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A worker carries a pile of garments out of a subcontracted garment factory in Phnom Penh while wearing a cooling patch on her forehead in May 2026. (Mech Choulay/Mekong Independent)

Heat stress growing with targets, strain on workers

Cambodia's factory workers measured the temperatures and humidity they experience over several days. From where they sit and work, most of their working hours registered as 'dangerous'



By Sineat Yon and Danielle Keeton-Olsen

For the six days a week that Chol Sreymom shows up to work, she says she tries to do her best both for the company and her peers in the factory.

In SWJ and many other garment factories in Cambodia, the work is cooperative: Each team needs to produce roughly 60 to 80 pieces in each hour. At 46 years old and about 26 years in the garment industry, Sreymom is a veteran.

"I'm a good staff member," she told *Mekong Independent*. "I try to help the younger workers, I encourage them and I try to make sure they take care of themselves when they're exhausted or sick."

But as the days went on, Sreymom said, this was becoming a challenge, physically and mentally.

"It's hard to accept, when I enter the factory I don't feel happy because it's hot and the boss is not friendly to us," she said.

The heat and humidity inside factories is already making strenuous work more challenging in Cambodia, and garment workers are on the frontlines of the country's evolving issues of higher temperatures and other climate change impacts. As the only sector with a set minimum wage in Cambodia and additional pressure from buyers and brands, the garment sector

is leading conversations about solutions to heat stress. But workers say they feel their stress goes deeper than more thermometers and evaporative air coolers can reach.

Dangerous temperature and humidity conditions are now a reality in Cambodia. The annual number of days at 35 C or higher in Phnom Penh increased from 35 days in the late 2000s to 112 days in the years between 2020 and 2024, according to a July report, Mitigating Heat Stress in the Garment, Footwear and Travel Goods Sector, published by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ).

Sreymom found that she spends more than half of her day in a dangerous heat environment, after taking temperatures with a thermometer inside the factory. At least 30 minutes of her day, even when factoring in Cambodia's monsoon season, register as "extremely dangerous" on the heat index.

According to data captured across four days of her work schedule at SWJ in early June, Sreymom spent 45% of her time in dangerous heat, including hours outside work. Of the roughly 2,880 minutes that she spent working in the factory, 80% of that time registered at a "dangerous" or "extremely dangerous" heat

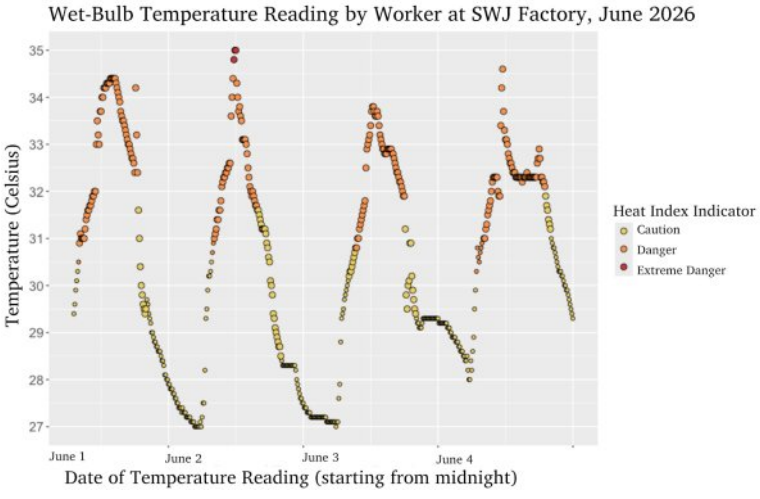
index.

The thermometer she used captures temperature and humidity every 10 minutes. Across those four days, the heat index registered in a dangerous zone for 2,390 minutes, or 40 hours of the total 89 hours that reporters measured the temperature.

Though Sreymom hadn't measured the temperature before, she said she was aware that it was getting hotter. She is also a farmer, growing rice as well as fruit and vegetables at her small piece of land in Kampong Speu province. Whether she was in the fields or at the factory, Sreymom noticed that before, she wouldn't start to feel hot until at least 10 a.m., but she said increasingly she notices the heat of the sun from 8 a.m.

But while she's taken more measures to stay cool during her farming activities, she wished the factory would do more to acknowledge the increasing heat, as well as workers' conditions in general. Sreymom knows the consequences can be deadly.

"I saw online on Facebook the story about the worker who died at her work station," she said, referencing the March death of 32-year-old Yim Rin at Cambo Unisoll factory in Kandal province. The Ministry of Labor and Vocational Training said that there



A chart showing the temperatures and heat index calculations captured every 10 minutes, as experienced by a worker at SWJ Factory in Cambodia's Kampong Speu province in June 2026. (Danielle Keeton-Olsen/Mekong Independent)

was no evidence Yim Rin died because of unsafe working conditions, but the case still made Sreymom think about the compounding pressures of heat, workload and other personal pressures on workers.

"I don't want that. Some people can die [from the stress or pressure] when they go home too."

Capturing the feeling

Heat is measured in different ways, and different measurements give insights into different risks that workers face. A thermometer on its own measures what's called a "dry bulb temperature," reading only the temperature as it's freely exposed to the air. Meanwhile a "wet bulb temperature" also reads humidity, as the content of water vapor in the air impacts how people can handle the heat. The combined reading of temperature and humidity is called the heat index, a calculation popularized in the late 20th century that better takes into account multiple factors of people's perception of heat. For that it's sometimes referred to as the "real feeling" of heat.

High temperatures have been persistent in factories. Authors of a new extensive report on heat stress used 10 years of "dry bulb" temperature data from inside garment factories, which doesn't take humidity into account. Though the overall trend of temperatures went down across the 10-year period, the data still showed that 82% of Cambodian factories analyzed had indoor temperatures over 32 C, the maximum temperature recommended by the garment industry monitoring organization Better Work.

For this project, some workers measured dry bulb

temperatures, just bringing a simple thermometer with them into their workplace and home, while others had a wet bulb thermometer, which read relative humidity too and could be used to calculate the heat index.

Sreytoch, a worker at a factory called Bowker Garment Factory in Phnom Penh, said she was aware the factory had thermometers, but it was rare that she checked it. She was surprised to take the basic thermometer into the factory and see the number climb upward each day.

At the maximum, she saw the temperature reach over 38 C, and that was in May, when monsoon season is supposed to set in and cool temperatures.

"I'm thinking about the near future, in the next few years, the temperature is just going to rise higher, and a lot more in the future after that."

Sreytoch is right to worry about her situation.

When workers spend their time at "extremely dangerous" heat index readings, with a calculated score of 50 or higher, they are advised to delay their work until cooler times of the day. Even at "dangerous" readings — which make up most of workers' working hour temperature readings — workers are recommended by heat index advisories to take a break for

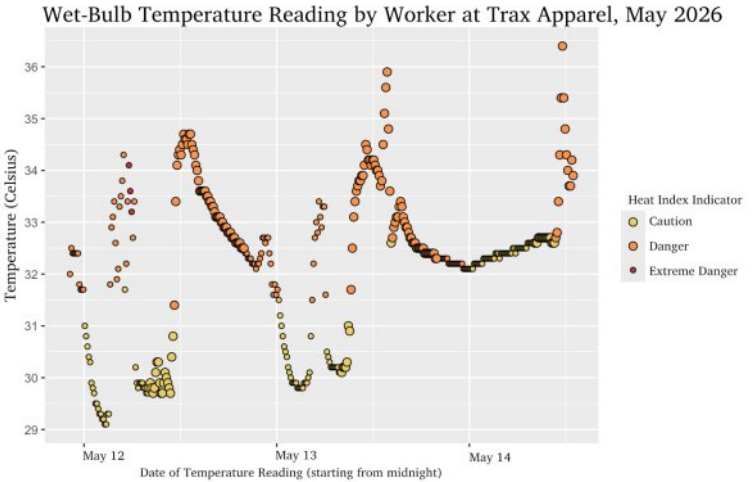
	Celsius	Fahrenheit
Caution	30-39	91-103
Danger	40-49	104-124
Extreme danger	50+	125+

Labels and approximate readings of the heat index, according to the U.S. National Oceanic and Atmospheric Administration (NOAA) and a reference guide prepared by Kestrel Instruments, a U.S. brand of meteorological measurement tools.

four minutes for every hour of activity, and have access to cooling stations.

Labels and approximate readings of the heat index, according to the U.S. National Oceanic and Atmospheric Administration (NOAA) and a reference guide prepared by Kestrel Instruments, a U.S. brand of meteorological measurement tools. For more details see the guides in Celsius and Fahrenheit.

When subject to heat stress for too long, workers can experience exhaustion, dehydration, rashes and even longer term health issues like kidney injury or respiratory and cardiovascular impacts.



A chart showing the temperatures and heat index calculations captured every 10 minutes, as experienced by a worker at Trax Apparel in Phnom Penh in May 2026. (Danielle Keeton-Olsen/ Mekong Independent)

With the basic thermometer, Sreytoch could read temperature, but she wasn't aware of the humidity within Bowker. However, readings from the advanced thermometers showed that the most extreme heat index readings during their days came from higher humidity readings, rather than extreme temperatures.

For Sreymom, for example, almost all of the dan-

gerous — and all extremely dangerous — heat index readings occurred while she was in the garment factory in early June. Sreymom spent a total 30 minutes of the five days she used the thermometer in extreme danger readings, but none of the times it occurred were at the highest temperature that day, but rather the greatest percent of humidity.

At Trax Apparel, one sewing staff member who took the thermometer in mid-May found that the temperatures were manageable in the mornings at Trax, but increased dramatically from her lunch break onward.

She went around different locations within Trax across May 12 and 13, and checked what the thermometer said at each one.

Where the workers were ironing labels onto clothes, she read 34.0 C.

At a section of storage, where workers packed, stored and moved garments, she also read 34.0 C.

The thermometer read 34.1 C when she spent a little time in the cutting section, where workers piece together clothes at the supplier for Adidas athletic wear.

A worker at a subcontracted factory also took the wet-bulb thermometer to her workplace, which

makes fleece and sweats for brands such as Champion, and received the most extreme readings of the group. The temperature exceeded 38 C three out of her five days of work in late August, and humidity levels over 80% pushed several of her work hours into “extreme danger” zones.



May 12: It’s 11:30 a.m. Srey Ya has just taken her lunch break. Just before she finished her shift ironing labels onto clothes for Adidas brand, she measured the temperature in Trax Apparel. It is 34 C.



May 13, about 2 p.m.: Sreytoch feels hot while she's working on the production line at Bowker Garment Factory. She checks her personal thermometer and reads that the average temperature is 35.8 C, with a maximum range of 38.3 C.

Why is it still so hot?

Though the climate is warming, the conversation about heat stress in factories has been going on for nearly as long as Cambodia produced garments and footwear for export.

The Cambodian government passed a sub-decree in 2002 urging factories to keep the climate at an

"acceptable" or "suitable" temperature, with thermometers within the building to monitor temperature. But that regulation never set any specific degree or standard for the "acceptable" temperatures or requirements to measure heat in factories, nor any penalty for factories who consistently fail such tests.





May 13, 6:30 p.m.: Sokhorn comes back home from her 12-hour shift at Caswell Factory and starts making dinner for herself. She quickly looks at the thermometer in her rented room. It reads 34.5 C, with a high of 36.1 C.

Meanwhile Vietnam in 2016 set a range of acceptable workplace temperatures across industries, varying based on humidity and the intensity of work. Workplaces should maintain a temperature of less than 30 C for almost all conditions of medium and high-intensity work, or if impossible increase the number of breaks so workers can recuperate, the regulations say. Thailand first set such regulations in 1976, revising its occupational health and safety standards in 2016.

Cambodia's Labor Ministry is reportedly working on new regulations to set a maximum workplace temperature, at least for the textile, footwear and travel goods sector. However, Mekong Independent could not obtain a copy of the draft law before publication.

Ken Loo, secretary general of the Textile, Apparel, Footwear and Travel Goods Association of Cambodia (TAFTAC), noted that the government was working on setting the regulations, without providing any further information. But, he added, TAFTAC has been trying to raise awareness about climate risks in factories.

