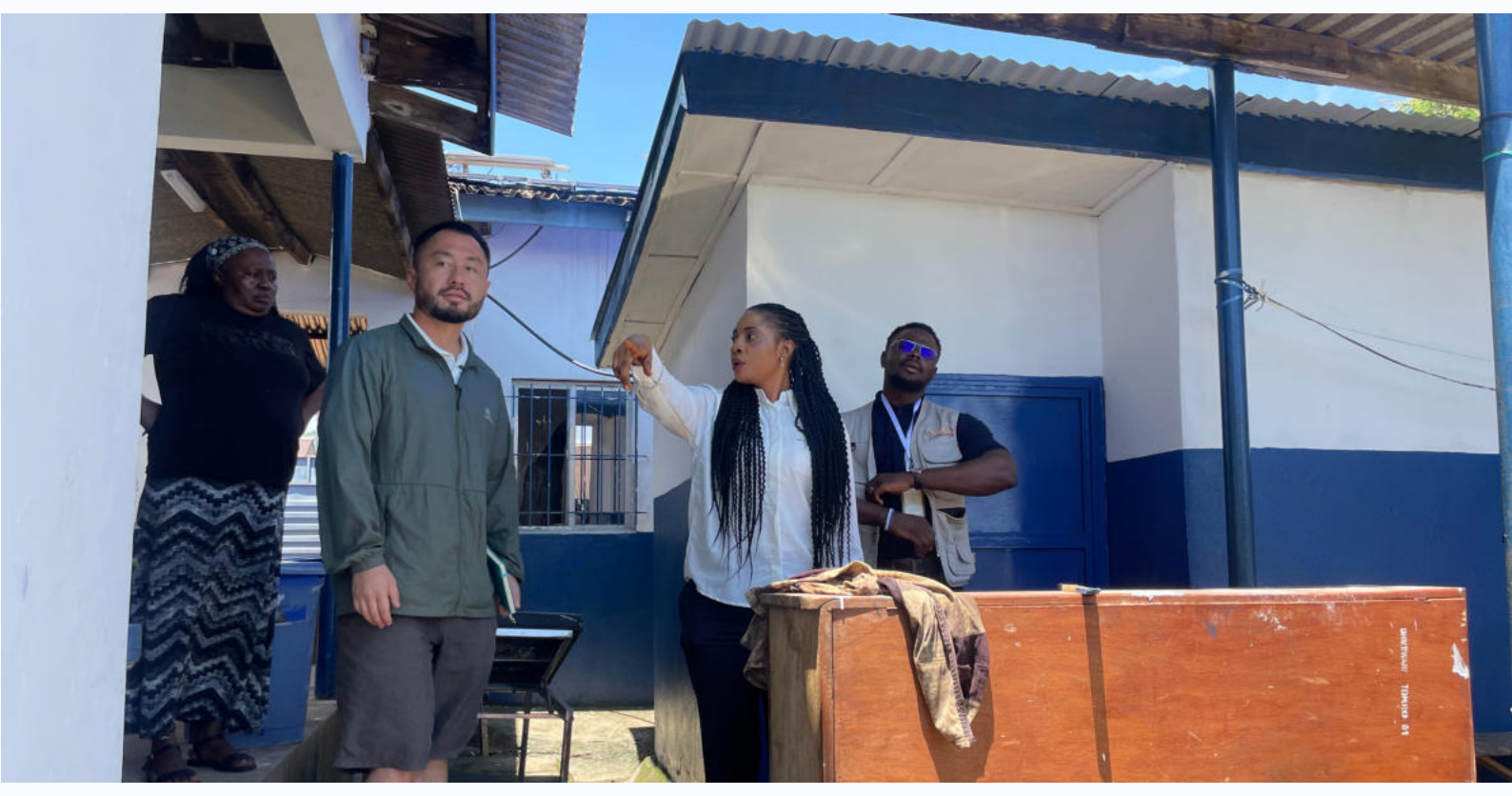
The reality is stark: health facilities across West Africa are struggling to cope with extreme and rising heat. In maternity wards, expectant mothers and newborns often lack access to cool or comfortable spaces. Medical staff, already stretched in their work, must provide critical care while enduring exhausting levels of heat stress. These conditions compromise not only the well-being of patients and families but also the effectiveness of healthcare delivery itself.



These conversations and site visits reaffirm that while rigorous research is essential, the true measure of our work lies in its translation into meaningful relief for those most exposed to climate impacts. MEER's mission is not only to push the boundaries of science and engineering but also to ensure that these innovations directly serve communities on the frontlines.



In our discussions with Solthis, we explored the possibility of integrating MEER's passive cooling roof installations into their facilities. Such solutions can significantly reduce indoor temperatures without the need for costly or energy-intensive air conditioning, creating safer and more dignified environments for both patients and healthcare workers. While formal decisions remain with Solthis, our visit laid the foundation for a meaningful partnership that could serve as a model for health-centered climate adaptation across the region.



At MEER, we believe that resilience must begin where human needs are most urgent—protecting the vulnerable, supporting families, and strengthening the institutions that hold communities together. By combining innovative engineering with direct community benefit, we aim to demonstrate that climate adaptation can be both practical and profoundly human.

