



*Adarsh Shikshan Mandal's*

**KONARK IDEAL COLLEGE OF SCIENCE & COMMERCE**

(Affiliated to University of Mumbai) (Hindi Linguistic Minority College)

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**Ideal Nature Club**  
**Presents**

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- **Proposed Aravalli jungle safari in Haryana challenged in SC**



A proposed safari in the ecologically sensitive Aravalli jungles in Haryana has come under the scanner of the judiciary after environmental activists moved an application before the Supreme Court to shift it, citing adverse impact on the wildlife, ecology and biodiversity in the region.

The application moved by three Haryana-based environmental activists, Vaishali Rana, Vivek Kambhoj and Roma Jaswal, was brought by advocate Gaurav Kumar Bansal before a Supreme Court bench, which exclusively deals with cases related to forests and environment.

The bench of justices BR Gavai, JB Pardiwala and Sanjay Kumar took note of the matter and asked a copy of the application to be given to advocate K Parameshwar who is assisting the Court in forest matters as amicus curiae (friend of court). The Court did not specify a date for hearing the application.

The jungle safari is proposed across an area of 10,000 acres covering 11 villages in Haryana's Gurugram district – Sakatpur, Gairatpur Bas, Nauragpur, Bar Gujjar, Tikri, Ghamroj, Aklimpur, Bhondsi, Alipur, Hariyaheda, Shikohpur and seven villages in the district of Nuh – Kota Khadewla, Gangani, Mohammadpur Ahir, Kharak, Jalalpur, Chehlka, and Bhango.

- **Wildlife department to develop grasslands in Aravallis forests in south Haryana**

Gurugram: To ensure availability of food inside forests during the summer months, the wildlife department has started work to develop grasslands inside the Aravallis forests in south Haryana districts, said officials on Sunday.



The grasslands will be developed in small pockets of land in districts such as Faridabad, Gurugram, Nuh, Rewari and Palwal.

Rajender Parsad Dangi, divisional wildlife officer, Gurugram, confirmed the development and said, “We have started work to develop grasslands in the forests before the summer season so that there is food available inside the forests itself when temperatures start rising. It has been noticed that due to lack of availability of food in summers, wildlife moves to human habitation that leads to man-animal conflict.”

Dangi said that the department has issued tenders for the project and it is likely to cost around ₹20 lakh and work will get completed by the next month. Officials also said that they have started cleaning water holes in the forests to ensure availability of water during the summer months.

“In the past one year, we have developed 25 ponds across the Aravallis forests in Gurugram district. In the whole south Haryana region, around 60 ponds have been

developed in the past few years. From April-May onwards, our staff will check if these ponds have water readily available and if water dries up, we will make sure to fill them with tanker water,” added Dangi.

In December last year, the wildlife department had said that it would dig at least 20 ponds in the Aravallis by March. These ponds have been developed in Faridabad, Gurugram, Nuh, Rewari and Mahendragarh districts.

Officials from the Gurugram wildlife department said that water bodies were developed in the shape of a pan and the boundaries of the ponds were constructed in such a manner that animals were able to approach the watering holes easily. These ponds will be replenished by using water tankers during the peak summer months.

- **Climate tipping points in Amazon, Tibet 'linked': Scientists**



Planet-heating pollution from human activities is raising global temperatures and scientists have said this is pushing crucial ecosystems and whole regions towards often irreversible changes. Climate extremes in the Amazon rainforest are directly affecting those in the Tibetan Plateau, scientists said Thursday, warning that the Himalayan region crucial for the water security of millions was close to a potentially disastrous "tipping point". Planet-heating pollution from human activities is raising global temperatures and scientists have said this is pushing crucial ecosystems and whole regions towards often irreversible changes.

Vulnerable areas include melting polar ice sheets that could cause metres of sea-level rise, as well as the Amazon basin, where tropical forests are at risk of turning into savannah.

But can one tipping point have a domino effect on another region? Recent research suggests this is already happening.

Climate-driven changes in the Amazon basin have knock-on effects on the Tibetan Plateau 20,000 kilometres (12,500 miles) away, scientists in China, Europe and Israel reported in Nature Climate Change earlier this month.

"We've been surprised to see how strongly climate extremes in the Amazon are connected to climate extremes in Tibet," said co-author Jurgen Kurths from Potsdam Institute for Climate Impact Research.

The researchers used global near-surface temperature data over the last 40 years to map out a pathway of climate links. They stretched from South America to Southern Africa, on to the Middle East and finally into the Tibetan Plateau.

In their study, the researchers then used computer simulations to track how global warming might change these long-distance link-ups out to 2100.