"We have conducted numerous workshops and trainings to ensure that our members take care and

concern on this issue. Preventive measures have also been introduced and explained to members so that they can take the necessary actions to ensure ventilation and lower temperatures at the workplace," he wrote in a message.

But Loo added that implementation "depends on the financial ability of the factory and other factors."

The brand Adidas, one of the major labels represented in Cambodian factories, says it has taken heat issues seriously for years, including it in the 1,200 factory audits they conduct, said Stefan Pursche, spokesperson for Adidas.

Adidas, a company that generated a record revenue of more than $28 billion (€24.8 billion) last year and $1.5 billion (€1.377) in net income, buys orders from Trax Apparel and Bowker, among other factories.

Pursche said the brand required factories to have "adequate ventilation systems" and had adopted specific heat-related guidance for factories since 2023. He also described a new set of guidelines, called the "Heat Stress Management and Prevention Framework," which he said was being developed by Adidas and international organizations in the sector like the American Apparel & Footwear Association, Interna-

tional Labor Organization, Better Work and others.

"This new guidance will best support suppliers in protecting its workers from the effect of heat in the workplace and will be published in the coming weeks," he wrote in an email.

However, compliance requires monitoring. Major factories like Bowker Garment Factory and Trax Apparel are more likely to be monitored for temperature and held accountable if workers endure too much heat stress. But many workers now are employed by subcontracted factories like Kejer, which indirectly supply the export industry by supplying other factories within Cambodia, and therefore are more hidden in the supply chain. Subcontracted factories are often not part of monitoring bodies like TAFTAC and Better Factories Cambodia, and workers generally lack most of the benefits that the garment industry touts.

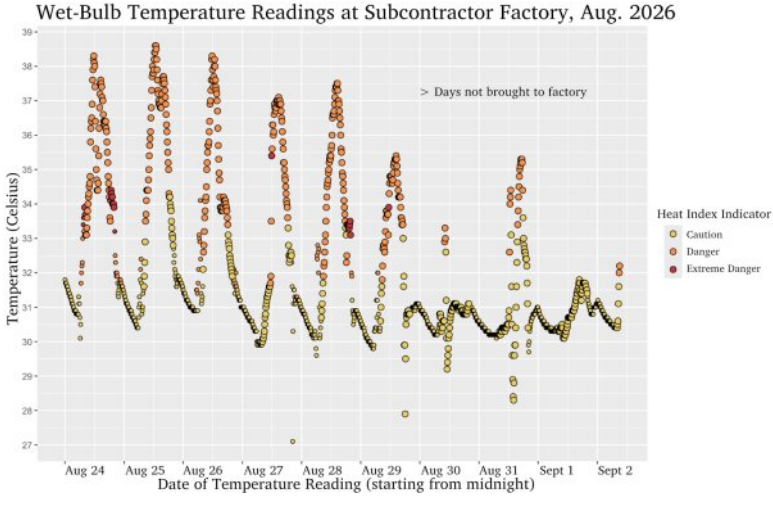
One worker's temperature measurements indicate that workers in the Kejer subcontracted factory experience higher temperatures and humidity than their peers at more monitored factories. In the first five days of the chart below, workers brought the thermometer to the factory. The remaining days were provided to show ambient temperatures at their rented rooms.

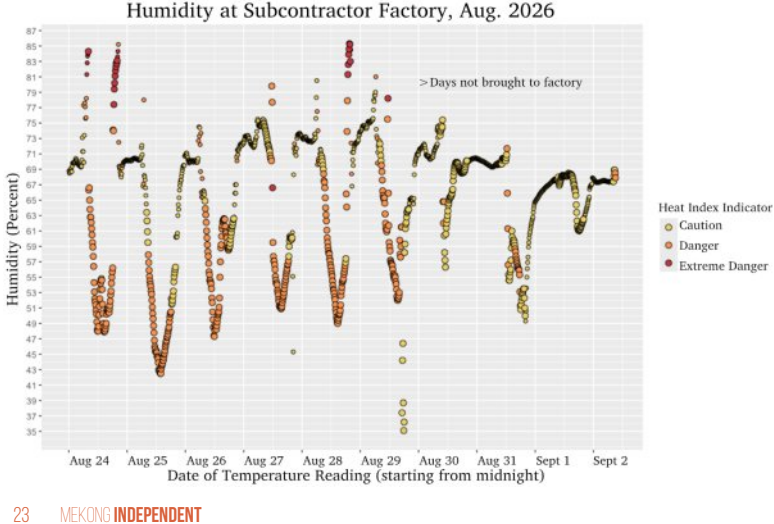


A worker irons garments at a subcontracted garment factory in Phnom Penh on May 19, 2026. (Mech Choulay/Mekong Independent)

The data shows that in the roughly 3,600 minutes they carried the thermometer, they experienced “danger” or “extreme danger” levels of the heat index for 83% of their workday.

The two charts above show different sets of data collected by one worker who brought a wet-bulb thermometer into a subcontracted factory, where workers found the temperature to rise to 38 C during work hours, while humidity could reach over 80%.


Wet-Bulb Temperature Readings at Subcontractor Factory, Aug. 2026
> Days not brought to factory
Temperature (Celsius)
Date of Temperature Reading (starting from midnight)
Aug 24
Aug 25
Aug 26
Aug 27
Aug 28
Aug 29
Aug 30
Aug 31
Sept 1
Sept 2
Heat Index Indicator
Caution
Danger
Extreme Danger


Humidity at Subcontractor Factory, Aug. 2026
>Days not brought to factory
Humidity (Percent)
Date of Temperature Reading (starting from midnight)
Aug 24
Aug 25
Aug 26
Aug 27
Aug 28
Aug 29
Aug 30
Aug 31
Sept 1
Sept 2
Heat Index Indicator
Caution
Danger
Extreme Danger

Caption: The two charts above show different sets of data collected by one worker who brought a wet-bulb thermometer into a subcontracted factory, where workers found the temperature to rise to 38 C during work hours, while humidity could reach over 80%.

The workers themselves say they believe there are other ways to make their workspaces cooler.

Sreytoch, the worker from Bowker, said she had friends in another factory inside the Royal Group Phnom Penh Special Economic Zone in the western district of the capital, and they had described specialized cooling systems that they felt effectively decreased the hot feeling inside a warehouse.

"In that SEZ they can do this because they are big, well known, and they don't want trouble," she observed.

Workers also suggested having more breaks and being allowed to bring individual motorized fans for their stations.

Sreymom noticed that her factory, SWJ in Kampong Speu, had a very high ceiling, and that ap-

peared to be affecting the heat. As a result, the cooling systems that they have — fans and a few water distribution systems — didn't touch or affect many of the workers.

Workers say that factories sometimes measure temperature and humidity, but they didn't check the data or know what to do with it.

Sreymom says the heat sits on her mind, as other aspects of the factory are dangerous too. When reporters met Sreymom in June, she described how the passageway at the front of the factory — where they enter, exit and pass to go to the toilet — is narrow and sometimes crowded with clothes or materials. She felt the factory layout "wasn't standard" to occupational health and safety regulations she learned in the past.

"Sometimes I worry about a fire, what would happen to us. I'm really worried, and I think about what happened at Koh Pich," she said, referring to a crowd crush that happened more than 15 years ago during a national holiday celebration in Phnom Penh.

Cambodian factories were not built to support workers through this level of heat, observed Laurie Parsons, reader in Human Geography at Royal Holloway, University of London who has heavily investi-

gated the impacts of climate change and labor issues on the garment industry.

"The problem is every factory fails unless you measure [wet bulb temperatures] in January or February," the coolest months in Cambodia, he said.

Parsons said that there was little data about average and extreme temperatures in garment factories, which made it challenging to set standard temperatures and thus understand what would actually improve workers' conditions across different sections of the factory floor. But he also observed that brands, factories and regulators tend to shift the blame, because reducing the level of heat stress would be another cost for manufacturers and brands.

"Factories are in warehouses, they're not really built to maintain a reasonable environment for a human population," he told Mekong Independent.

The Ministry of Environment posted a report in 2021 estimating costs of different cooling systems, based on work by the U.N. Industrial Development Organization. Investments like replacing air conditioning units for a factory was estimated at $15,000, while redesigning the ventilation system could cost $100,000, according to the document.

Phirom Morm, a human resources manager at

Bowker Garment Factory, said that the company was aware of the increasing number of days at 35 C and above, and was investing in infrastructure in the factory, which supplies Adidas among other brands.

He said the factory's target workplace temperature is 30-31 C, and they start monitoring closely for heat stress indicators at 32 C and above.

"Bowker is implementing additional measures including upgrading local exhaust ventilation systems in high-heat process areas, applying reflective heat-isolation roof coatings, enforcing mandatory 30-minute task rotations, and reassigning vulnerable workers to air-conditioned spaces during peak heat periods," he said.

Morm didn't specify how much budget the factory's cooling systems require, but he noted that the factory monitors the systems and conducts preventative maintenance programs. He also noted the factory's participation in government, NGO and brand-connected programs about heat stress.

Parsons, the academic at the University of London, said he felt motivated about the issue because of the amount of engagement across all garment sector stakeholders, even among brands. He noted that European Union countries like Germany and France had



Sokhorn stands in the sun outside her rented room on the outskirts of Phnom Penh. (Mech Choulay/Mekong Independent)

been more mindful of the human rights and labor issues in their supply chains, and thus tackling issues like heat stress had gotten increased traction. He said he thinks the projected loss in productivity also speaks to brands and manufacturers.

"One thing that's really positive about all this is everyone's talking about it and everyone recognizes it's a problem," he said. "Heat has real potential for at least the willingness to engage in it."

Not just an ambient environment

When the heat is too much, workers say they feel they have no choice but to bear it.

Sokhorn, a worker at Caswell Apparel, said she feels she is making unhealthy choices amid the heat in order to continue her work. She has a water bottle provided by the factory, but she tries her best not to use it, in order to keep up with the fast pace of the work.

"Even when I work under the heat, and I'm exhausted and don't have enough energy, I try to avoid drinking enough water, because I force myself to go to the toilet just two times a day, one around 9 a.m. and another time around 3 p.m.," she explained. "To make sure that I don't go to the toilet so often, in a whole day of work I only drink about 750 mL of water."

The long-term damage will not only be to health, as workers reportedly lose productivity, motivation and even comprehension ability when experiencing heat stress. Researchers from the U.S.-based Cornell University's Global Labor Institute and a London-based investment firm estimate that Cambodia's garment industry could lose 18% of its potential export earnings if they don't adapt to climate change.

Sokhorn said she was aware of many potential health issues: Unlike many of her peers, she refuses to drink any energy drinks, because she knows the extreme sugar and caffeine levels will damage her health. However, she still forces herself to drink less water and hold off bathroom breaks because she doesn't want to cause problems for her peers.

Sokhorn and other workers explained that their production goals were collective, and her group was given a certain number of targets to complete within an hour or a day, depending on the order. Sometimes the goal is feasible, but sometimes they feel the need to rush to keep up.

Regardless of the pace of the deadline, this means Sokhorn would be held accountable by her peers, she said. For Caswell Apparel, she's literally pushed along by what they call a float, or moving hangers that transport garments between work stations.

"If I don't complete my part, the floating garment rack will stop and get stuck at my place," she said. "The other workers will have nothing to do until I finish my part."

Workers in the subcontracted factory — which is called Kejer but does not appear to be in TAFTAC or Commerce Ministry business registration databases



Ourn Sreylai and Keo Chantha, two workers who recently moved from Banteay Meanchey province, share a rented room outside the capital as they took new jobs in a factory on the outskirts of Phnom Penh, in a photo captured on August 23, 2026. (Sineat Yon/Mekong Independent)

— said they were well aware of what rights they should receive, because they used to have them in their previous workplace.

Sreytouch, one of the newly subcontracted workers, said that she and her colleagues came to the Phnom Penh metropolitan area from Poipet, where they used to work at ML Intimates. She was let go with around 700 others as the factory closed in May due to

a lack of orders and the continued closure of the land border with Thailand post-conflict.

