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MANILA BULLETIN

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The approval of a ₱60.55-billion loan from the World Bank for the Philippine Sustainable Agriculture Fund (PSAF) marks a pivotal moment for the country's agricultural sector. At a time when food security, climate resilience, and rural livelihoods are under increasing strain, this investment—set to benefit at least five million farmers nationwide—signals both urgency and opportunity. Properly harnessed, PSAF can become a cornerstone of a more productive, competitive, and climate-smart Philippine agriculture.

MINDANAO TIMES

Why a dual water source system is strengthening Davao's climate resilience

Water security is increasingly becoming one of the defining challenges for cities across the world. Changing rainfall patterns, stronger weather disturbances, and growing urban demand are forcing governments and utilities to rethink how water systems are designed and managed.

MONGABAY

Global warming already impacts daily lives around the globe, study finds
By: Mike Gaworecki

As a grueling March heat wave batters the U.S. West with dangerous temperatures, and the world girds itself for what could be another sizzling record-smashing Super El Niño, a team of researchers has published a study looking at how global warming is already impairing people's regular daily activities.

CCC IN THE NEWS:

DAILY TRIBUNE

CCC pushes science-based climate action in Metro Manila

The Climate Change Commission is strengthening coordination with the Metro Manila Council and Regional Development Council to advance science-based climate action across the National Capital Region.

Mayors urged: Adopt systems-based risk planning

The Climate Change Commission (CCC) on Monday presented a science-based action plan to Metro Manila's top leaders, urging a shift from fragmented disaster responses to a regional, systems-based approach to combat rising environmental threats.

Information and Knowledge Management Division

CLIMATE HOME NEWS

Island nations fight to save cultural heritage from climate change

By: Adam Wentworth

Farmers and fishermen in the Maldives have long relied on an ancient calendar to guide their daily lives.

The Nakaiy system divides the year into 27 distinct periods, each named after a star or constellation in the night sky.

Any one period in the calendar tells you about expected weather and tidal patterns, navigational routes, and fishing conditions. The Nakaiy was created through centuries of careful observation and local knowledge, passed down through families as an essential tool for survival.

But things are now changing. The climate crisis is leading to more extreme weather events across the Indian Ocean island nation and upending the Nakaiy calendar.

“When you go and speak to communities and ask them what kind of impacts they are facing, a lot of elders will tell you that the weather, it doesn’t follow the calendar anymore,” explained Aishath Reesha Suhail, a programme officer in the Maldives’ Ministry of Tourism and Environment.

As the effects of climate change worsen, it is a real prospect that the Nakaiy may be abandoned by local people, representing a major cultural loss to the Maldives.

‘Systemic and growing threat’

With extreme weather becoming the norm, communities are observing a domino effect of consequences in their everyday lives. The slow onset of heritage loss is now being seen across continents, but notably among small islands in remote parts of the ocean.

“Climate change represents a systemic and growing threat to cultural heritage worldwide,” a UNESCO spokesperson told Climate Home, adding that the World Heritage Committee has identified climate change as “one of the most significant long-term risks affecting properties across all regions.”

UNESCO, the UN body for education, science and culture, defines the loss of cultural heritage as “the erosion of traditional knowledge systems, craftsmanship, social practices and identity, particularly where communities are displaced or livelihoods disrupted”. A clear example is historical sites and even entire islands washed into the ocean as a result of rising sea levels and coastal erosion.

The Maldives is dealing with such a situation now. The Koagannu Cemetery is a 900-year-old resting place, located on the country’s southernmost atoll, a mere 50 metres from the shoreline.

The monument's intricate coral gravestones are being actively threatened by the encroaching Indian Ocean.

The government and local community have responded to this challenge with emergency protection measures. Sandbags and concrete structures have been installed along the coastline, complemented by large numbers of palm trees to create a seawall. A wider solution is 'beach nourishment', a common practice in the Maldives where sand from elsewhere is brought in to replace what has been lost through erosion. Taken together, these solutions have so far protected the cemetery.