They found that when it gets warmer in the Amazon, temperatures also rise in Tibet. But when rain increases in the South American rainforest, snowfall decreases in the Himalayan region, sometimes called the "third pole".

### - 'Tipping cascades' –

Using snow cover data, the scientists also detected what they say are early warnings the Tibetan Plateau has been approaching a tipping point of its own since 2008. The Tibetan Plateau supplies a substantial proportion of the water needs of almost two billion people across South Asia, Southeast Asia and China. Research published in Nature Climate Change last year said climate change could deplete terrestrial water storage over the Tibetan Plateau, which may ultimately threaten water availability downstream.

Other studies have shown a warming trend in recent decades in the region which -- like the Arctic region -- is warming two to three times faster than the global average.

But Kurths said the proximity to a potential point-of-no-return transition had been "overlooked so far".

The researchers said that while their study suggests a heightened risk of "tipping cascades" it was unlikely that the climate system as a whole would flip into a new state. "Yet, over time, sub-continental tipping events can severely affect entire societies and threaten important parts of the biosphere," said co-author Hans Joachim Schellnhuber from PIK.

"This is a risk we should rather avoid."

To avoid the worst impacts of warming, countries have agreed to keep temperatures from rising above the limit of well below two degrees Celsius since the mid-1900s, and preferably below 1.5C.

For that to be achieved, planet-heating greenhouse gas emissions, mainly from fossil fuels, must decline some 45 percent compared to 2020 levels by the end of this decade, and to net zero by mid-century, according to the UN's climate science advisory body.

- **Brazil's top court set to rule in favor of billion-dollar Amazon fund revival**



The fund was frozen after Bolsonaro took office in 2019 and weakened environmental protection measures in the Amazon, arguing that commercial farming and mining were needed in the region to reduce poverty. Brazil's Supreme Court is set to demand that the government reactivate a billion-dollar international fund aimed at protecting the Amazon rainforest as the nation faces rampant deforestation, according to a court statement on Thursday. A majority of the top court's justices decided that the government must take steps within 60 days to reactivate the Amazon Fund, frozen in 2019 when the President Jair Bolsonaro's administration decided to change its governance structure.

Norway paid \$1.2 billion into the fund between 2008 and 2018, resources that were intended to finance sustainability projects and help reduce deforestation in the world's largest rainforest. Germany also donated more than \$68 million.

The fund was frozen after Bolsonaro took office in 2019 and weakened environmental protection measures in the Amazon, arguing that commercial farming and mining were needed in the region to reduce poverty. Deforestation has surged since then, driven by illegal logging and gold mining.

Seven of the judges on the 11-member court determined that changes made to the governance format of the fund were unconstitutional and they ruled that the previous model should be reinstated, according to a statement on the court's website.

The case will continue to be heard on Nov. 3, when a final ruling is expected. The government did not immediately respond to a request for comment.

- **Elon Musk visits Brazil's Bolsonaro to discuss Amazon rainforest plans**



Bolsonaro and Musk appeared in a video transmitted live on the president's Facebook account, standing together on a stage and answering questions from a group of students. Tesla and SpaceX chief executive officer Elon Musk met with Brazil's President Jair Bolsonaro on Friday to discuss connectivity and other projects in the Amazon rainforest. The meeting, held in a luxurious resort in Sao Paulo state, was organized by Communications Minister Fábio Faria, who has said he is seeking partnerships with the world's richest man to bring or improve internet in schools and health facilities in rural areas using technology developed by SpaceX and Starlink, and also to preserve the rainforest.

"Super excited to be in Brazil for launch of Starlink for 19,000 unconnected schools in rural areas & environmental monitoring of Amazon," Musk tweeted Friday morning.

Deforestation in the Brazilian Amazon has surged under Bolsonaro, reaching its highest annual rate in more than a decade, according to official data from the national space agency. Bolsonaro's critics say he is largely to blame, having emboldened loggers and land grabbers with his fervent support for development of the region. Bolsonaro and Musk appeared in a video transmitted live on the president's Facebook account, standing together on a stage and answering questions from a group of students.

"A lot can be done to improve quality of life through technology," Musk told the crowd.

Although none of the students asked about Musk's prospective purchase of Twitter, Bolsonaro said that it represented a "breath of hope."

"Freedom is the cement for the future," he said.



Musk has offered to buy Twitter for \$44 billion, but said this week the deal can't go forward until the company provides information about how many accounts on the platform are spam or bots.

Like Musk, Bolsonaro has sought to position himself as a champion of free speech and opposed the deplatforming of individuals including his ally, former U.S. President Donald Trump.