Sreytouch and the others told *Mekong Independent* that they had lost their seniority pay, social security from the factory and other health incentives like maternity leave. Now they work longer hours and on Sundays, and get paid a weekly but much smaller package.

On top of lacking benefits, Sreytouch said she was aware of the occupational health and safety issues at Kejer, like the lack of airflow and consolidation of debris from the soft fleecy fabric that they all cut and sew into sweatshirts for Champion and other brands. She said she and her peers were exhausted, struggled to breath and sometimes got rashes.

"Everyone tries to cover up, even with the heat, wearing masks and extra layers to prevent the dust from irritating our skin, [but] it gives us extra heat," Sreytouch said.

When asked about their communication channels for workers, the factory and brand that responded to Mekong Independent said there were many ways to express their concerns.

Phirom Morm, the human resources manager for Bowker, told Mekong Independent in an email that

the factory had several digital platforms to communicate with workers, from general channels like conversations with supervisors, to online options like a special digital platform and a Telegram HR group chat.

"Management regularly reviews reported issues with worker representatives and monitors the implementation of agreed actions. Bowker is committed to ensuring that workers have accessible channels through which they can raise concerns and receive timely follow-up," he said in a statement.

Morm said the factory had made short-term and long-term changes to their cooling systems based on worker feedback, including adding fans in areas where workers felt too hot as a temporary measure and more extensive changes when they could.

The 39,945 square meter factory of 3,344 staff now has 322 industrial evaporative air coolers, 188 wall-mounted fans, 91 additional fans, roof heat insulation, UV films on windows, designated cooling and rest areas, and accessible drinking-water facilities.

He acknowledged that it was hard to keep factories cool by nature.

"At the same time, managing heat in our operating environment presents practical challenges, including





Orn Vannak, 42, top, wears a hat and mask every day to avoid fabric debris. (Danielle Keeton-Olsen) Garment workers leave at the end of a shift. (Mech Choulay)

high outdoor humidity, large metal-roofed buildings and dense production layouts, all of which can affect the effectiveness of evaporative cooling and natural ventilation. We recognize these challenges do not remove the need for continued improvement," Morm wrote in an email.

Sreytoch, the worker from Bowker, is a supervisor, and said she was able to work with the factory managers and HR to make sure workers in her section are heard when they complain about the heat and other issues. But she sometimes feels frustrated with structural issues in the factory; for example, when Bowker managers rearrange workers' sections after they've gotten accustomed to a certain task and feel they're performing well.

"They don't seem to care about sticking workers in the spot where they do well," she said.

The heat adds to thes general strains of working in a factory, she said. She knows it's getting hotter everywhere, and it is hard to fight heat in a manufacturing setting. But at 23 years old, she feels the general exhaustion that working in the garment industry causes has already taken a lot out of her life.

"When I first started my first boss said I had a good memory, but that's no more, as I've changed

from one job to another," Sreytoch said. "I don't know the reason, but I didn't realize [as it happened] but day by day" she saw the decline in her memory, and her general health too.

For Sreymom, she doesn't see the heat as the problem in itself — it's other challenges that worry her. She and other workers were once able to lobby their boss at SWJ to install more fans, but there was no follow-up after, and workers weren't all able to feel the effect of the fan.

Sreymom said she doesn't feel acknowledged by the factory, especially her direct manager who sometimes makes insulting comments to Sreymom. She said they weren't able to form a new independent union because of fear from the workers and pressure she felt from factory management. Still she says they try to make the situation better, but it requires persistence.

"It's still not enough, and I raised before that it doesn't actually reach everyone," she said. "We should be able to work with the boss to make it better, get a better cooling system."

This story was supported by the Pulitzer Center.

In the Mekong region, coverage of natural disasters can also be a crime

The Lower Mekong is among the world's most climate-vulnerable regions. But its governments increasingly threaten and arrest journalists covering natural disasters, where corruption and mismanagement often surface.



Floods in Quảng Trị, central Vietnam, in 2020.



By Hướng Thiện

Even though the 2021 coup in Myanmar put his media house — founded just a few years earlier — in jeopardy, Naing had not thought of leaving the country. A seasoned video journalist, he felt compelled to stay on the ground to continue reporting.

Yet things came to a head in 2023 when his close friend and colleague Sai Zaw Thaike, a well-known photojournalist, who was working for the independent outlet Myanmar Now, was sentenced to 20 years in prison with hard labor for treason, defamation, disinformation and agitation against public officials, the longest prison sentence handed down to a journalist since the coup. His crime: covering Cyclone Mocha in Rakhine State in May 2023.

"When journalists expose news that the military doesn't want revealed, they are prosecuted under the Official Secrets Act and charged with state treason," says Naing, who spoke under a pseudonym for safety reasons.

According to Naing and several other Myanmar journalists interviewed for the article, Sai Zaw Thaike's coverage exposed the junta's inaction during the cyclone that affected 800,000 people.

"The military did not provide proper assistance to

the locals suffering from the Cyclone," says Naing. "They also withheld information about the cyclone from the public, and due to internet blackouts in those areas, many of the locals died because of the cyclone."

Naing says Sai Zaw Thaike was so tortured in prison that he blurted out names of colleagues who contributed to the reporting of the cyclone, including Naing. Sai Zaw Thaike was not allowed to have a lawyer. His newsroom had to be relocated to Australia.

When Naing returned home from a trip abroad in 2023, he realized that his phone number was blocked and his bank account was frozen. His hunch told him the government was taking action against him. After bribing someone to access the government's warrant list, he discovered his wife was also wanted. He made a swift decision: Flee the country to avoid arrest. His wife, seven months pregnant, would join him in Thailand later.

"I am not upset because he had revealed my name," says Naing. "I only care about his health."

Despite Sai Zaw Thaike's deteriorating health, prison authorities have denied him adequate medical care.

As of 2026, the Lower Mekong region, home to 200 million people, is among the world's most climate-vulnerable regions. According to the 2025 WorldRiskIndex, Myanmar (ranked 6th), Vietnam (13th) and Thailand (24th) are among the highest-risk nations.

The index, compiled by the German development alliance Bündnis Entwicklung Hilft in cooperation with the Institute for International Law of Peace and Armed Conflict at the Ruhr University Bochum, measures exposure to natural hazards — particularly floods — and climate vulnerability in terms of ability to cope and adapt across 193 countries.

A surge in disaster frequency and severity coincides with declining media freedom. The Lower Mekong region remains one of the world's most restrictive environments for journalism, with Vietnam and Myanmar being among the world's largest jailers of journalists. Journalists, especially freelancers covering natural disasters, face various types of legal threats, including criminalization.

Dr. Mon Mon Myat, a lecturer in the Department of Peace Studies at the International College, Payap University in Chiang Mai, Thailand, says that the weaponization of repressive laws against journalists

existed even before the Myanmar coup, but that this practice has accelerated since 2021.

"The only link between treason and reporting about the cyclone is injustice," says Dr. Mon Mon Myat. "The authorities hate journalists who seek the truth and report about it."

In addition to sedition and similar charges, vaguely worded laws on fake news have been leveled against journalists across the Mekong region who cover environmental disasters.

Amid shrinking press freedom and the rising power of authoritarian leaders, lawyers in these countries reportedly have significantly less space to defend journalists. Cases of lawyers facing legal harassment — or even imprisonment, both domestically and internationally — for defending public interest journalists have been recorded in Myanmar, Vietnam and Thailand.

Vietnam and Laos

Tâm, a former Hanoi-based journalist who quit journalism in 2024, says her former small state-affiliated newsroom faced a tricky situation when covering natural disasters. "Smaller newsrooms are more likely to self-censor because it would be costly to pay

for 'mistakes,'" says Tâm, who also spoke under a pseudonym. She cites major outlets being penalized for what the authorities unilaterally deem to be untruthful information or content beyond the outlets' authorized remit.

In affected areas in times of disasters, a press card is often needed to contact local authorities — a credential that eludes even many state-affiliated journalists, let alone independent journalists. Certain information about disasters can only be made public once approved by authorities, namely the Central Committee of Propaganda in charge of censorship.

"The unwritten law is that they cannot feature a lot of work by NGOs that have different opinions than those of governments," says Tâm.

Nguyễn Tuấn Khanh, an independent journalist based in Ho Chi Minh city, says describing charitable activities by non-state actors requires careful and cautious language, since such coverage threatens to underscore the state's slow and weak response.

"The writer risks being summoned by police for interrogation over presenting images that tarnish the state's image, while not fully understanding or acknowledging the state's efforts," says Khanh.

Several independent journalists who venture out

"Smaller newsrooms are more likely to self-censor because it would be costly to pay for 'mistakes.'"

Tâm

to cover environmental stories that trouble authorities have been charged with anti-state propaganda. Notable journalists such as Nguyễn Văn Hoá and Hoàng Đức Bình are now in exile or in prison on such charges. Last August, the Hanoi People's Court tried journalist Đoàn Bảo Châu in absentia and sentenced him to seven years. Among the evidence used to convict him was an interview with BBC Vietnamese about the 2016 floods in central Vietnam, in which he allegedly defamed the party and the state, disseminated fabricated information and incited public panic. He is now in exile in Canada.

Citizen journalists have also paid a price for posting information on natural disasters. Recently, a number of Facebook users in Lào Cai, Đắk Lắk and Cà

Mau provinces have been fined between 7.5 million and 20 million (about $290 to $770 USD) for posting information about flooding that was deemed to be untrue, even though it was not clear what specifically was untruthful.

In the same vein, in 2019, Laotian social media influencer Muay Littlepig was sentenced to five years in prison and a fine of 20 million kip (about $900) for sharing posts criticizing the government's poor response to flooding in southern Laos. The charges against her — "spreading propaganda against the Lao People's Democratic Republic" and "attempting to overthrow the Party, state, and government" — fell under Article 117 of the Penal Code.

Like Vietnam, Laos is a single-party state where independent journalism is virtually nonexistent. Laos's 2008 Press Law stipulates that the media must serve as the voice of the party and the state. Venturing into remote areas and representing oneself as an independent journalist is not an easy task, says Lamsay, a freelance Lao journalist who spoke under a pseudonym.

"Nobody wants to give you information, unless the problem is apparent and everyone knows it," says Lamsay.

Fake news warnings

In times of natural disasters, the government often issues warnings on fake news circulated by overseas independent news outlets and Vietnamese language channels of international outlets.

For example, an article titled “Be vigilant against conspiracies that exploit natural disasters and floods to distort information and incite sabotage” published in 2025 on the website of the Ministry of Trade and Industry reads:

“Some of the most prominent pages known for spreading distorted information include Việt Tân, Chân trời mới, and RFA Tiếng Việt. Through various social media platforms such as Facebook, YouTube, and TikTok, they accuse the Party and the State of Vietnam of neglecting disaster-preparedness and failing to care for people during typhoons and floods — leaving the public to fend for themselves. These narratives not only distort the truth but also sow confusion, creating a sense of regional discrimination by claiming that people in some areas receive priority in rescue efforts while people in other areas are not prioritized and are effectively “abandoned.” More dangerously, these pages also publish false information that incites public panic — such as claims that dikes or dams have burst in this place or that place — in order to make people panic and thereby hinder rescue and relief operations.”

Thailand and Cambodia

In late November 2017, while on the ground investigating the floods in southern Thailand, Hathairat Phaholtap, then a staff reporter for Thai PBS, noticed signs posted along the roadside expressing different opinions, both for and against the Thepha Coal Power Plant in Songkhla province. As she began to probe further into the flood aftermath and the restoration of livelihoods, she couldn't help but read up on the debate on the project. It didn't take long before a former community leader who supported the coal plant's construction warned her not to come to the area again, otherwise, "you'll find yourself in serious trouble."

Going into the field in an area where enforced disappearances were not uncommon and local authorities have failed to bring justice to those family members has taken a severe toll on her mental well-being. She says entering the conflict zone sometimes required government escorts for safety.

Hathairat Phaholtap, now a Thai-language editor at the Isaan Record in Khon Kaen, says that those who cover conflict zones must be either senior journalists or people who have received training and know how to work in sensitive areas.