Among the many issues climate change creates, cultural heritage is not always front of mind. In the Maldives, one of the main barriers people face is awareness. "Most of what we are dealing with relates to the erosion of our islands along with areas such as fisheries… but we are quite limited in our capacity to do something about it," Suhail said.

"We don't understand the full breadth of the issue at present because we haven't been able to do extensive research on the matter," she added. However, assessing the extent of the damage – and how to respond effectively – is a key priority for the government, outlined in its latest climate plan, known as a Nationally Determined Contribution, and as part of its National Adaptation Plan process.

Fishing is at the core of the country's culture and identity, employing thousands of people. Most dishes include fish – "we have it for breakfast, lunch and dinner," Suhail noted – but the climate crisis and overfishing are shifting how and when communities can fish. Tuna makes up 98% of all fish caught in the Maldives, but warmer ocean temperatures are changing migratory patterns, pushing the species into deeper, colder waters.

As a critical economic and cultural resource, the government has outlined a range of solutions to protect the fisheries sector in its first Biennial Transparency Report to the UN. These include using real-time tracking data to improve the efficiency of fishing operations; investing in canneries to increase fish storage; and diversifying away from tuna through marine farming.

Culture and nature go hand-in-hand
The same pattern is playing out elsewhere.

Palau and the Maldives are not close to one another. The two states are separated by around 4,000 miles and sit in different corners of the ocean. But both are experiencing very similar climate challenges, based on their position as a set of scattered, low-lying islands surrounded by an imposing body of blue water.

In the same way as the Maldives, Palau's cultural heritage is closely tied to "land, coastlines and traditional food systems," according to Toni Soalabla, at the Palau Office of Climate Change.

“Many of the places that hold stories, history and identity of our communities are located along the coast and are increasingly exposed to erosion and sea level rise,” she said.

One of these places is Ngerutechei village, reportedly the oldest in Palau, and home to ancient stone paths and carvings. The village provides a glimpse into the past social values and culture of the people in this western Pacific nation.

As part of the development of Palau’s National Adaptation Plan, the government has worked with local leaders to identify similar sites of cultural significance. The plan encourages communities to use their own knowledge to create protective measures for these sites.

Climate change is also prompting communities to take up traditional land and food practices again. These include cultivating taro, a stable food source that has historically supported water, soil and food security on the islands.

“These systems developed over generations in response to local environmental conditions, so strengthening them today is both a climate adaptation measure and a way of maintaining cultural knowledge that might otherwise fade,” said Soalabla.

Cultural practices in Palau have developed alongside the natural ecosystems that people rely on to survive. It is within this context that researchers believe adaptation policies should be created. Recognising this relationship “can strengthen both community identity and environmental resilience at the same time”, according to Soalabla.

Heritage on the global stage
The issue of cultural loss has not gone unnoticed in international climate negotiations.

Small island states such as the Maldives have used their role at the UN to push for greater awareness and action, with some key successes.

In 2015, the Paris Agreement established a Global Goal on Adaptation (GGA) which recognised that countries needed to do something about climate change now and not later. However, it took six years before a framework and a set of adaptation targets were agreed at the UN climate summit in Glasgow to pursue this goal.

From this came the establishment of seven overall themes – from poverty eradication to access to health – to guide adaptation action and a set of around 60 indicators to measure progress against the targets.

Emilie Beauchamp, an adaptation specialist at the International Institute for Sustainable Development (IISD), said that “cultural heritage was highlighted as one of the global priorities [of the GGA Framework] and is one of the seven themes, so it is considered very important by the international community.”

The much-debated set of indicators, only finalised in Belém at last year's COP30, include five related to cultural heritage with a focus on preserving cultural practices and important sites that are "guided by traditional knowledge, Indigenous Peoples' knowledge and local knowledge systems". A spokesperson for UNESCO said the inclusion of heritage indicators "marks an important recognition that climate impacts extend beyond economic losses".

While critics said the set of final indicators was rushed through by the Brazilian presidency, they now serve as guidance for national governments that wish to implement plans to protect their common heritage. The missing piece of the puzzle remains how to finance these plans – something notably absent from the Belém text, which made clear that the adaptation indicators "do not create new financial obligations or commitments, nor liability or compensation".