The meeting with Bolsonaro occurs just five months before the far-right leader will seek a second term in a hotly anticipated election.

- **Deforestation in Brazil's Amazon hits April record, nearly double previous peak**



In the first 29 days of April, deforestation in the region totaled 1,012.5 sq km or 390 square miles, according to data from national space research agency Inpe. Deforestation in Brazil's Amazon surged to record levels for the month of April, nearly doubling the area of forest removed in that month last year -- the previous April record -- preliminary government data showed on Friday, alarming environmental campaigners. In the first 29 days of April, deforestation in the region totaled 1,012.5 sq km (390 sq miles), according to data from national space research agency Inpe. The agency, which has compiled the monthly DETER-B data series since 2015/2016, will report data for the final day of April next week. April is the third monthly record this year, after new highs were also observed in January and February.

Destruction of the Brazilian Amazon in the first four months of the year also hit a record for the period of 1,954 sq km (754 sq miles), an increase of 69%

compared to the same period of 2021 – clearing an area more than double the size of New York City.

Deforestation in the Amazon has soared since right-wing President Jair Bolsonaro took office in 2019 and weakened environmental protection. Bolsonaro argues that more farming and mining in the Amazon will reduce poverty in the region. "The cause of this record has a first and last name: Jair Messias Bolsonaro," said Marcio Astrini, head of Brazilian advocacy group Climate Observatory, in a statement.

Bolsonaro's office directed questions to the ministries of environment and justice. The ministries said in a joint statement the government was making major efforts to fight environmental crimes and that police and environmental authorities were cooperating on an operation to combat deforestation in five Amazon states.

Even with deforestation already on the rise, Climate Observatory said its analysts were astounded by such a high reading in April, which is part of the rainy season when the muddy forest is harder for loggers to access.

Preservation of the Amazon is vital to stopping catastrophic climate change because of the vast amount of climate-warming carbon dioxide it absorbs.

Ane Alencar, science director of the Amazon Environmental Research Institute (IPAM), said she had expected deforestation to keep rising ahead of the October presidential election, like it has in Brazil's past three election years, as officials wary of angering voters generally do less to enforce the law. Still, she called the surge in deforestation last month "absurd."

"It seems that the clearing of forests has become institutionalized in the country as something common, with record after record," Alencar said.

- **Europe's most vital trade route Rhine River at risk due to climate change**

Low waters are becoming more frequent and forcing costly and cumbersome workarounds to keep supply lines open. The Rhine River has been a reliable shipping lane for centuries, helping spawn industrial giants along its banks. But those days are coming to an end, and the scramble is made all the more urgent as Germany's government fails to keep pace. With water regularly receding to levels that impede shipping from late summer through the fall, companies up and down Europe's most important trade route are rushing to adapt, underscoring how the climate crisis is hitting even advanced industrial economies.

BASF SE is re-routing logistics to trains and trucks. Plastics maker Covestro AG has contingency plans that include shifting some production to Belgium. Manufacturers are stockpiling supplies, utilities are storing extra fuel, and freight operators have started overhauling fleets with barges able to navigate shallow water.



The costly and cumbersome workarounds are aimed at avoiding widespread shutdowns due to disruptions in the critical transport artery — a dilemma that’s becoming more frequent as warmer winters mean less snow to maintain levels during dry summer months. After brutal heat waves scorched southern Europe, the river at Kaub, a key waypoint west of Frankfurt, has hit levels this summer that mean some ships could carry only about half of normal capacity. While recent rains have eased the strain, even small changes can have a major impact. A drop of 10 centimeters (four inches) means about 100 fewer tons can be transported per ship, according to Florian Röthlingshöfer, director of Swiss Rhine Ports.

“What we might experience today as the exception will become the norm in the future,” Christoph Heinzelmann, director of Germany’s Federal Waterways Engineering and Research Institute, said in an interview. “With that, more limitations will arise.”

Overhauling the Rhine’s fleet of 8,900 ships for shallow water could total around €90 billion (\$99 billion). And that’s just part of the costs to keep commerce flowing. There’s extra inventories and the space to store them, as well as government plans to reengineer the river, which are slow in coming.

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- **Brazil's Amazon sees worst August wildfire in almost a decade**



National space research agency INPE registered 31,513 fire alerts in the Amazon via satellite in the first 30 days of the month, making it the worst August since 2010. Fires in Brazil's Amazon rainforest surged in August to the highest for the month since 2010, government data showed on Wednesday, surpassing the blazes in August 2019 that drew global attention soon after President Jair Bolsonaro took office.