Thank you, as always, for your steadfast support as we continue to expand these critical collaborations.

Warm regards,
Dr. Ye Tao
Founder, MEER

WATCH LAST MONTH'S MEERTALK !

CLIMATE NEWS

Researchers develop ‘supercool cement’ to reduce AC reliance in buildings

An academic research team in China has developed a new type of ‘supercool cement’ which could potentially reduce the dependence of concrete buildings on air conditioning while cutting embodied carbon emissions.

The material integrates passive daytime radiative cooling (PDRC) into cement, the most widely used construction material worldwide, accounting for 8% of global carbon emissions.

Engineered with alumina- and sulfur-rich compounds, the cement creates reflective crystals on its surface during production, allowing it to reflect more sunlight away from the surface than traditional concrete mixes. Field tests at Purdue University showed surface temperatures of the material were up to 5.4°C cooler than ambient air and 26°C cooler than conventional cement under peak sunlight. In addition, a life-cycle assessment indicated a 25% reduction in emissions during production of the new mixture compared to Portland cement.

“We have innovatively transformed cement materials from heat absorbers to heat reflectors using a bottom-up approach,” the team said in a paper recently published in the journal *Science Advances*. “This breakthrough holds the potential to turn the heavy cement industry into a negative-carbon emission system, where supercool cement could play a key role in driving an energy-efficient, carbon-free future for the construction industry.”

READ MORE

MEERTalk

Dr. Tarje Nissen-Meyer

Professor at University of Exeter and
Co-founder of Earth Rover Program

Good Vibrations from the Soil:

Seismology for Ecosystem Monitoring

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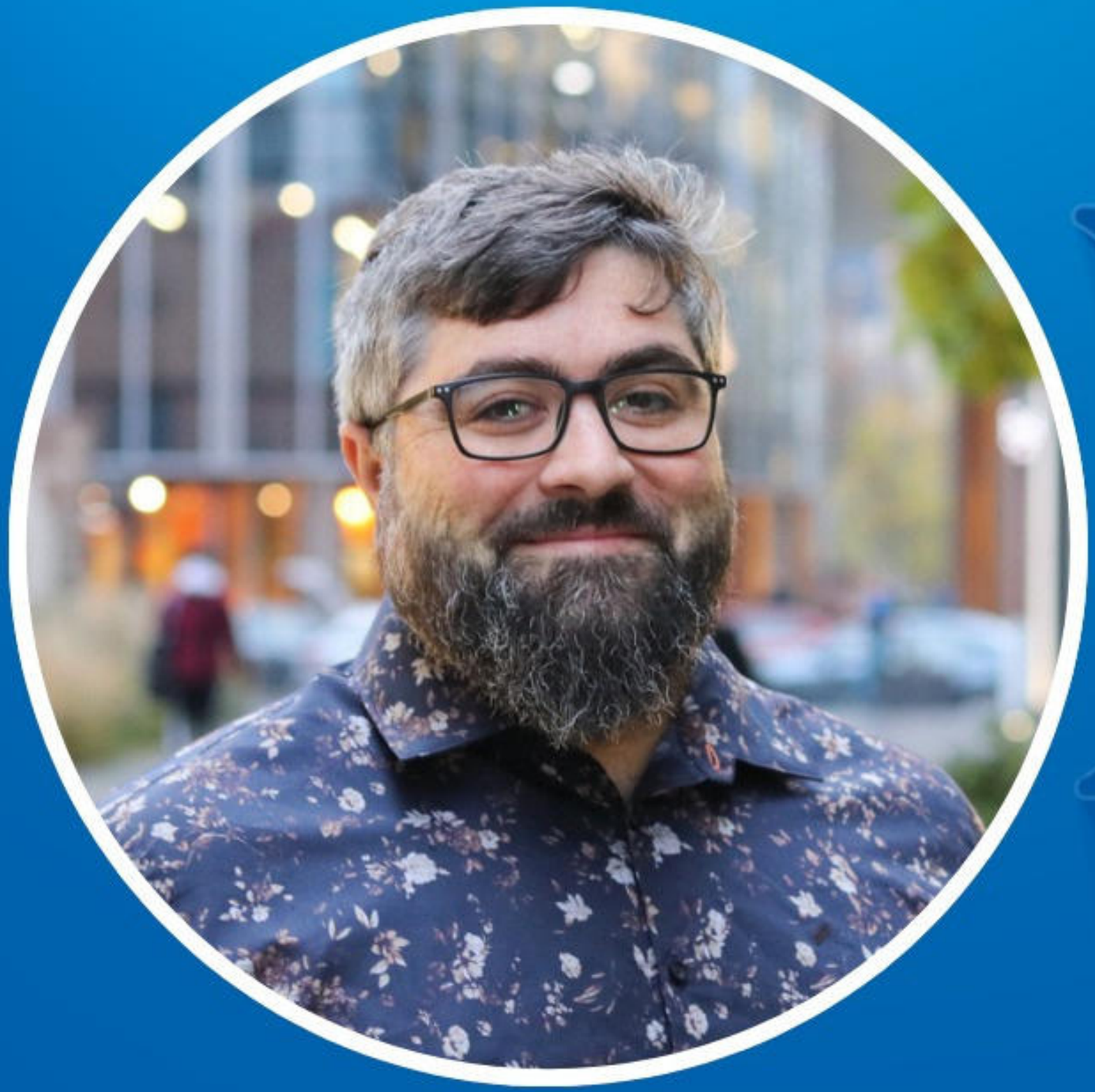