The lack of financial commitments proved disappointing for many small states grappling with how to prevent their cultural history from being entirely forgotten, especially at a time when adaptation finance remains below requirements. A recent UNEP report found that developing nations would need an estimated US$310 billion per year in 2035 to adapt to climate change, while current public financing was around $26 billion.

At these low levels "only a small percentage of what the framework outlines could be implemented," according to Beauchamp.

The challenge of cultural heritage
When looking at low-lying islands on a map, they can appear as specks of land amid a vast ocean. Many of the stories from these remote places go unnoticed. But the specks represent millennia of human culture that is slowly being lost to the ocean.

While the international community has now recognised the problem and solutions exist, the recurring issue of scarce finance may prevent governments from taking sustained action. Island communities have already been forced to move home as sea levels rise, leaving behind their cultural connections to a place.

The value of any cultural asset, or of human heritage, can be judged by how it is engaged with over generations. Without human intervention, many historical sites, language, cuisine and other local customs would become a forgotten part of history. The rapid onset of climate change brings the role of cultural heritage into sharp relief, challenging communities to decide in real time what they value, what deserves saving, and how to achieve that.

Stories of cultural loss are not confined to small islands but it is here where the challenge is presenting most acutely. The experiences of these vulnerable nations in protecting their heritage will provide the litmus test for effective adaptation responses elsewhere.

ECO BUSINESS

‘Comedy can say the elephant in the room’: Why climate action needs a sense of humour
By: Robin Hicks

Climate change is typically framed in the language of crisis – rising temperatures, escalating risks, catastropic economic losses. But what if one of the most effective ways to engage people on the issue isn’t through urgency and fear – but humour?

On this episode of the Eco-Business Podcast, climate comedian Stuart Goldsmith talks about a career turning one of the world’s most complex and anxiety-inducing problems into something people can actually talk about – even laugh at.

As climate discourse becomes increasingly polarised, with the environmental, social and governance (ESG) world facing pushback and geopolitical turbulence reshaping the conversation, Goldsmith reflects on whether it’s getting harder to do what he does. From corporate boardrooms – he has done gigs for the likes of Deloitte, Lego, and Ecovadis – to global sustainability events, he shares what he’s seeing on the ground: a shift not necessarily in the work itself, but in how it’s being framed – from “climate” to “risk”, from “sustainability” to “impact”.

Goldsmith, whose jokes range from the hypocrisy of flying business class to a climate event to how many chief sustainability officers it takes to change a lightbulb, explores what comedy can unlock that traditional climate communication often struggles to achieve – from saying the “unsayable”, to helping people process fear, guilt and contradiction in a carbon-dependent world.

He also discusses the fine line between humour and seriousness, and why making people laugh about climate doesn’t mean making light of it – even in a climate-vulnerable region such as Southeast Asia. “It’s not about making fun of the dark stuff – it’s about making fun of our complicity in it,” he said. “There’s nothing funny about these events – but there can be humour in how we respond to them.”

Tune as we discuss:

- Is climate comedy getting harder?
- Should climate comedy now be called something else?
- How is comedy more effective than traditional forms of communication at changing behaviour?
- Are there elements of climate change that just aren’t funny?
- How does comedy get through to corporates?
- How does climate comedy persuade people to lead more environmentally aware lifestyles?
- Climate gags that bombed

- Is your job of selling climate comedy getting harder in the current climate?

It depends. I first went to GreenBiz in Arizona three years ago and had loads of conversations, met potential clients, and did plenty of fun shows – mostly remotely. Being able to perform for a group of lawyers in Canada or a partner summit in the US without flying aligns with my aim of not burning unnecessary fuel.

Last year, I had twice as many conversations – but only secured one client. That was when the current US administration had really begun to shift things, and people were visibly shaken – some had just lost funding, including from USAID. The mood was: we'll keep doing the work, but we'll call it something else.