National space research agency INPE registered 31,513 fire alerts in the Amazon via satellite in the first 30 days of the month, making it the worst August since 2010, when fires totalled 45,018 for the full month.

Most of INPE's Amazon fire alerts in an average year come in August and September – considered the burning season in the region, when rains often subside to let ranchers and farmers often set fire to deforested areas.

Fires in August till 30th are already up 12.3% from August 2021 and roughly 20% above the average for the month in the INPE data series since 1998.

The uptick comes ahead of an October presidential election with leading candidates sharply at odds over destruction of the Amazon rainforest.

The frontrunner, leftist former President Luiz Inacio Lula da Silva, has vowed tougher protection of the Amazon and blasted right-wing incumbent Jair Bolsonaro for letting deforestation of the biome hit a 15-year high.

Experts blame Bolsonaro for rolling back environmental protections in Brazil, opening the way for loggers and ranchers to illegally clear more of the Amazon since he took office in 2019.

Bolsonaro's office and the Environment Ministry did not immediately respond to Reuters requests for comment.

Preliminary data showed that deforestation of the Brazilian Amazon in the first seven months of this year totalled an area roughly seven times the size of New York City – the most for the period in at least six years.

- **Man breathes sigh of relief after park in Amazon breathed its last**



The park stretches for 118,000 hectares, larger than New York City, and lies in the transition zone between the Amazon and drier Cerrado biomes. It is home to the endemic white-fronted spider monkey, a species endangered due to habitat loss. In a move that shocked environmentalists, the government of Brazil's third-largest state has given up a legal fight over protecting a state park in one of the Amazon's most biodiverse areas. The upshot of that decision is that a man responsible for the deforestation of huge swaths of protected land wins with finality a lawsuit against the government. The park will cease to exist. Antonio José Rossi Junqueira Vilela has been fined millions of dollars for deforestation in Brazil and for stealing thousands of hectares (acres) of the Amazon rainforest. Yet it was a company linked to him that filed a lawsuit against the state of Mato Grosso, alleging it had improperly set the borders of the Cristalino II State Park. The park stretches for 118,000 hectares (292,000 acres), larger than New York City, and lies in the transition zone between the Amazon and drier Cerrado biomes. It is home to the endemic white-fronted spider monkey (*Ateles marginatus*), a species endangered due to habitat loss.

In a 3-2 decision, Mato Grosso's upper court ruled that the government's creation of the park in 2001 was illegal because it took place without public consultation.



The state government did not appeal that decision, leaving it to become final. Now the park will be officially dissolved, the government press office confirmed to The Associated Press.

The loss of the park is a measure of how bad things are today for the Amazon. Not only are environmental laws going unenforced, now a court has invalidated a major protected area. Scientists say not only are ecosystems being lost, but massive deforestation is damaging the forest's ability to absorb carbon dioxide, a crucial role it plays for the planet.

Laying waste to the forest

Before he challenged the validity of Cristalino II park, Vilela's presence was already well known there. In 2005, he was fined \$27 million for destroying 11,000 hectares (27,000 acres) of forest inside the protected area, according to local press reports at the time.

In 2016, the Vilela family made headlines in Brazil for being at the center of a landmark enforcement operation against deforestation in the Amazon, known as the Flying Rivers Operation, carried out by the Brazilian environment agency, Ibama, the federal police and the attorney general.

Vilela was also indicted for deforesting 30,000 hectares (74,000 acres) of public forests in Pará state, the equivalent of five Manhattans. Brazil's attorney general called Vilela the worst perpetrator of deforestation the Amazon had ever seen.

Legal proceedings often stretch for many years in Brazil. If convicted in the Pará case, Vilela could be sentenced to more than 200 years in prison. He could be fined more than \$60 million.

Attorney Renato Maurílio Lopes, who has represented both Vilela and an affiliate company, did not respond to messages left by The Associated Press Wednesday and Thursday.

According to researcher Mauricio Torres, a geographer from Pará Federal University, Vilela's family follows the "classic script of land grabbing in the Amazon."

The way to steal land in Brazil is to deforest it and then claim it, he said. "It is through deforestation that the land-robbers concretely mark their ownership of the land and are recognized as 'owners' by other gangs," he wrote to the AP.

According to official data, as of March 2022, Cristalino II had lost some 22,000 hectares (54,000 acres) to deforestation, even though it is a fully protected area. The area destroyed makes up almost 20% of the park.

Mato Grosso, Brazil's largest soybean-producing state, is run by governor Mauro Mendes, a pro-agribusiness politician and ally of far-right President Jair Bolsonaro, who has repeatedly said Brazil has too many protected areas and vowed not to create more of them.