“Any journalist who attempts to work in disaster areas needs to have a guideline of working in a disaster as well, otherwise you will be a disaster victim or a burden in the situation,” says Hathairat Phaholtap.

Nasihah Maso, a journalist at Wartani, an independent news and media outlet focusing on Thailand’s Deep South, says it is difficult to separate disaster reporting from the broader reality of working as a journalist in a conflict region.

“The risks become more visible when journalists cover issues related to security, human rights, natural resources, and government development projects that may have long-term environmental and community impacts.”

In neighboring Cambodia, a Phnom Penh-based journalist says he has always taken precautions when deciding to cover environmental issues — not only because of the documented increasing risks in environmental journalism in Cambodia, but also because he has witnessed his colleague, an indigenous journalist, face constant legal harassment, physical attacks and mental health deterioration for doing the job.

Sovann Sreypich, a freelance journalist based in Phnom Penh, covers disasters. In addition to the chal-



Floods in Lemyethna township in the Ayeyarwady region of Myanmar in 2026. (Supplied)

lenges of obtaining government data, journalists may also need to navigate sensitive issues that arise "when we try to establish the truth behind an incident — such as who was responsible, whether it was caused by human error, and what technical or financial support should be provided to victims".

"In disaster-affected areas, when I request information or access, I typically often present my press card to local authorities," says Sreypich. "In some cases, additional introductions or official requests are

required, depending on the location and the sensitivity of the issue."

Myanmar

Coverage of natural disasters reveal structural shortcomings that authorities seek to conceal.

"The most risky thing is not the disasters and its aftermath," says Esther, an independent journalist based in Magway in north central part of Myanmar. "We have to be very careful about the surveillance and arrests of the junta regime."

"The military regime wants to hide their mismanagement, corruption and lack of capacity to tackle the problem."

A 2025 situation report by the United Nations about Myanmar's earthquake stresses challenges in data collection, verification and processing and underreporting, making it difficult to grasp the full scale of a disaster in the country mired in conflicts. Multiple armed groups beyond the junta hamstring reporting on natural disasters.

Aung, a humanitarian worker based in Mandalay, says his organization tries to stay under the radar to avoid harassment by the military regime so that it can continue its work. "We have to avoid unnecessary

problems so we can help people from anywhere in the country," he says using a pseudonym.

He urges that journalists need to be careful when featuring charitable activities by domestic non-state actors.

Yangon-based journalist Josephine Kyi says journalists face different challenges depending on which authorities control the area.

"Because much of Myanmar remains affected by armed conflict, journalists inevitably have to navigate relationships with authorities and other power holders. This makes even seemingly straightforward disaster reporting more complicated and time-consuming."

She says in territory controlled by the junta, the most obvious concern is security. Low-profile reporting is essential, as using a camera in public can be highly risky. It is also difficult for journalists to identify themselves openly and work publicly as members of the media. In areas controlled by resistance groups, field reporting often requires references or introductions from trusted networks.

"I covered an earthquake last year and am covering flooding this year. Last year, the earthquake-affected areas were mostly under the control of the junta regime, so I had to navigate the challenges of

reporting in junta-controlled territory," says Josephine Kyi. "This year, for the flooding, I am dealing with different challenges in areas controlled by resistance groups."

To reduce the risks, Josephine Kyi says that some media outlets that she has been contributing to do not mention the real names of the authors in publication. "I think using pseudonyms is a good strategy," she says. "Mentioning credits or not doesn't that matter."

"There is no formal legal protection for journalists, while local rules, regulations and revolutionary ideologies can shape how reporting is conducted," says Josephine Kyi. "Journalists often have to rely on broader networks to establish contact with local sources and gain access to affected areas."

Exile in Thailand

The arrests of several other colleagues after Sai Zaw Thaike's imprisonment took a toll on Naing's mental health. His newsroom was closed, and he became jobless. A few months after he reached the Thai border, the military ransacked his parents' house.

"I had to leave behind everything I had built, and now I am living in Thailand, trying to start a new

life," says Naing.

While feeling somewhat safer in Thailand, where he holds a pink card, a Thai identification document issued to non-Thai residents that doesn't permit him to travel internationally, Naing faces the common struggle of many exiled Myanmar journalists: staying financially afloat while remaining professionally active in the host country. He has to make risky trips back home by land from time to time. Initially, Naing would pay for his own reporting trips back home out of his pocket and pitch stories to international outlets. Now, he has declined offers from several outlets to return, as the threat of conscription and legal consequences outweigh any journalistic opportunity.

"It is increasingly difficult to get quality footage and reliable information from local people in those places [in Myanmar]," says Naing.

Joy, a mental health counselor working on the Thailand-Myanmar border, says the fear of being criminalized, jailed and killed by the military government for doing their job is extremely common among journalists in Myanmar, based on her experiences providing mental health support for exiled Myanmar journalists.

On the one hand, many journalists fled the coun-

try because they were unable to do their jobs. On the other, even after relocating to a host country, they often feel helpless because they cannot do their work properly from afar — such as calling sources and verifying information.

She says her exiled journalist clients express anxiety about their legal precarity.

"Fear of being deported often comes up in conversations [with clients], like 'What if we were detained in Thailand? In that case, we'd have to assume they would deport us back to our country, and then we would be in jail,'" says Joy, speaking under a pseudonym.

Communicating with exiled journalists in safer locations — where they can help share information — is another solution, though it doesn't always guarantee complete safety, says Vũ Huy Hoàng, an activist based in Thailand. He has been helping journalists inside the country post clips of public interest that are dangerous to share in Vietnam.

Dark clouds

As threats increase, journalists have been forced to adapt, and many are simply being pushed farther away.

Esther, the independent journalist based in north central Myanmar, chose to cover the 2025 earthquake in Myanmar from across the border in Thailand. She made a short stay in refuge, believing she and her family would be safer.

In Vietnam, the restrictions are tightening. The Press Law was amended this year, and journalists are now required to disclose their sources at the request of the Ministry of Public Security if the information is deemed detrimental to national security.

On September 25, the Vietnamese government further issued a decree on penalties in journalism, which took effect the next day. Article 14, vaguely worded, stipulates fines of 300 million to 400 million dong (about $11,500-$15,500) for the act of "publishing or broadcasting information that negatively affects the standing, reputation, or image of Vietnam; or that harms foreign relations and international cooperation between the Socialist Republic of Vietnam and other countries and partners."

The challenges mount as extreme weather increases. Floods in Northern Vietnam last year broke records while causing 409 deaths and disappearances and 337,000 damaged or collapsed houses. In Thailand the same year, flooding killed at least 162 peo-

"The authorities hate journalists who seek the truth and report about it."

Dr. Mon Mon Myat, Payap University

ple as officials acknowledged failures in its management.

This year, as of late September, large swaths of Bangkok were underwater.

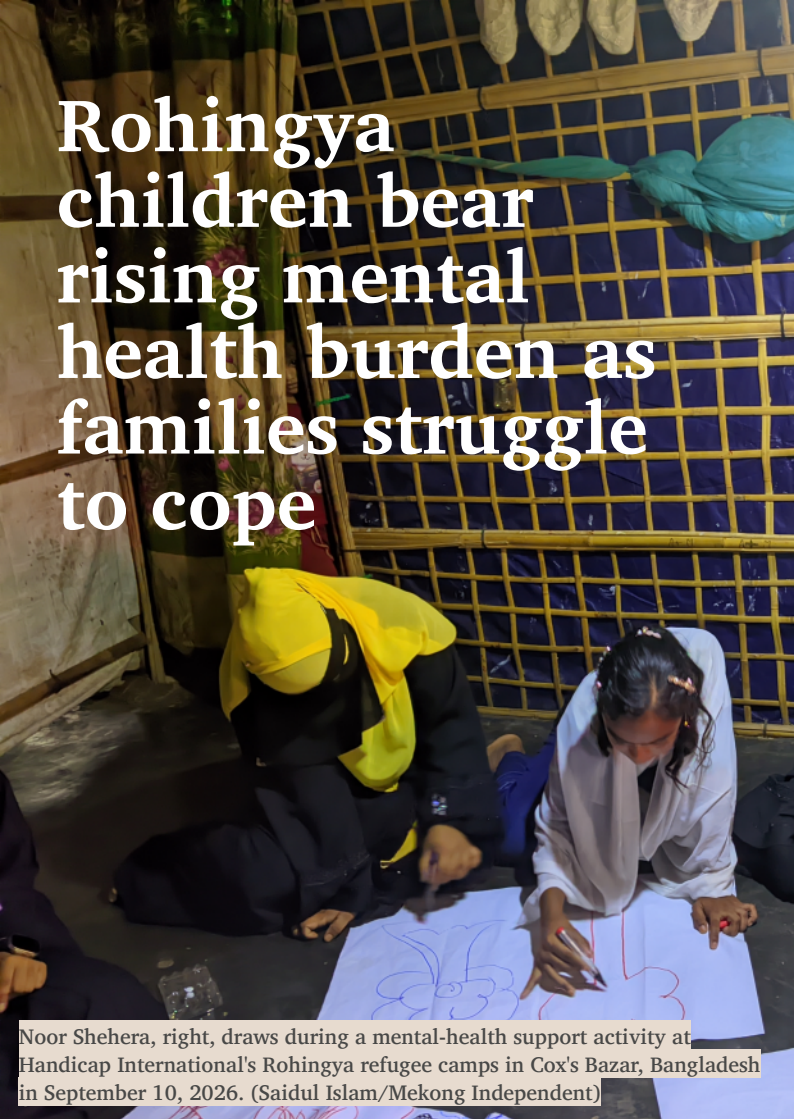
The International Press Institute issued a report in 2024 documenting the rising threats against journalists covering climate incidents just as their work became more pressing.

Many states fail to let journalists report the issues freely, forcing them to "adopt resource-intensive strategies to reduce the risk," the report says.

It encourages more support for local newsrooms, and more collaborations as a way to give them — and the attacks against them — greater visibility.

IPI executive director Frane Maroević said these were "appalling risks." "This is a call to action to all of us who care about independent journalism, press freedom and the global climate and environmental crisis. Today we need accurate, independent, and accessible journalism more than ever."

Rohingya children bear rising mental health burden as families struggle to cope



Noor Shehera, right, draws during a mental-health support activity at Handicap International's Rohingya refugee camps in Cox's Bazar, Bangladesh in September 10, 2026. (Saidul Islam/Mekong Independent)

Rohingya children in Bangladesh's refugee camps are confronting a deepening mental-health crisis as poverty, family problems and uncertainty over their future take a toll.

By Niyamot Ullah

From where Noor Shehera sits in her small home in Camp 6 of Bangladesh's Cox's Bazar, the rising voices of her mother and father easily reach her.

For the last few years, her family has had significant financial stress, the 13-year-old said. They can't afford to give her new clothes or school supplies. Sometimes, there's not enough food.

Lately, even the cost of her monthly tuition at an informal school in the camp could spark arguments between her parents.

"I could sit with my books for hours, but I could not concentrate on what I was reading," Noor Shehera said. "All I could think about were the problems at home."

Poverty, family problems, overcrowding, and education have become increasingly important factors influencing the mental health of Rohingya youth.

Over 29% of individuals seeking mental health

services at just one of their facilities in 2025 were children under 15 years old, Médecins Sans Frontières, or MSF, said in a report published in August.

This is compared to nearly 10% in 2021.

Driven into Bangladesh by a 2017 genocide in Myanmar, over 1 million Rohingya refugees live in camps with few opportunities and are dependent on humanitarian aid.

Both the volume and severity of mental-health cases have increased significantly compared to five years ago, MSF mental health activity manager Shariful Islam said in a statement published this month.

Amina Begum, Noor Shehera's 39-year old mother, began to notice changes in her daughter. She became quieter and eventually stopped going to school altogether. She couldn't sleep very well at night and was easily irritated with other family members.

"Whenever there is a problem in the family, everybody knows about it. My daughter could not escape from the arguments," Amina Begum said, adding that the whole family was under pressure.

"In the beginning, we thought that she was only annoyed with us. We did not know that she became emotionally ill."