This year, there's more of a sense of regrouping. I've even updated one of my jokes. It used to be: how many sustainability team members does it take to change a lightbulb? One – because there's only one of them. Now it's: how many sustainability leaders does it take? Still one – but we don't call it that anymore. Now it's "risk impact management". Same work, different label.

I brand myself as a "climate comedian", but I've wondered whether "impact comedian" might be more bookable – reflecting how the sector is shifting away from words like "climate" or "sustainable" towards "risk" and "impact". I'm not sure it has the same ring to it, but I may end up doing what others are doing: delivering the same message under a different name.

Ultimately, what I want is to talk about climate, sustainability, and how we feel about it – our anxiety, our hypocrisy, our complicity in the carbon economy. That's more relevant than ever. If I need to repackage it, so be it.

Where does comedy succeed where traditional climate messaging has failed?

I wouldn't say scientists or policymakers have failed – they've moved things forward enormously. In my lifetime, we've gone from "there's no crisis" to "it's real, it's serious, and it's our fault – but there is hope".

What comedy can do is say the unsayable. It cuts through the careful language – "challenges ahead", "political headwinds" – and calls out the elephant in the room. It gives people permission to say what they really mean, and a way to talk about difficult things.

It also gives people permission to feel joy. One of the hardest truths is that this is frightening – and we are scared. But fear doesn't motivate action; it isolates us. We feel guilty, overwhelmed, stuck.

We need hope, optimism, and connection. Every resistance movement has had art, play, and satire. Comedy gets into the cracks and offers another way of seeing things.

My job is often to ask sustainability leaders: what have you been saying for five years that no one's hearing anymore? I'll turn that into jokes and put it in front of people so they hear it afresh.

Are there climate problems that are too dark to make funny?

Of course – there's nothing funny about mass biodiversity loss or people suffering the impacts of climate change. But there can be humour in how we respond to those things – how we ignore them, avoid them, or struggle to talk about them.

Comedy isn't moral or immoral – it's amoral. It's about combining ideas in a surprising way. It can be used well or badly.

The aim is not to mock the tragedy, but to explore our relationship with it – our discomfort, our complicity. If you share a worry with a friend and they make you laugh, it becomes easier to cope.

I wouldn't go to a climate-vulnerable community and make fun of how severe their circumstances are. Although we've seen incredible work in Gaza with Clowns Without Borders, where clowns make people laugh despite the severity of their situations. My role is more about speaking to audiences in the developed world, reminding them that this is already happening to others, right now.

Take something like the minerals in our phones, often mined under harsh conditions. There's nothing funny about that. But if I can highlight the absurdity – "everyone else's phones, not yours" – people can confront it without feeling attacked, and maybe make different choices.

How does your work land with corporates?

I often perform at corporate events – long days full of data and presentations. Comedy gives people a release and helps make the message stick. People ask if I'm "preaching to the choir", but I think that's valuable – it's great preaching to the choir. They sing better. If the choir are burnt out and exhausted, tell them some jokes so they're not so burnt out.

I have been in briefings where interesting, positive messages are being transmitted by the sustainability lead – and the audience are listening as if it's a health and safety briefing. They blink twice, smile and go, "oh, that seems good." And then they go about their day.

I can get in there and use comedy to make it feel real and visceral and like it's something important to the individual.

I've got a joke I'm fond of at the moment. Everyone's panicking about AI. I've got this line, which is "AI has an enormous energy and water cost, but it can also help with climate solutions… according to itself."

I really like that because people in the room, they get what I'm talking about and I'm just putting a lens on a thing that people have thought – observational comedy is all about noticing things that everyone's noticed, but they haven't noticed that they've noticed.

Saying that stuff out loud, sparking conversations, sparking debate about it, and hopefully that helps to bring the subject to life, make it more meaningful.

As a comedian, I've done a lot of corporate work. I love doing it. I think comedians regard corporate gigs as a necessary evil. They think, "oh God, this'll be a tough gig". I'll get the money and I'll buy myself something nice to stop the doom feeling.