Mendes' state secretary of the environment is Mauren Lazzaretti, a lawyer who made a career defending loggers against criminal charges related to the environment.

During their tenure, Mato Grosso experienced one of the worst environmental disasters in Brazilian history. In 2020, wildfires burned 40% of the state's Pantanal biome, the world's most extensive tropical wetlands. Mendes signed a law Thursday that allows cattle raising in the Pantanal's private preservation areas.

Via email, Mato Grosso's Environment Secretary said it will proceed with the park's dissolution and did not appeal because "it was deemed technically unviable." The office noted that the adjacent Cristalino State Park I is still a protected area and covers 66,000 hectares (163,000 acres) of Amazon rainforest. In a statement, the Mato Grosso Socio-environmental Observatory, a non-profit network, said that the park's extinction sets a "dangerous precedent" and the state government has shown itself incapable of protecting preserved areas. It said it is assessing legal options to maintain Cristalino II.

"The public should not have to pay the price for the omission and incompetence of the state of Mato Grosso," Angela Kuczach, head of the National Network for Conservation Units, told the AP.

- **Deforestation in Brazil's Amazon hits record for first half of 2022**



From January to June, 3,988 square km (1,540 square miles) were cleared in the region, according to national space research agency Inpe. That's an increase of 10.6% from the same months last year and the highest level for that period since the agency began compiling its current DETER-B data series in mid-2015. Deforestation in Brazil's Amazon rainforest reached a record high for the first six months of the year, as an area five times the size of New York City was destroyed, preliminary government data showed on Friday. From January to June,

3,988 square km (1,540 square miles) were cleared in the region, according to national space research agency Inpe.

That's an increase of 10.6% from the same months last year and the highest level for that period since the agency began compiling its current DETER-B data series in mid-2015.

Destruction rose 5.5% in June to 1,120 square km, also a record for that month of the year.

The Amazon, the world's largest rainforest, contains vast amounts of carbon, which is released as trees are destroyed, warming the atmosphere and driving climate change.

Deforestation is creeping deeper into the forest. In the first six months of the year, Amazonas state in the heart of the rainforest recorded more destruction than any other state for the first time.

A Reuters witness on Friday saw several recently deforested areas near the roadway west of Amazonas state capital Manaus, where lush jungle had been turned into expanses strewn with fallen, dried trees.

This year's rising deforestation is also feeding unusually high levels of fire, which are likely to worsen in the months ahead, said Manoela Machado, a wildfire and deforestation researcher at Woodwell Climate Research Center and University of Oxford.

Brazil recorded the highest number of fires in the Amazon for the month of June in 15 years, although those blazes are a small fraction of what is usually seen when fires peak in August and September, according to Inpe data.

Generally, after loggers extract valuable wood, ranchers and land grabbers set fires to clear the land for agriculture.

"If we have high deforestation numbers, it's inevitable that we're going to have high fire numbers as well," Machado said.

"This is extremely bad news."

Experts in Brazil blame right-wing President Jair Bolsonaro for rolling back environmental protections and emboldening loggers, ranchers and land speculators who clear public land for profit.

Bolsonaro's office directed request for comment to the Environment Ministry, which said the government has been "extremely forceful" in fighting environmental crimes.

The ministry said that considering the 12 months through June, Inpe's data showed deforestation declined 3.8% from the same period a year earlier.

Environmentalists are banking on leftist former President Luiz Inacio Lula da Silva, who presided over a steep decline in deforestation during his presidency from 2003 to 2010, winning in October's election for a turnaround in Brazil's environmental policy.

A poll released this week showed Bolsonaro losing to Lula by 19 percentage points in an expected run-off.

Regardless, this year is likely to have high levels of deforestation and fires as loggers and land grabbers seek to capitalize on the weak enforcement ahead of a potential change in government, experts say.

"It's very difficult to be optimistic for the next few months in the Amazon," said Romulo Batista, a forest campaigner for Greenpeace Brazil.

- **Melting of Ladakh glacier could form three glacial lakes: Study**



Glacial lakes are formed when a glacier erodes the land and then melts, filling the depression created by the glacier.

Accelerated melting of the Himalayan Parkachik Glacier in Ladakh could give rise to three glacial lakes with an average depth ranging between 34 and 84 metres, scientists have found.

These lakes could be a potential source of glacial lake outburst floods in the Himalayas, the scientists from the Wadia Institute of Himalayan Geology, Dehradun, said.

Parkachik Glacier is one of the largest glacier in the Suru River valley, which is a part of the Southern Zaskar Ranges, western Himalaya. The Zaskar Range, part of the Himalayas, lies in the union territory of Ladakh.