Families under pressure

Even when her household was peaceful, Noor Shehera worried arguments could erupt again at any time.

"When my parents were arguing, I was scared and thought that something bad was going to happen," Shehera said. "I would keep listening to what the adults are saying instead of sleeping and studying."

Children and adolescents have become increasingly affected by family finances, disrupted education, and uncertainty regarding their future, said refugee counselor Mohammed Faruk, who works in Camp 14 with the BRAC, previously known as the Bangladesh Rural Advancement Committee.

"Out of every 30 children and adolescents I meet, about 20 of them have serious emotional problems," he said.

Many refugee children deal with overcrowding, violence, family disputes, and financial stresses, which are directly related to their mental health struggles, said activist Mujibu Rahman, who works in Camp 17 promoting gender equality and education.

"The children are bearing many troubles they should not be at their age."

In April, 12-year-old Hamid Ullah's father was

"The children are bearing many troubles they should not be at their age."

Mujibu Rahman, Camp 17

kidnapped by an armed group in Camp 5.

The 42-year-old Aziz Ullah, primary breadwinner and caregiver for his family, was badly beaten and left with permanent disabilities.

Unable to walk, he's not been able to return to work. His mother does household chores, but is unable to work as a woman in the camp, leaving the family with no income.

The family's circumstances changed dramatically overnight, leaving Hamid Ullah stressed and anxious. He began to ruminate on how his family would get food and other necessities, his father's health, and the future.

Hamid Ullah found it difficult to sleep and pay attention in classes.

Extreme poverty, as well as insufficient humanitarian aid, lack of educational opportunities, limitation in movement and hopelessness, are part of the growing distress young people are feeling, MSF noted in their report.

It's also led to other serious trends.

Some 27% of all suicide attempts recorded at MSF's Kutupalong facility between 2023 and 2025 were from children under 18 years old. Over 80% of suicide attempts involving children were directly attributed to family violence, the report said.

One of the issues is that children can't express their experiences as a mental health problem, said Saidul Islam, a counselor with Handicap International.

They often express their mental stress as physical symptoms, like headaches, wanting to be left alone, or not wanting to study anymore.

"A child comes to us because of a sleep problem, but when we talk with them, we find family problems, financial problems, school problems, or fear about their future," he said. "Mostly, the sleep problem is just one aspect of what they are going through."





Family support

Mental health services in the camps include community-based psychosocial support, counselling, and specialized mental health services, including treatment for schizophrenia and bipolar disorder, according to MSF.

Nearly 24,800 refugees received individual counselling from trained refugee counsellors in 2024, according to a report released in 2025 from UNHCR, the U.N.'s refugee agency. Among them, over 7,700 are newly-identified cases.

Another 10,000 refugees with more serious needs received specialized counselling, while 156 individuals were admitted for specialized mental health care at UNHCR-supported facilities.

When Mohammed Salim began to lose interest in his studies and friends, his family didn't know that

Captions:
MSF counselor Anuwar speaks with a parent about understanding children's mental health. (Niyamot Ullah/Mekong Independent)

A BRAC female staff member providing mental-health care to a group of Rohingya refugee girls under 15 years of age. (Niyamot Ullah/Mekong Independent)

mental stress was to blame.

"We thought that he had become lazy or lost his desire to study," said his father Abdul Karim. "We didn't know that he worried constantly and couldn't control it."

In actuality, the 15-year-old was stressed about his future and what he would do after school. Lack of accreditation in refugee schools and few job opportunities means students often have nowhere to go after graduation.

"I kept asking myself what I would do in the future. I wanted to get higher education and lead a good life, but I could not see many opportunities around me," he said.

"I lost interest in doing things that I used to enjoy. I could not concentrate when I was studying and sometimes did not want to talk to my friends."

Only about two out of 15 parents understand their children's problems, said MSF counselor Muhammed Anuwar, who works in Camp 15.

"Parents do not always recognise emotional distress, they interpret it as a stage in adolescence or defiant behaviour," he said.

For Ayesha Begum, learning how to respond to her children's uncertainty took time. Her son and three

"I kept asking myself what I would do in the future. I wanted to get higher education and lead a good life, but I could not see many opportunities around me."

Mohammed Salim, 15

daughters often ask her questions about the future, like when their life will get better or when they will have enough food.

Although she doesn't always know how to answer their questions, she says she tries to acknowledge their concerns.

"When there is no food, no money, when their parents are worried, they hear all this. Even if you do not let them worry about it, they feel something is wrong," she said.

"If he is always alone, we try to sit beside him and ask him why something is wrong. We may not be able to solve his problems but we can let him speak."



Overcrowded Rohingya refugee camps in Cox's Bazar are places of daily stress for children who may suffer from mental health issues. (Niyamot Ullah/Mekong Independent)

Seeking help

However, the counselors believe that recognizing the issue early is significant.

"When adults witness any drastic change in the behaviour of their children, they shouldn't blame their children," said Kabir Ahamed, a counselor working with MSF. "Rather, they should try to identify the reason behind that change and provide suitable support to their children."

Kabir Ahamed said the organization uses activities

like henna application, games, and other creative activities to help children trust the staff.

However, community stigma still makes it challenging for some families to get support.

Noor Shehera's mother, Amina Begum, said her view of mental health has changed since her daughter began receiving help.

"We were afraid that people would misunderstand [our daughter] and that they would think something was wrong with our family," Amina said, adding that a counselor at MSF helped them to understand that seeking support was not shameful.

"But now we understand that when a child suddenly changes her behavior in such a way, we have to question what happened to her."

Noor Shehera is back to attending her classes, which are paid for by her father's daily labor job.

She said, "At times I get worried, but now I know that I could talk to someone rather than keep everything within me."

DOES CAMBODIA ACTUALLY NEED MORE HYDROPOWER DAMS?

Today, there are 10 hydropower dams in operation in Cambodia, while another 14 are under construction or proposed. Amid concerns over forest loss and community displacement, what lessons can be learned from existing dams? What are the alternatives?

By Vuth Chan Dara and Kuch Sikol

Cambodia's electricity mix has transformed almost completely since 2000, when oil supplied over 90% of electricity and hydropower filled the rest. Hydropower surged after 2012 as new dams came online, briefly dominating the mix.

Coal has since overtaken it, climbing from zero in 2013 to over 60% by 2024, while oil has nearly disappeared. Solar only entered the picture in 2018 and has grown steadily since, reaching about 11% by 2025.

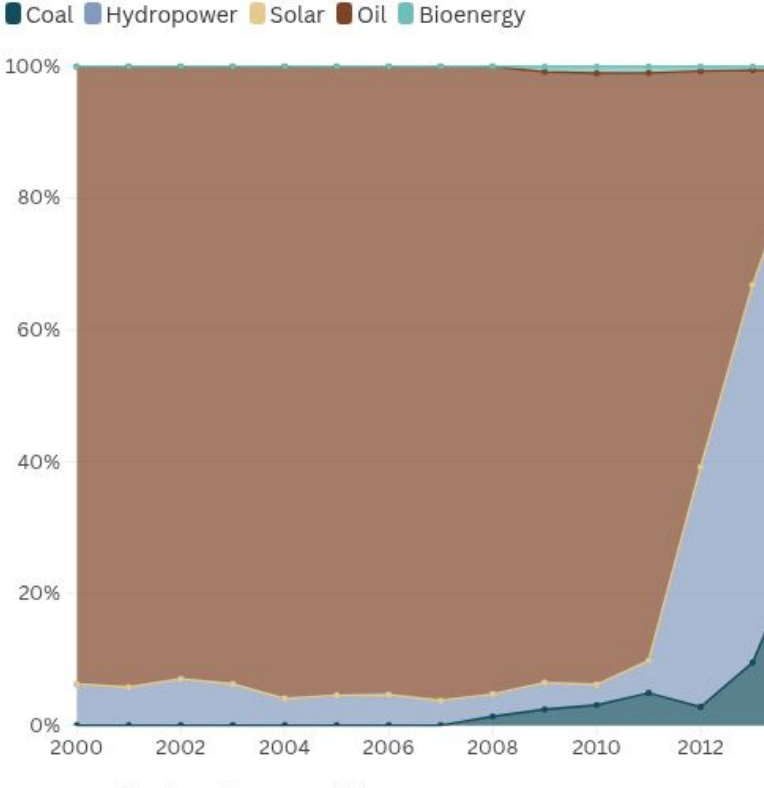
Today, there are 10 hydropower dams in operation, while another 14 projects are under construction or proposed, according to the country's master plan.

But previous investigations and academic studies have documented forest loss, flooding of protected areas, disruption of wildlife habitats, and displacement of Indigenous communities associated with several existing hydropower projects.

This raises a broader question than whether Cambodia simply needs more electricity. Before approving another generation of hydropower projects, what environmental lessons can be learned from existing dams? What are the alternatives? Could upgrading

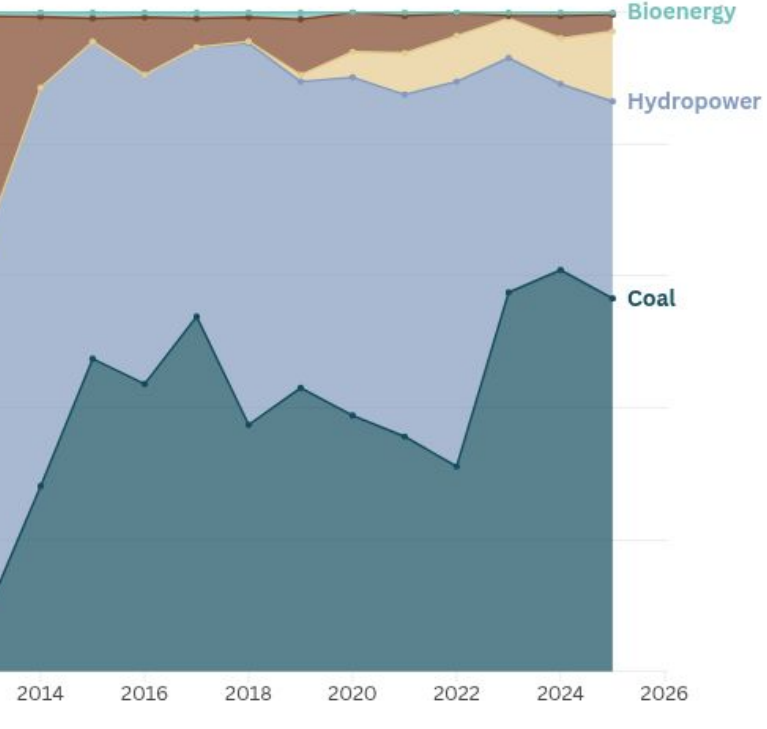
Cambodia's growing dependence on hydropower

Percentage of total electricity generation, by energy source, 2000–2



Source: Ember (2026); Our World in Data

025


Bioenergy
Hydropower
Coal
2014
2016
2018
2020
2022
2024
2026

existing hydropower facilities help meet part of Cambodia's future energy needs while reducing pressure on forests and protected areas?

To answer these questions, this explainer combines Cambodia's power development master plan, satellite-based forest cover data, and previous studies to examine how much forest has been lost to existing hydropower projects, how much could be affected by future dams, and whether experiences from neighbouring countries offer an alternative pathway.

How widespread is hydropower development in Cambodia?

Precisely how much of Cambodia's power comes from dams today is harder to pin down than it should be. Official figures are scattered across ministry statements, donor reports and industry trackers, and don't always agree. The Asian Development Bank's energy sector assessment in 2018 put installed hydropower capacity at roughly 980 MW built, with about 400 MW under construction and another 90 MW in feasibility studies, against a technical potential the ADB estimates at 10,000 MW.