For me, I feel like I'm doing corporate work for the good guys. I love it because trying to push the needle, by supporting the people who are saying the most important stuff.

Has this work changed your own behaviour?

Yes. I started talking about climate on stage in 2021, partly to process my own anxiety. It made comedy feel fresh again.

I always joke about my own hypocrisy first – it stops it feeling like a lecture. For a while, I was making jokes without changing much. Now I've made changes: buying second-hand, avoiding plastic bottles, driving an EV, installing solar.

The key is that I'm doing these things because I want to – not because I feel shamed into it. That reflects how we should communicate climate: not by telling people to sacrifice, but by showing why better choices make sense.

Fear isn't useful. I used to see climate change as terrifying; now I see it as frustrating and absurd – and that motivates me more.

Have you ever told jokes that have bombed?

Constantly. That's the job. You're always refining.

Sometimes a joke is too complex – like trying to explain global temperature averages. You risk becoming a "funny TED Talk", and that's not the goal. I want proper laughs.

The danger is that climate communicators are often driven by fear, and that can creep into how they speak. You have to process that separately – comedy doesn't work if you're still in the raw emotion.

What's your favourite joke?

Climate's full of contradictions. I flew to America to speak at a climate conference. I know that's bad – but it's better than flying to America and not speaking at a climate conference… like you've all done."

It works because it shares the responsibility – and gets it out in the open.

MANILA BULLETIN

[Opinion] Transformative investment in climate-smart agriculture enhances food security

The approval of a ₱60.55-billion loan from the World Bank for the Philippine Sustainable Agriculture Fund (PSAF) marks a pivotal moment for the country's agricultural sector. At a time when food security, climate resilience, and rural livelihoods are under increasing strain, this investment—set to benefit at least five million farmers nationwide—signals both urgency and opportunity. Properly harnessed, PSAF can become a cornerstone of a more productive, competitive, and climate-smart Philippine agriculture.

The initiative, to be implemented by the Department of Agriculture, places strong emphasis on climate-smart practices in rice-based farming. This is a timely focus. Rice remains the staple of Filipino households and the backbone of rural economies, yet it is also among the most vulnerable to climate variability. By promoting improved nutrient and seed management, water-saving technologies, and greenhouse gas-reducing methods, PSAF aims to increase yields while reducing environmental impact.

These are not abstract goals. Efficient nutrient management ensures that fertilizers are applied precisely, lowering costs for farmers while preventing soil degradation. The adoption of high-quality, climate-resilient seeds enhances productivity and safeguards crops against erratic weather. Water-saving techniques—such as alternate wetting and drying—address both resource scarcity and methane emissions, a major contributor to agriculture-related greenhouse gases. Meanwhile, reducing post-harvest losses through better storage, handling, and processing can significantly increase farmers' incomes without expanding land use.

Yet the true promise of PSAF lies beyond individual interventions. It is, as described, a transformative investment because it integrates policy, systems, and partnerships into a coherent framework for change. The introduction of a digital voucher system, for instance, is a breakthrough in governance. By delivering farm inputs directly to beneficiaries and linking public spending to measurable improvements in yields and incomes, it enhances transparency, accountability, and efficiency. This is a long-overdue reform in a sector often plagued by leakages and inefficiencies.

Equally important is PSAF's support for diversification. Farmers will be enabled to venture beyond rice into higher-value crops such as vegetables and fruits, as well as livestock and aquaculture. This diversification is essential for risk management, income stability, and nutrition security. It aligns with the broader goal of making food not only more abundant, but also safer and more affordable for Filipino households.

Modernizing logistics and improving market access are also central to the program's success. Farmers must not only produce more—they must be able to sell more, at fair prices. Investments in supply chains, cold storage, and farm-to-market linkages can help bridge the gap between production and consumption, reducing waste and enhancing competitiveness.

Still, the scale of ambition must be matched by the rigor of implementation. Policies must be clear, consistent, and supportive of innovation. Systems must be robust enough to monitor outcomes and adapt to challenges. Partnerships—with local governments, the private sector, farmer cooperatives, and civil society—must be strengthened to ensure inclusivity and sustainability.