The glacier's yearly melting rate was 6 times faster between 1999 and 2021 (22 years) than that calculated from 1971 to 1999 (28 years), the scientists found using satellite data to determine its glacial retreat from 1971-2021. The findings are published in the journal *Annals of Glaciology*.

The study attributed the accelerated glacial retreat to ongoing climate warming, which also causes surface morphological or geological changes to glaciers.

Faster glacial retreat, along with surface morphological changes, have been known to result in the forming of new glacial lakes and expansion of existing ones, a potential source of glacial lake outburst floods.

Glacial lakes are formed when a glacier erodes the land and then melts, filling the depression created by the glacier.

In this study, the scientists have identified three potential overdeepening sites for lake formation on the glacier at different elevations. The lake area of each of these lakes could range from 43 to 270 hectares.

They said, however, that the expansion and reduction of these lakes depended on the dynamics of the glacier.

The study's surface ice velocity estimation suggested a slowing down, resulting in an increase of debris cover on the glacier surface, or the ablation zone, it said.

- **Toxic red tide due to algae bloom kills fish, marine life in San Francisco Bay**



Algae blooms produce a toxin that is lethal to fish and other marine life, and as they spread, bacteria in the water start to consume the algae. As it decays, it depletes the water of oxygen, leading the fish to suffocate, Rosenfield said. An unprecedented red tide in the San Francisco Bay Area is killing thousands of fish and other marine life whose carcasses are washing ashore, creating a foul odor that experts say could get worse during this weekend's expected heat wave. At Oakland's Lake Merritt, a popular spot for joggers, walkers and those looking to

be in nature, crews on Wednesday began removing dead crabs, bat rays, striped bass and other fish that began piling up on its rocky shores over the weekend.

### **What caused this mass die-off?**

The fish die-off at Lake Merritt and throughout the Bay Area may be due to a harmful algae bloom that has been spreading in the region since late July, said Eileen White, executive officer of San Francisco Bay Regional Water Quality Control Board.

“We normally have algae blooms during the summertime. But what’s unusual about this one is how large it is and the fact that there are fish kills,” White said. Most algae blooms end after a week or so. But a triple-digit heat wave forecast for the holiday weekend may help the Bay Area's grow even more, White said. She said that reports of dead fish started coming in last week.

“This was a natural occurrence of Mother Nature and so, we don’t know when it’s going to end,” she said.

### **The science behind algae bloom**

A microorganism called *Heterosigma akashiwo* formed a bloom first spotted in the Alameda Estuary, White said. It is present in the bay all the time, but scientists are trying to determine what caused it to spread so far and wide and for so many weeks.

They say a years-long drought has prevented stagnant water from flowing into the ocean and unseasonably warm and sunny weather may be helping the algae spread.

Jon Rosenfield, a scientist with the San Francisco Baykeeper conservation group, said high levels of nutrients like phosphorus and nitrogen in wastewater also drive the growth of algae blooms.

"The only lever that we have to control the problem is to reduce nutrients put into the bay from the 40 wastewater treatment plants that operate around the bay," he said.

### **What causes the red tide?**

Rosenfield said sewage treatment plants are cleaning the water of solid material and bacteria, but they’re not designed to pull out nitrogen and phosphorus.

Treating the water for nutrients would cost billions of dollars, and those costs would be passed on to residents, White said. She said water districts are funding studies to understand the effects of nutrients that have been present in the water since people settled in the area.

“The goal is to make the appropriate regulations based on sound science,” White said. Experts are also trying to determine what exactly is killing the fish.

Algae blooms produce a toxin that is lethal to fish and other marine life, and as they spread, bacteria in the water start to consume the algae. As it decays, it depletes the water of oxygen, leading the fish to suffocate, Rosenfield said.

"Which of those mechanisms is operating here, the toxin or the low dissolved oxygen? We just don't know yet," he said.

### **Algae bloom- now a common occurrence**

Algae bloom has been reported in Contra Costa and Marin counties to the north and San Mateo County to the west. In the South Bay, concentrations of chlorophyll — an indicator of algae density — measured on Aug. 10 were the highest observed in more than 40 years, White said.

In Oakland, people turned to social media to post photos of some of the thousands of dead fish at Lake Merritt, where visitors have started complaining about the stench.

### **'Creating nuisance'**

"It doesn't smell very good right now, so it's a bit of a nuisance," said Graham Webster, who jogs around the lake once or twice a week.

"But the bigger question is what's happening to the lake and the bay? And what's causing it? Is it our fault? Can it be fixed?" he asked.