Stimson Center trackers put total installed hydropower capacity around 1,300–1,800 MW as of the early-to-mid 2020s. The uncertainty reflects projects

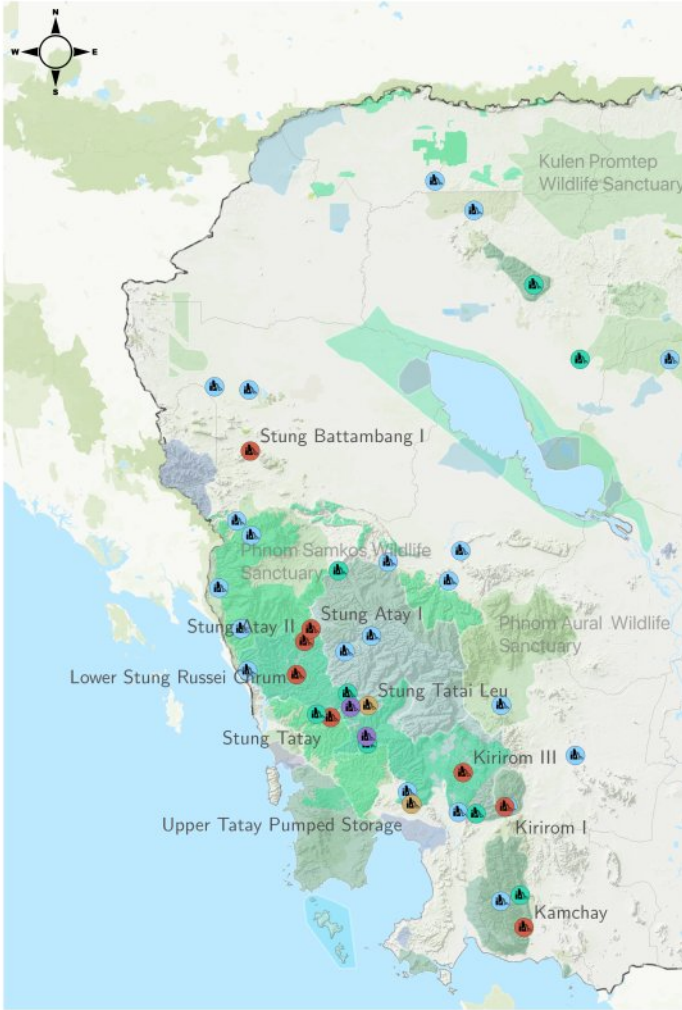
moving in and out of “under construction” status, and the lack of a single public, continuously updated dam registry.

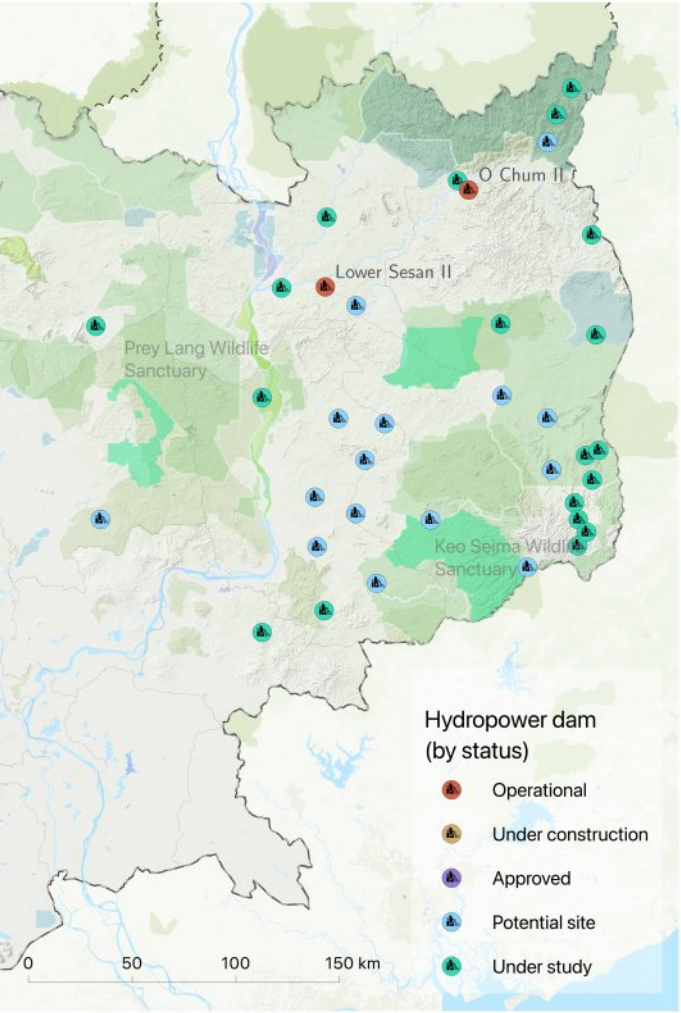
Cambodia’s Power Development Master Plan (PDP) 2022–2040 with the Asian Development Bank targets 3,000 MW of hydropower capacity by 2040.

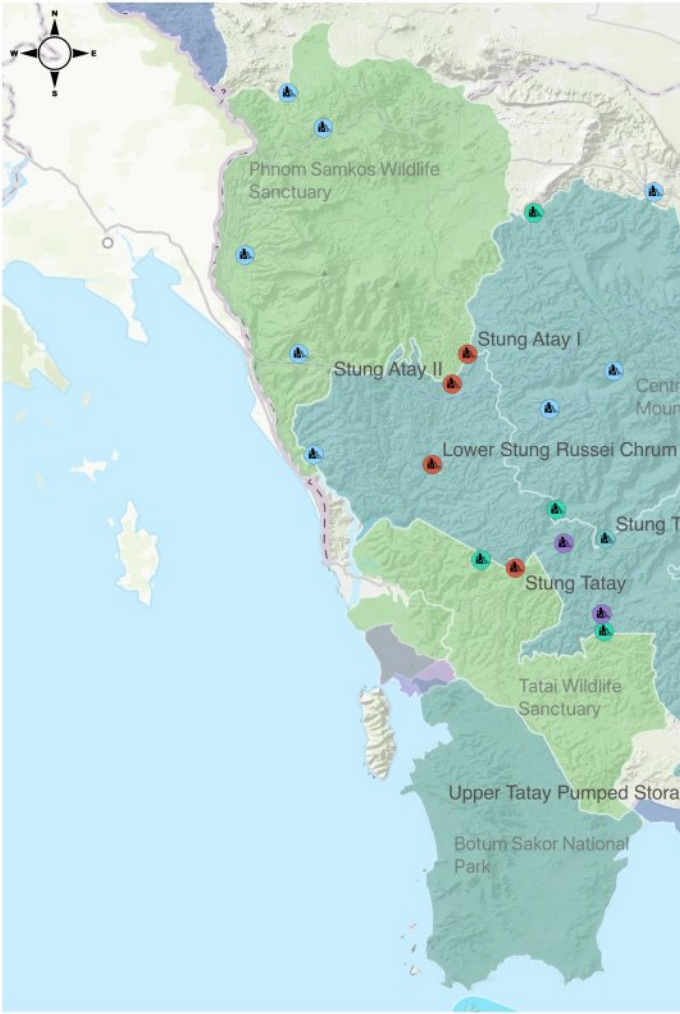
Many of these projects are concentrated in Cambodia’s southwest and northeast, where major river systems pass through some of the country’s largest remaining forest landscapes. Since the late 2000s, Cambodia has accelerated hydropower development through a series of Build-Operate-Transfer (BOT) agreements, many involving Chinese state-owned enterprises.

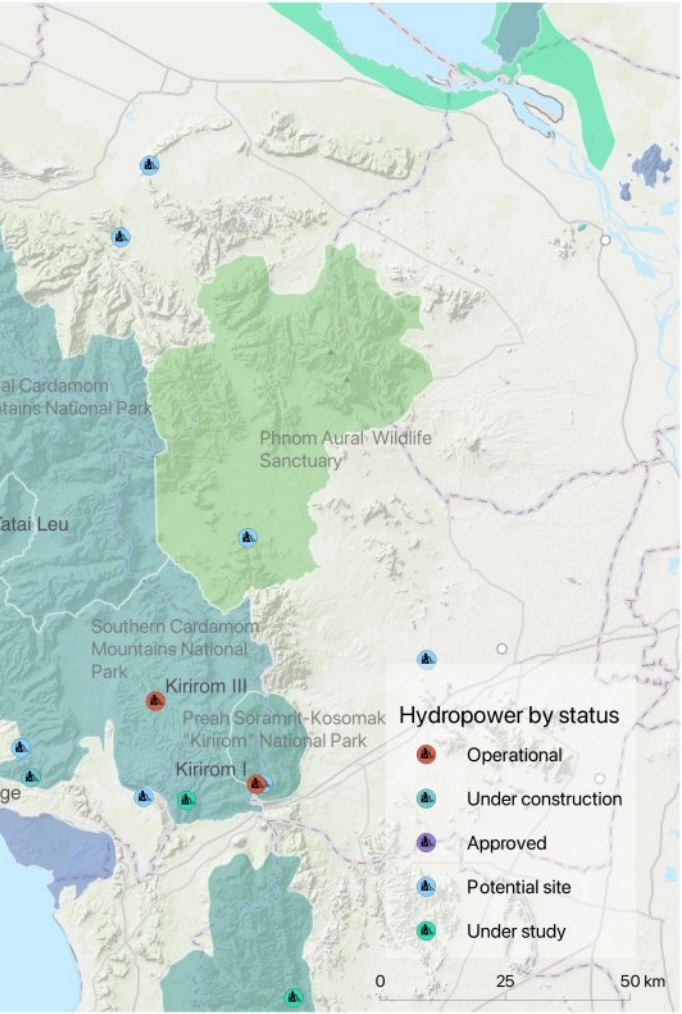
Cambodia now has 10 operational hydropower dams with a combined installed capacity of approximately 1353 MW while there are three under construction and dozens more under study, according to a list compiled by Open Development Cambodia.

Among those, in the Cardamom region, home to several protected areas, there are six operational hydropower dams and two under construction, two more approved, 15 potential sites, and five under study.


N
W
E
S
Kulen Promtep
Wildlife Sanctuary
Stung Battambang I
Phnom Samkos Wildlife
Sanctuary
Stung Atay II
Stung Atay I
Phnom Aural Wildlife
Sanctuary
Lower Stung Russei Chrum
Stung Tatai Leu
Stung Tatay
Kirirom III
Upper Tatay Pumped Storage
Kirirom I
Kamchay


O Chum II
Lower Sesan II
Prey Lang Wildlife Sanctuary
Keo Seima Wildlife Sanctuary
Hydropower dam (by status)
Operational
Under construction
Approved
Potential site
Under study
0
50
100
150 km


N
W
E
S
Phnom Samkos Wildlife Sanctuary
Stung Atay I
Stung Atay II
Lower Stung Russei Chrum
Stung Tatay
Tatai Wildlife Sanctuary
Upper Tatay Pumped Stora
Botum Sakor National Park


al Cardamom
tains National Park
Phnom Aural Wildlife
Sanctuary
Tatai Leu
Southern Cardamom
Mountains National
Park
Kirirom III
Preah Soramrit-Kosomak
"Kirirom" National Park
Kirirom I
ge
Hydropower by status
Operational
Under construction
Approved
Potential site
Under study
0
25
50 km

Caption: Maps of active and potential sites of hydropower dams in Cambodia and its Cardamom mountains area. (Open Development Cambodia)

How do hydropower dams lead to forest loss?

Hydropower is widely regarded as a renewable energy source because it generates electricity without burning fossil fuels. Unlike solar or wind energy, however, large hydropower projects require significant changes to the natural landscape. To generate electricity, dams block rivers and create reservoirs that inundate valleys, forests, farmland, and surrounding land.

It leads to forest loss through a combination of direct environmental impacts, infrastructure requirements and a recurring pattern of systemic illegal logging facilitated by dam concessions. Reports have found that improved access to previously remote forests can increase illegal logging and land encroachment.

Developers must also clear reservoir basins of vegetation to prevent methane emissions from decaying organic matter once the area is submerged, which often becomes a lucrative opportunity for logging.

There is no single official estimate of the total forest area lost to hydropower development in Cambodia. However, previous investigations, academic studies, and satellite analyses have documented significant forest loss linked to individual dam projects, particularly those built within or near protected areas. These findings are especially concerning given that Cambodia has experienced one of the highest rates of deforestation in Southeast Asia over the past two decades.