Ultimately, PSAF represents more than a financing package. It is a strategic bet on the Filipino farmer. With the right tools, knowledge, and support, they can lead the transformation of Philippine agriculture. In doing so, they can help secure the nation's food future in an era defined by climate uncertainty.

The task ahead is formidable, but the pathway is now clearer. With disciplined execution and shared commitment, this investment can yield dividends not only in higher farm productivity, but in a more resilient, equitable, and food-secure Philippines.

MINDANAO TIMES

Why a dual water source system is strengthening Davao's climate resilience

Water security is increasingly becoming one of the defining challenges for cities across the world. Changing rainfall patterns, stronger weather disturbances, and growing urban demand are forcing governments and utilities to rethink how water systems are designed and managed.

The Philippines is fortunate to be endowed with abundant natural water resources– from Surface water sources to productive groundwater aquifers that sustain communities across the country. With significant annual rainfall that varies from 965 to 4,064 millimeters annually and diverse watersheds, water availability has long supported growing cities and economies.

However, ensuring long-term water security also depends on how these resources are managed together. Changing climate and increasing demand make it essential for cities to balance surface water and groundwater through integrated systems that protect supply even during dry periods.

The Davao City Water District has increasingly turned toward a balanced approach, combining surface water and groundwater sources, to strengthen resilience against these uncertainties.

"Sa pagkakaron, we can claim that Davao City has achieved tung atong ginatawag na climate resiliency in terms of water service kay atoang napamatud-an during that time of El Niño when every place in the country has been experiencing drought ug water shortage, ang Davao City, opposite ang atoang scenario, abunda kaayo ta og supply," Duhaylungsod said in a 2024 interview during the Davao Peace and Security Press Corps presser.

(As of now, we can claim that Davao City has achieved what we call as climate resiliency in terms of water service, as demonstrated during the El Niño period when every place in the country was experiencing drought and water shortages. In contrast, Davao City's scenario was the opposite; we had an abundant supply.)

Through the Davao City Bulk Water Supply Project (DCBWSP), treated surface water sourced from the Tamugan River augments the existing groundwater supply managed by the Davao City Water District (DCWD), demonstrating how surface water integration is helping ease pressure on aquifers while maintaining stable supply for the city.

Learning From Changing Climate
A changing climate does not always announce itself through disasters. Sometimes it appears quietly through shifting river flows or unexpected dry periods.

Early Q1 this year, monitoring recorded lower river flow levels in parts of January despite it being within the rainy season– a reminder that even historically reliable water sources are not immune to changing climate conditions.

Yet across Davao, households and businesses experienced no noticeable disruption in supply.

DCWD was able to maintain stability by balancing surface water delivery with groundwater production, demonstrating how diversified sources can absorb environmental fluctuations without affecting consumers.

For residents, the adjustment happened largely behind the scenes. For the local water utility, however, it offered a practical example of how redundancy strengthens resilience.

Protecting Groundwater for the Long Term
Around the world, groundwater depletion has become an increasing concern. Aquifers that once seemed limitless are now under pressure due to population growth and expanding economic activity.

Supplementing groundwater extraction with treated surface water enables utilities to manage wells more responsibly, reducing strain during periods of peak demand and allowing natural recharge processes to take place.

Surface water provides additional supply when needed, while groundwater continues to serve as a stable foundation of the distribution system. Together, this balanced approach reduces dependence on a single source and strengthens overall water resilience.

This is the same strategy applied in Davao City through the treated surface water supplied by the DCBWSP.

MONGABAY

Global warming already impacts daily lives around the globe, study finds

By: Mike Gaworecki

As a grueling March heat wave batters the U.S. West with dangerous temperatures, and the world girds itself for what could be another sizzling record-smashing Super El Niño, a team of researchers has published a study looking at how global warming is already impairing people's regular daily activities.

Using 75 years of data stretching from 1950 to 2024, the scientists identified a clear trend and concluded that climate change is already placing serious limitations on people's daily lives, with those impacts now widespread and very likely to worsen as temperatures continue to rise. Older adults, and people in the tropics, are especially being affected.