KYLE KIMBALL

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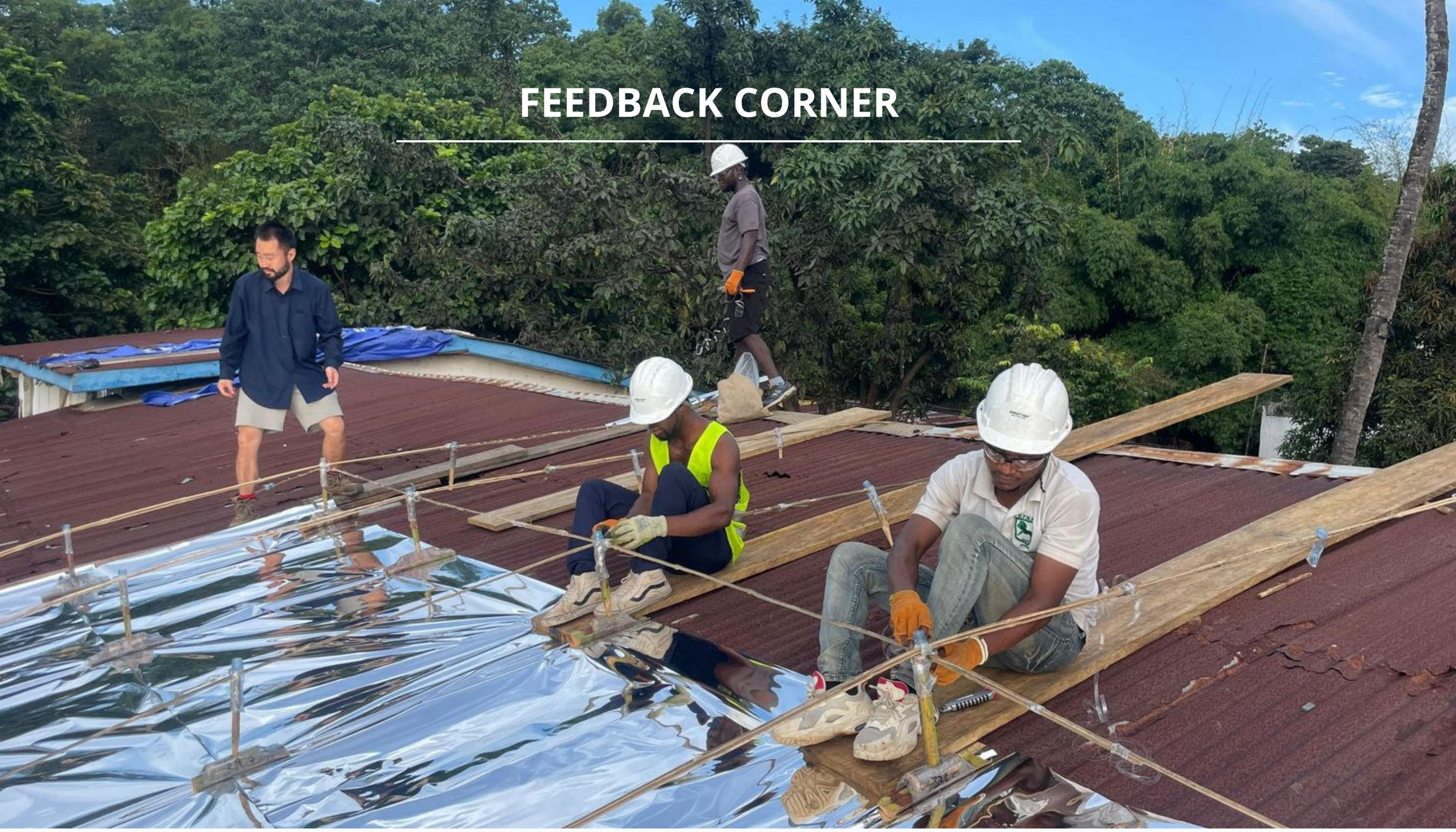

Thank You for Being Part of Our Journey

Thank you again for your continued support and for staying with us on this journey. We're deeply grateful for the time you take to follow our progress, share our work, and stay connected to MEER's mission. Each reader, partner, and supporter helps bring our vision of practical, community-based climate solutions closer to reality.

If you have thoughts on how we can make this newsletter more useful, engaging, or inspiring, please don't hesitate to reach out — we'd love to hear from you. As a nonprofit organization, MEER depends on your generosity to keep advancing our research, field projects, and outreach. Every donation, large or small, makes a real difference in helping us cool the planet, one surface at a time.