Among the earliest documented cases was the Stung Atay hydropower dam in Pursat province. During the clearing of its 4,179-hectare reservoir, investigations found that the project was used as cover for widespread illegal logging, with an estimated 200,000 hectares of protected forest reportedly harvested during the period. Although much of the logging occurred outside the reservoir boundary, the project opened access to previously remote forests and accelerated deforestation on a much larger scale.

The Lower Sesan 2 hydropower dam, completed in 2018, inundated an estimated 34,000 to 36,000 hectares of land. Investigations later reported that the project area was also used to launder illegally harvested timber transported from forests beyond the

reservoir, illustrating how environmental impacts can extend well outside the area directly flooded by a dam.

The Kamchay hydropower dam in Kampot province flooded approximately 2,000 hectares of forest inside Bokor National Park, affecting protected habitats and reducing local communities' access to forest resources.

What are the alternatives?

Building new hydropower dams is not the only way to increase renewable electricity generation.

Two experts suggested solar and wind farms, floating solar at hydroelectric sites, and upgrading existing hydropower dams.

Vietnam offers one example. In 2025, Vietnam Electricity completed an expansion of the Hoa Binh Hydropower Plant, adding two new generating units that increased the plant's capacity by 480 megawatts. Because the expansion used the existing dam and reservoir, it did not require flooding additional land or clearing new forests.

By comparison, the 480 MW added at Hoa Binh is more than triple the 150 MW capacity of the new Stung Tatay Leu dam currently being built inside the

Central Cardamom Mountains National Park. While the Hoa Binh upgrade required minimal new land clearing, five new dams under construction in the Cardamoms will collectively damage over 15,000 hectares of protected forest.

Courtney Weatherby, deputy director for the Energy, Water, and Sustainability Program at the Stimson Center cautioned that the comparison has limits. “The potential will vary significantly by dam, and frankly it’s hard to estimate without a detailed technical analysis,” she said.

In general, older dams offer the clearest upgrade opportunities, but Cambodia’s hydropower fleet is comparatively young. “It may be difficult to pursue significant power improvements through simply upgrading existing power facilities,” Weatherby said.

Weatherby said floating solar could also be built on hydropower reservoirs, citing existing examples such as Thailand’s Sirindhorn Dam and Vietnamese projects.

Building solar farms on hydropower reservoirs could reduce evaporation and complement dry-season power generation. In some cases, peak solar production could rival the capacity of the existing dam, she said.

An independent expert who declined to be named due to conflicting interests with his current work said such floating solar arrangements could be paired with pumped-storage, meaning electricity from the peaks of solar generation could be used to fill additional water reservoirs, and released when demand exceeded production.

He said this "basically turns the dam into a large battery" and, because it uses existing infrastructure, "many of the negative impacts of dam construction" could be avoided. Weatherby, however, cautioned that such projects must be "carefully sited and operated" to avoid impacts on rivers and fisheries.

The independent expert also suggested simply building more solar, though it has the downside of uneven power generation depending on how much the sun is out. "Solar farms are cheaper, can be installed on already degraded land or floating on lakes and ponds, even those connected to hydroelectric projects and are far less destructive to communities and nature."

He added that the changing climate in Cambodia was making hydropower less reliable, and economic changes — such as a recent crackdown on the country's criminal scam industry — together with poten-

tial alternatives "likely mean many of the 14 planned projects could remain unbuilt."

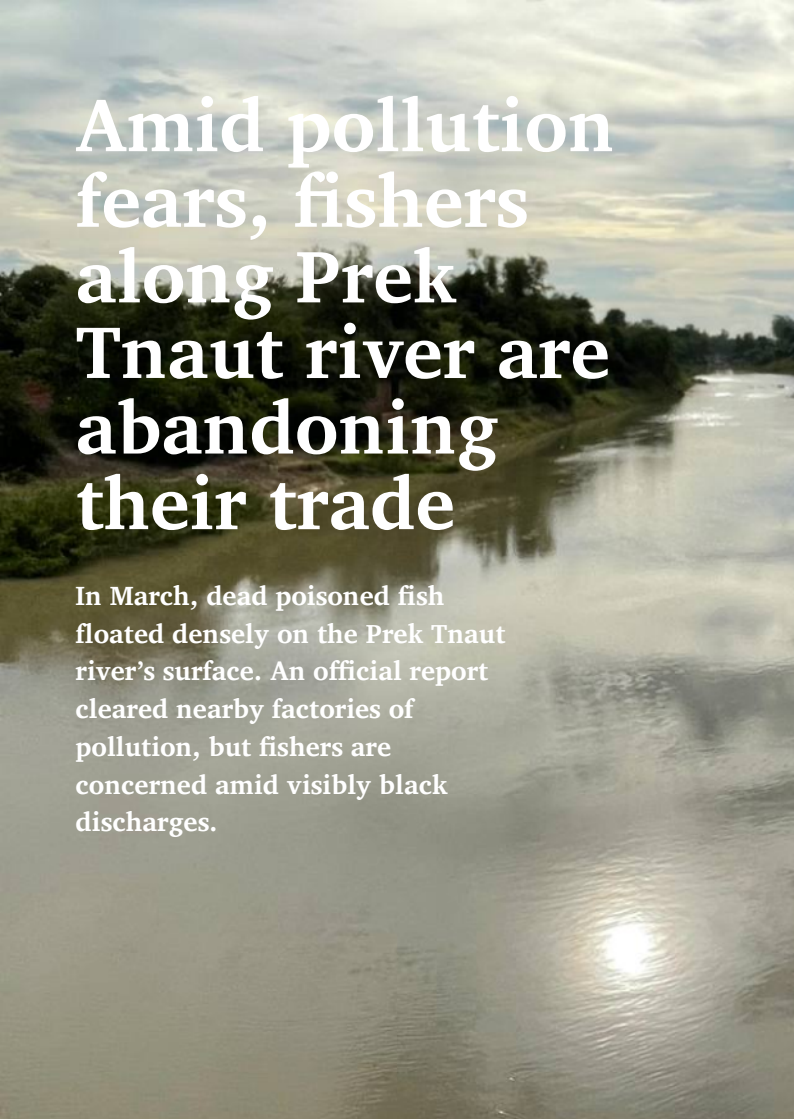
Mekong Independent has contacted Keo Rottanak, Minister of Mines and Energy, for a response.

The Stimson Center's Weatherby said that in the years since the Cambodian master plan was written in 2022, solar deployment had already shot above projections for 2030.

A project for 150 MW of wind was underway and not accounted for in the plan. The war in Iran and the Cambodian-Thai border conflict would also give a greater motive for renewable energy independence.

"This actually echoes a trajectory that was visible in Vietnam: once solar potential was unlocked, investment interest skyrocketed in both solar and energy storage, and it was possible for private sector investments to rapidly expand potential capacity well beyond initial targets," she said.

"Solar/wind/energy storage could make up a larger percentage than was initially considered with robust associated grid investments to accommodate."



Amid pollution fears, fishers along Prek Tnaut river are abandoning their trade

In March, dead poisoned fish floated densely on the Prek Tnaut river's surface. An official report cleared nearby factories of pollution, but fishers are concerned amid visibly black discharges.



Prek Thaut river at Sak Sampov commune, in September 2026. (Kim Chanchav/Mekong Independent)

By Kim Chanchav

In March this year, poisoned fish floated densely on the Prek Tnaut river's surface — stretching from the 7 Makara and Teuk Thla dams all the way to Sak Sampov commune.

Some residents initially took the fish to make prahok fermented fish paste, but the meat was mushy and reeked of chemicals, making it inedible.

Incidents of fish poisoning in the Prek Tnaut River — specifically in areas south of Phnom Penh — have created hardships for local fishermen who rely on the river for their livelihoods.

Some have already given up fishing, while others who continue to fish are forced to seek supplementary employment, as they can no longer rely solely on fishing amid a year-after-year decline in catches.

Though the poisoning incident in March, particularly near Kong Noy and Sak Sampov communes, gained some attention at the time, the actual extent of the affected area is far greater than what has been reported.

Residents interviewed by Mekong Independent stated that the fish poisoning incident was not limited to the two aforementioned communes; poisoned fish were observed as far upstream as the 7 January Dam,

where authorities release water from upstream areas. They noted that such poisoning incidents occur frequently, attributing them to the discharge of toxic substances or wastewater from factories.

Cycles of poisoning

Nguon Sokhoeun, a 50-year-old resident of Sak Sampov village, Sak Sampov commune, Dangkao district, Phnom Penh, hauled his cast net out of the stream along with containers of various sizes for his catch. He remarked that fish poisoning incidents frequently occur when water is released from upstream dams, bringing with it factory waste. This causes the stream water to turn a murky black and releases an odor that drifts into the village.

"Water is released from the dam multiple times a year — sometimes twice, three times, or even more frequently. When a surge of water comes through, it turns pitch black and foul-smelling; the stench wafts all the way here — you can smell it right where you stand, and the odor carries all the way to our homes and the village."

Nguon Sokhoeun still wants to fish in the Prek Tnaut River, even though the catch is inconsistent; on some days, he catches enough to eat with a little left

over to sell for 10,000 or 20,000 riel, while on other days, he catches almost nothing at all.

"If the fish are plentiful, I might catch 5 or 6 kilograms a day — sometimes even more. That is, provided the water isn't too foul. On top of the pollution, the river dredging has dug out deep pits, making the riverbed much deeper and the banks dangerously steep. The spots where I used to cast my nets have all been dredged out."

Chin Mao, 36, a fisherman from Kong Noy commune who has fished in the Prek Tnaut River since childhood, regularly sets his gear there. He notes that in previous years, he would typically start catching fish as early as the beginning of August, but this year, the catch seems increasingly scarce.

The pollution is typically more concentrated when water levels are low during the dry season of roughly November through April, residents say.

Sources of pollution

The Prek Tnaut river originates in the eastern reaches of the Krâvanh (or Cardamom) and Damrei mountain ranges. It flows eastward from the mountains of Kampong Speu province, crosses the elevated plains (at an altitude of approximately 20 meters),



Sum Mien rows his boat along the Prek Tnaut river to set fishing nets in September 2026. (Kim Chanchav/Mekong Independent)

and empties into the Tonle Bassac river south of Phnom Penh.

With a total length of about 232 kilometers and a catchment area exceeding 5,000 square kilometers, the river spans three administrative areas: Kampong Speu province, Kandal province, and Phnom Penh.

Incidents of fish poisoning occurred in 2022 and 2023 along the upstream section of the Prek Tnaut River in Kampong Speu province. Authorities attrib-





A photo of fish death in the Prek Tnaut river in March released by Cambodian authorities. (Supplied) The relative locations of the Prek Tnaut river, factories on its shore, and fish deaths.

uted these incidents to toxic water discharge from mango processing plants located along the river.

The area that saw mass fish deaths in March is near an industrial area in Phnom Penh. In September, factories could be seen discharging black wastewater into canals leading toward the Prek Tnaut river in its upstream section. However, a visual inspection revealed that the water color upstream was actually quite similar to that of the downstream section.

To date, no official has publicly confirmed the specific cause of the pollution. Mekong Independent contacted Khvay Atitya, the Ministry of Environment's spokesperson, seeking an explanation for the fish poisoning and information on potential solutions; however, he did not provide a direct verbal response. Instead, he shared a report detailing the inspection of three specific facilities in the area: a yarn spinning and dyeing factory, a denim washing plant, and a company that treats liquid waste from an animal fur processing plant.

Preliminary analysis of water samples collected from the discharge points by the Ministry of Environment team and local authorities indicated that the water quality met established standards. The Ministry of Environment spokesperson stated that there were

no suspicious findings regarding the discharge of liquid waste from the three aforementioned factories that would indicate pollution of public waterways.

According to the Ministry of Environment spokesperson, water quality near the Phnom Penh Special Economic Zone also showed no significant issues, with a dissolved oxygen level of 4.83 mg/L, complying with standards.

Continued concerns

The three companies that passed the ministry inspections are Global Xilin, Hi Blue and Tak Sun. Tak Sun is a company providing liquid waste treatment services for the animal fur processing plants of Sunjoy and Cipel, according to the official report.