The research team found that the global average number of hours per year people are exposed to heat that severely limits their activity has doubled for younger adults since the 1950s, while for older adults it went from about 600 hours per year to about 900 hours.

However, these impacts aren't evenly distributed: Parts of Southwest and South Asia, South America and Australia already experience what the researchers call "extreme livability limitations" even for younger adults.

The research team behind the study, led by Luke Parsons, an applied climate modeling scientist at The Nature Conservancy, said he used a "physiologically grounded" heat model to analyze 75 years of global climate data to fill in what the researchers perceive as a gap in our understanding of ongoing and projected heat impacts on people's daily lives.

"There's all these different heat metrics out there," Parsons told Mongabay. "They're very useful tools, but they carry these hidden assumptions about who's being exposed. They oftentimes don't distinguish between younger and older people," for example. They're also often focused more on when it's too hot to work outdoors or when extreme heat is a threat to human survival.

Parsons continued: "We wanted to take what we call a physiologically grounded approach here to think about, 'Can a person do [typical] day-to-day activities? How does extreme heat outside impact or limit our day-to-day lives?'" In other words: "Is this place livable?"

Rather than use a traditional heat index to answer these questions, Parsons and his team utilized the human/environmental adaptation and threshold limit model (HEAT-Lim model), developed by study co-author Jeni Vanos and her lab at Arizona State University. That model was first applied by Vanos et al. in a paper published in Nature Communications in 2023.

Combining the HEAT-Lim model's output with global climate data for the past 75 years allowed the researchers to determine what level of activity humans could sustain without an uncontrolled rise in body temperature threatening their well-being.

"We looked at how hot it was, and how humid it was, from 1950 all the way up to the end of 2024," Parsons said. "And we asked, for every hour of the day, if you were a younger adult who can sweat [efficiently] or an older adult who can't cool themselves as easily, when would it be dangerously hot for you to participate in basic day-to-day activities?" Younger adults as defined in the study are those 18-40 years old, while older adults are those 65 and older.

The team found that there are already places on Earth where it gets so hot and humid at times as to make it unsafe for either younger or older adults to do more than lie down or sit outdoors. There are parts of Southwest and South Asia, South America and Australia where even younger adults already experience what the scientists call "extreme livability limitations."

For older adults, the team found extreme limitations that make human life "unlivable," where it's impossible for the human body to naturally compensate for environmental heat loads, in parts of southwestern and eastern North America; tropical South America; western Saharan Africa; Southwest, South and Eastern Asia; and Australia. They write: "Temperature and humidity severely limit livability for older adults across large swaths of tropical and subtropical areas."

The researchers also looked at the global average number of hours per year that heat and humidity severely limit people's activity and found that it has "doubled for younger adults since the 1950s up to the recent couple decades," Parsons said. "And for older adults, it went from about 600 hours in the year to about 900 hours in the year."

That estimate of 900 hours annually of livability limitations for older people is a global average, Parsons noted, averaging together colder places and hotter places. In some parts of the globe, limitations are much worse.

"We looked at places in the Persian Gulf or sub-Saharan West Africa or South Asia or Southeast Asia, and some of these places, [see] roughly 2,000 to maybe almost 3,000 hours out of the year [that] are so hot and humid that older adults can't really safely go about their day-to-day lives if they don't have access to air conditioning and can't go inside out of the heat."

The data indicate that a large fraction of humanity is already being impacted by global warming, Parsons explained. "About … 35% of the current global population lives in areas where peak annual heat already really severely limits what younger adults can safely do outdoors. And for older adults, that number grows to about 78%, [impacting] almost four in five older adults. When it's the hottest hours of the year, [they] are going to be really heat limited in what they can do outside."

Parsons was particularly struck by the fact that, even when considering younger adults, about 1% of the global population already lives in locations where it's hot enough in the hottest hours

of the year to make it unsafe to do any outside activity. “And that number grows to almost 25%, or one in four, older adults. That is roughly 2 billion people.”