White said the algae aren't known to be toxic to people, but they can cause skin and eye irritation. Her office is recommending people and pets stay out of any water that looks reddish-brown.

Cely Aquino said she visits Lake Merritt regularly and seeing all the dead fish was sad.

"I saw a lot of the dead fish, and I saw a couple of stingrays that were dead also. It's pretty sad," she said. "But I figure nature it's going to take care of it all."

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# **Ideal Nature Club** **Presents**

## **“AANGAN BOOKLET”**

### **YEAR 2022-2023**

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- **India updates its NDC to tackle climate crisis**



The update was marked via a two-page document uploaded on the United Nations Framework Convention on Climate Change.

New Delhi: India has formally updated its nationally determined contribution (NDC) to fight climate change, confirming to the United Nations apex body that it will reduce the emissions intensity of its Gross Domestic Product (GDP) by 45% from 2005 levels by the year 2030, and to have installed capacity for non-fossil fuel-based power sources equivalent to the country's 50% requirement by 2030. The update was marked via a two-page document uploaded on the United Nations Framework Convention on Climate Change (UNFCCC) website, and represents India's formal commitments to the Paris Agreement, a legally binding international treaty on climate change.

The second quantifiable goal will be implemented with the help of transfer of technology and low-cost international finance, including from Green Climate Fund (GCF), the document states. In other words, it is partially conditional on climate finance from rich nations, senior environment ministry officials said.

The Paris deal seeks to limit global warming to well below 2, preferably to 1.5 degrees Celsius, compared to pre-industrial levels but study after study has shown the actions planned and the pledges made by governments the world over are at present inadequate to meet the goals.

According to India's submission, the new update will "help achieve a long-term goal of reaching net-zero emissions by 2070", although this itself wasn't one of the targets.

The NDC also states that India will put forward and further propagate a healthy and sustainable way of living based on traditions and values of conservation and

moderation, including through a mass movement it called “LIFE– Lifestyle for Environment”.

India also reiterated its goal from the NDC submitted in 2015, which is to create an additional carbon sink of 2.5 to 3 billion tonnes of CO<sub>2</sub> equivalent through additional forest and tree cover by 2030 and to better adapt to climate change by enhancing investments in development programmes in sectors vulnerable to climate change, particularly agriculture, water resources, health and disaster management, as well as in the Himalayan and coastal regions.

The declaration adds that will mobilise domestic and new and additional funds from developed countries to implement the above mitigation and adaptation actions in view of the resource required and the resource gap, and will build capacities, create domestic framework and international architecture for quick diffusion of cutting edge climate technology in India and for joint collaborative R&D for such future technologies.

“India’s NDC is ambitious, and it is a significant contribution towards achieving the goals of the Paris Agreement. Environmentally sustainable, low carbon initiatives are underpinning all key sectors of the Indian economy,” it states, adding: “India reaffirms its commitment to the UNFCCC and the Paris Agreement on Climate Change.”

The NDC clarifies that no change in the other sections or text or otherwise of the document containing the existing first NDC is proposed at this stage. “India reserves the right to provide further updates by way of additional submissions on its NDC, as and when required.”

The NDC has been submitted with a cover letter by Bhupender Yadav, the Union environment minister, which is addressed to Ibrahim Thiaw, acting executive secretary, UNFCCC. It states: “India’s NDC do not bind it to any sector specific mitigation obligation or action. India’s goal is to reduce overall emissions intensity and improve energy efficiency of its economy over time and at the same time protecting the vulnerable sectors of economy and segments of our society.”

“It is good that two of the Panchamrit targets announced in Glasgow are now formally included in the NDC update. Our modeling shows that India can be confident about achieving these updated NDC targets and more. At a time of global energy volatility, India’s commitment to expanding renewable energy is reassuring,” said Ulka Kelkar, director of the Climate Program at World Resources Institute.

In its last NDC sent to UNFCCC in 2015, the commitments comprised eight targets for 2021-2030, including reducing the emissions intensity of its GDP by 33- 35% by 2030 from the 2005 level; achieving about 40% cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030 with the help of transfer of technology and low-cost international finance; and creating an additional carbon sink of 2.5- 3 billion tonnes of CO<sub>2</sub> equivalent through additional forest and tree cover by 2030”.

Other targets pertained to sustainable lifestyles, climate adaptation, and climate friendly growth.

“Out of these, India achieved an emission intensity reduction of 24% back in 2016. The next update on emissions intensity is expected early in 2023 when the next Biennial Update Report will be submitted to UNFCCC. India’s non-fossil installed capacity is 41%. Our target was 40% by 2030,” added a second environment ministry official, detailing India’s performance on the earlier NDC. This person admitted that India is lagging behind on achieving the carbon sink target.