Hi Blue is located right next to the Prek Tnaut river close to where local residents fish, upstream near the Teuk Thla dam.

Global Xilin is located approximately 4-5 kilometers from the fishing area. A small public canal running past the factory in September contained murky water, and a drainage pipe discharging black water.

The Special Economic Zone is located upstream and houses many large factories such as Coca-Cola, Denso and Minebea. A canal also runs through the

area, where a foul odor was present and black discharge could be seen.

Vong Kimhoeun, a resident of Sak Sampov commune, maintains that the fish die-off in the area near his home is caused by the discharge of toxic substances from factories, noting that the small canals carrying factory wastewater contain murky, black water in which aquatic life cannot survive. Regarding this matter, Mekong Independent attempted to contact Chan Yutha, spokesperson for the Ministry of Water Resources and Meteorology, for further information; however, he referred the reporter to Oeung Chantha, the director of the water quality improvement project at the ministry. Unfortunately, the call to Oeung Chantha disconnected immediately after the reporter introduced himself. Meanwhile, Khim Finan, spokesperson for the Ministry of Agriculture, Forestry and Fisheries, could not be reached by phone as of September 20; a message sent via Telegram also remained unanswered.

Beyond the need to ensure fish survival, residents of Sangkat Sak Sampov are urging authorities to intervene and prevent further water pollution. As their area lacks piped clean water, the stream serves as a vital source for daily needs — such as washing dishes


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Caption: Discharge from the Phnom Penh Special Economic Zone, in a public canal, and at the Hi Blue factory in September 2026. (Kim Chanchav/Mekong Independent)

and bathing — especially given that local wells often lack sufficient water.

Fishing is no longer enough

Every morning, Sum Mien, the 63-year-old resident of Krang Svay village, Krang Pongro commune, Dangkao district, Phnom Penh, rows his boat along the Prek Tnaut river to set fishing nets — a livelihood he has pursued for over 40 years since 1985. He spends most of the day on his boat setting more than 10 nets, yet the catch remains meager — often insufficient to support his family — ever since water pollution began causing fish die-offs.

According to Sum Mien, prior to the year 2000, he would set just two or three gillnets and catch so much fish that he could barely sell it all fast enough; nowadays, however, he sets 10 to 15 nets, yet on some days, he struggles to catch even 1 or 2 kilograms. The species he catches include Siamese mud

"When a surge of water comes through, it turns pitch black and foul-smelling."

Nguon Sokhoeun, 50

carp, sicklefin barb, giant sharkminnow, Mekong silver barb, bagrid catfish, and wallago; however, he notes that bagrid catfish and wallago have been absent this year due to water toxicity issues that occurred in late March.

"Fishing nowadays can't compare to the past. Back then — in the 90s and even the 2000s — there was such an abundance of fish that we didn't even know where to sell them all. Now, however, the catch has dwindled; the water quality has deteriorated because of the surrounding factories, and chemical runoff drifts in."



A local resident fishes in the Prek Tnaut river. (Kim Chanchav/ Mekong Independent)

Nguon Sokhoeun stated that he could no longer rely solely on fishing — despite living near the river — due to unstable fish yields. Instead, fishing has become a secondary activity rather than his primary occupation; he also works in construction, farms rice, and raises cattle.

Similarly, Sum Mien, who once utilized a wide variety of fishing gear, has also had to seek work outside of fishing. He turned to selling ice cream from a mobile cart and cultivating crops along the Prek Tnaut River to make ends meet.

He noted that while many residents previously took up fishing as a profession, the number of fishermen has steadily declined due to the continuous drop in fish yields.

“In previous years, around this time — September — fishermen would flock to this river in large numbers; but now, if you look at the reality, they are all gone — there are no fish.”



Storms of climate cha shake remote village

Pheam Ban is being swept up in the extremes and unpredictability of climate change. Locals are turning to old superstitions and fireworks — and education and cooperatives — to try to drive away the storm.



ange

A view of Pheam Ban village as clouds darken and rain approaches, in Kampong Thom province. (Kong Raksmey/Mekong Independent)

By Kong Raksmey

When the wind is strong, Ma An, 73, lights nine sticks of incense.

"I pray. I beat an iron pot. Please, the black tree god, the water god, the land god here, the 120th grandfather. Your children are very afraid."

Ma An lives in Pheam Ban village, a remote, little-visited floating village in Kampong Thom province. During the rainy season, it can only be reached by boat.

She has lived there since she was 17. But in recent years, life in her floating house on Tonle Sap lake has become more frightening. Storms arrive more frequently, and out of season, she said.

"This year's weather is very windy. I am very scared today. My life is also deteriorating."

The village is being swept up in the extremes and unpredictability of climate change. For Pheam Ban commune, this means destructive storms, fewer fish, and lower, dirtier water. Residents are feeling adrift as their world shifts around them, and are searching for ways to prepare.



Grandma Ma An collects trash along the river to support her living since she can't go fishing. (Kong Raksmey/Mekong Independent)

The storm

Chhim Surat, 68, has been a volunteer teacher in Pheam Ban village since 1999.

"This July and August, when the big storms were coming, all the village was crying and trying to make sounds, make noise, and shoot fireworks into the sky to chase the big storms away."

The weather has been extremely volatile; storms strike without warning, and the winds are highly unpredictable, Chhim Surat said. A small boat carrying a mother and daughter tipped over in August when a storm suddenly hit. They were lucky to survive because the water was shallow, she said.

Challenges go beyond the changing climate. Pollution is increasing, and its effects are worse when the water is low.

"The people who live in the floating village find it's harder and harder to live since there's too much chemicals," Chhim Surat said. "It affects the people who use the water to live."

Caption: During the rainy season, villagers move their houses close to big trees and other safe places. They tie their houses to the trees so the storms can't blow them away. (Kong Raksmey/ Mekong Independent)



"When the big storms were coming, all the village was crying and trying to make sounds, make noise, and shoot fireworks into the sky to chase the big storms away."

Chhim Surat, 68

For her, education is the way to improve conditions.

"I keep staying because I hope that I can educate the next generation so they can at least read and understand the right information," she said. "I want to educate the next generation to better understand and protect themselves from the effects of climate change."

According to the Mekong River Commission, the Tonle Sap river's water level at Prek Kdam, southeast of the main lake, was unusually low until August, and as of mid-September remained roughly 10% below average. Forecasts of a severe El Nino this year — a climate pattern that brings extreme weather across the globe — is raising warnings locally.





Schoolchildren from grades 1 to 6 in Pech Krai village are taught by volunteer teacher Chhim Surat. (Kong Raksmey/Mekong Independent)

Stocking up

Phon Sarin, 44, is a fisherwoman and head of a local women's savings group. About 10 women are working together to pool resources and prepare for a lack of fish.

Every year, the Tonle Sap lake expands significantly during the rainy season, flooding forests along its edge, and shrinks again in the dry season. Recently, however, the yearly pattern has been disrupted, with the lake staying low for longer periods. Fish stocks have plummeted.

"It significantly impacts our fishing; when the water rises quickly, we can start fishing sooner, whereas a slow rise leaves us unable to catch anything," Phon Sarin said.

This year has been difficult fishing again, and fishers are having to adapt.

"During the times that we can't find fish, we need to gather and store food for later consumption; we stock up in advance because we know there will be a season when it cannot be found, so we must work hard to save enough," she said.

Phon Sarin started the women's savings group four years ago. Beyond saving and lending money together, the group undertakes joint projects.



Phon Sarin prepares fishing nets. (Kong Raksmey)

They have planted seedlings to try to restore flooded forests, and work on making and selling fermented-fish prahok together.

Knowledge is key for making preparations. But in the commune there was little awareness about a potential extreme weather event arriving in this year's El Nino, Phon Sarin said.





Health

The Lake Clinic, an NGO, has a large boat stationed at Pheam Ban. Staff arrive once a month from Siem Reap on a smaller boat. When the water rises and falls, the floating clinic is moved around the commune.

Doctors stay for three days at a time, treating a wide range of diseases for free in partitions set up on the boat.



The Lake Clinic regularly visits residents in Peam Ban commune for health checkups and medicine distribution. (Kong Raksmey/ Mekong Independent)

Their cases in early September included a series of skin conditions: a baby with a foot infection, an 8-year-old with scarring blisters, and a woman with severe eczema around her eye.

For the clinic, climate change is limiting their access to villages.

“When the water level is really low, we can’t get the big boat there,” said doctor Hun Thourida.

In recent years there have been more months of



It visits at least three villages to provide free health services each time. (Kong Raksmey/Mekong Independent)



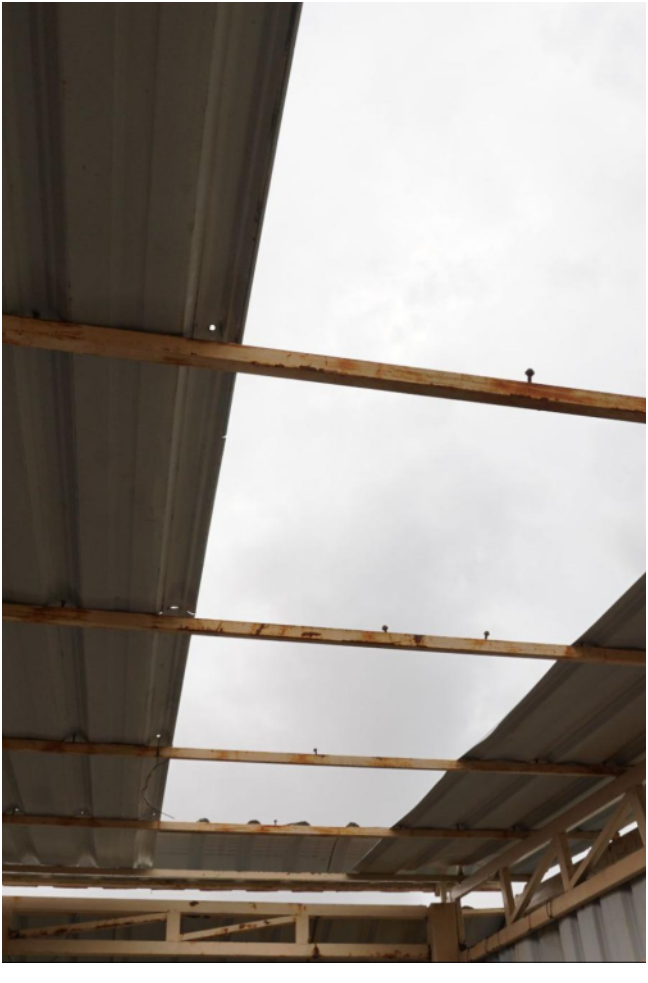
low water, similar to years that saw drought. Sometimes, the doctors are unable to reach a village for three or four months. People can come to them, but transport can be difficult or expensive.

When the lake is low, health issues increase from the muddy water. Residents continue to drink and use it, even as the water becomes more polluted over time.

“A common misconception we hear from them is the belief that the waters of the Tonle Sap are inherently fresh and purifying — that any toxic substance entering the lake is neutralized,” said outreach coordinator Ky Kolyna.

The clinic works to support the community beyond health care. “What we can do is help them prepare effectively — teaching them how to respond when drought strikes,” she said. “TLC’s ultimate goal is to provide support that secures a better future.”

Caption: Phon Sarin brings her nephews and nieces to the Tonle Sap Lake Clinic for free medicine every month to save money and avoid traveling long distances to the hospital. (Kong Raksmey/ Mekong Independent)



The dragon

Ma An, the 73-year-old in Pheam Ban village, lost her husband a year ago. Since then, she has begun collecting plastic waste from the lake to sell to recyclers. She is finding living difficult.

"If I had the opportunity, I would have gone on land," she said. "Whenever I see a dark sky, I feel depressed in my heart."

Bathing in the low, polluted water has made her itch. The storms keep her awake at night. The weather used to be more predictable, she said.

"The dragon descended only in the months of September, October, and November." But this year, until September, "I only have the storm and the wind."

Caption: The roof of a school in Peam Ban commune leaks during a strong storm, with the wind blowing in. (Kong Raksmey/Mekong Independent)