Drew Shindell, a professor of Earth sciences at Duke University who was not involved in the present study, said the research shows just how “potentially damaging” the global rise in temperatures that’s already occurred could turn out to be. “I say potentially,” he noted, “as the types of changes we’ve seen thus far can mostly be adapted to, at least in well-functioning countries.”

But, he added, “adaptation has its limits, and as warming continues, it will become more and more difficult to adapt and also more and more risky, as we’ll become highly reliant on artificial cooling.”

It’s not difficult to imagine conditions becoming so hot that overtaxed electrical grids in very hot climates fail, Shindell posited, meaning people will lose their cooling systems and hence their ability to adapt to the “unlivable” conditions to which they’re being subjected.

“That’s not only a risk for poorer tropical countries, but even for places like Texas or Arizona, where the grid could fail under the stress of a very hot summer’s high AC demand,” he said. “So adaptation carries risk of failure that may be small but [could] still have potentially enormous consequences.”

Research like the present study is important because it can help nations, local governments and communities determine where vulnerable people are most exposed to extreme heat in order that adaptation resources might be directed to them, according to Cascade Tuholske, an assistant professor of human-environment geography at Montana State University, who was not involved in the study.

“While numerous studies have documented how climate change is driving a rapid increase in extreme heat globally, this study expands our understanding of how the actual livability of locations is changing for different demographics because of increased outdoor heat stress,” Tuholske said.

He continued: “This is really important because it showcases where actual outdoor activities, like farming or construction, should be limited due to increasing heat exposure, and which populations live in these warming regions. Middle Eastern countries, [for example] where there are large numbers of migrant workers who work outside, really stand out as places of concern.”

CCC IN THE NEWS:

DAILY TRIBUNE

CCC pushes science-based climate action in Metro Manila

The Climate Change Commission is strengthening coordination with the Metro Manila Council and Regional Development Council to advance science-based climate action across the National Capital Region.

In a presentation in Pasig City, the commission outlined key climate policies, risk scenarios and priority areas for collaboration, urging local government units to adopt a systems-based approach in addressing climate risks affecting flood control, transport, solid waste and land use planning.

CCC Vice Chairperson and Executive Director Robert Borje emphasized the need for integrated planning, citing the directive of President Ferdinand Marcos Jr. to address climate change through coordinated strategies. “We underscore that climate change does not arrive as a single-footed event,” he said.

The commission also highlighted findings from the National Adaptation Plan, noting that Metro Manila faces interconnected risks such as sea level rise, flooding, extreme heat and drought, requiring region-wide responses.

Metro Manila Development Authority Chairperson Romando Artes expressed support for the initiative and proposed the creation of a technical working group to strengthen collaboration among agencies and local governments.

The CCC said continued engagement with local officials is key to improving resilience, enhancing access to climate financing and aligning national policies with local implementation.

Mayors urged: Adopt systems-based risk planning

The Climate Change Commission (CCC) on Monday presented a science-based action plan to Metro Manila's top leaders, urging a shift from fragmented disaster responses to a regional, systems-based approach to combat rising environmental threats.

During a joint meeting of the Metro Manila Council (MMC) and the Regional Development Council (RDC), CCC officials outlined the specific climate impact drivers facing the National Capital Region. These include rising sea levels, extreme temperatures, droughts, and fluvial flooding.

CCC vice chairperson and executive director Robert E.A. Borje stressed that local government units must move beyond reacting to individual weather events and instead integrate climate risk data into long-term urban planning.

"It's critically important that we provide support for the planning ahead," Borje said. "We underscore that climate change does not arrive as a single-footed event."

The presentation highlighted sections of the National Adaptation Plan (NAP) tailored to the National Capital Region, stressing that risks in the metropolis are increasingly interconnected.

It also argued that integrating these projections into flood management, transport, and land-use planning would reduce asset loss and protect vulnerable communities.

Metropolitan Manila Development Authority chairperson Romando S. Artes expressed full support for the initiative and proposed the creation of a technical working group to advance the climate agenda.

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