Speaking at the Glasgow climate summit on November 1 last year, PM Modi announced that India’s non-fossil energy capacity would reach 500 GW by 2030, meeting 50% of the country’s energy requirements by then.

Modi also added in Glasgow that such ambitious action would be impossible without adequate climate finance from developed nations, calling on rich countries to make \$1 trillion available as climate finance “as soon as possible.”

HT had reported on Thursday that the process of NDC submission to UNFCCC will be completed well before a September 23 deadline of the United Nations Framework Convention on Climate Change (UNFCCC) for NDCs to be analysed for a report to be published by the UNFCCC secretariat later this year, officials added.

The NDC synthesis report measures the impact of NDCs submitted to understand the current emissions trajectory and assess whether the world is on track to meet the Paris Agreement goals.

The previous synthesis report released on September 17 last year found, based on NDCs submitted until last year, that greenhouse gas emissions for 2030 would be 59.3% higher than in 1990, 46.2% higher than in 2000, 28.1% higher than in 2005, 16.3% higher than in 2010, 8.2% higher than in 2015 and 5.0% higher than 2019. The total GHG emission level resulting from implementation of the unconditional elements of the NDCs is projected to be 7.8% higher in 2030 than in 2019. But as per the Intergovernmental Panel on Climate Change’s findings, CO<sub>2</sub> emissions need to decline by about 45% from the 2010 levels by 2030 and reach net zero by around 2050 in order to keep global warming under 1.5 degree C warming level.

In other words, the last synthesis report showed countries were not doing enough to meet the Paris Agreement goal.

“The pledge retains the headline long-term goal of reaching net zero by 2070, which is now re-cast as a long-term goal. The updated NDC has the virtue of simplicity. It resolves what were unclear and confusing statements in the Glasgow Panchamrit announcement,” said Navroz Dubash, professor at the Centre for Policy Research, a think tank.

“For example, a confusing pledge on reduction of 1 billion tonne by 2030, without mention of a baseline or whether this is cumulative, has disappeared. It also

streamlines the pledge on renewable and non-fossil fuel energy, by boiling down what were two somewhat confusing pledges, one in percentage terms and one in GW capacity terms, into one clear pledge. No one should shed any tears for these confusing and unclear pledges that have been discarded,” he added.

“But what does this add up to in terms of India’s contribution to the climate challenge? First, the carbon intensity pledge of 45% reduction below 2005 levels by 2030 will likely require deep structural changes in the Indian economy to de-link carbon and GDP. Current policies may achieve this target but to exceed it will require additional policies...

“According to our analysis in Ideas for India, India’s emissions intensity has been dropping steadily compared to other countries even though India is at a lower level of GDP. On electricity, the updated NDC commitments are clearer but marginally less stringent than before, but the real benchmark of progress is domestic policy, which goes further than the international pledge...

“The updated pledge states ‘about’ 50% cumulative installed electricity capacity from non-fossil sources by 2030. This replaces a dual pledge of 50% renewable energy by 2030 and 500GW non-fossil capacity in the Panchamrit,” the professor added.

“There are two implications of this change. First, the new pledge is marginally less stringent because the 50% now refers to all non-fossil fuel sources (including nuclear) while the Panchamrit referred to only renewable electricity. Moreover, the specific 500GW number has been dropped, which could be seen as a limitation, but also avoids unduly locking the country into an absolute capacity target; a percentage articulation provides some flexibility to ramp up renewable energy based on future requirements...

“Second, and more salient, domestic policies and actions go further than the updated NDC pledge. As of today, India is already at 40% non-fossil fuel capacity, and the Central Electricity Authority has projected that just solar and wind (even excluding hydro) could amount to 50% of capacity by 2030, which, if realised, would exceed the updated NDC which includes all non-fossil fuel sources. Moreover, India already has a domestic target of 450GW renewable energy capacity, which serves as a domestic analogue to the now-removed Panchamrit 500GW non-fossil pledge. Most significant, India already has in place provisions to require that 43% of renewable electricity be purchased from renewable sources (including hydro) by 2030 in the form of a renewable portfolio obligation. This generation-based policy goes beyond anything in the updated NDC or the Panchamrit -- it requires going beyond building new capacity, to actively manage the use of thermal versus renewable power,” he added.

“India’s formal NDC submission after cabinet’s approval cements its leadership position in the international climate discourse. As India moves towards COP27, it has started to carve a position of offence to corner the developed world for its unambitious climate actions and lack of financial support to the developing world,” said Vaibhav Chaturvedi, fellow, Council on Energy, Environment and Water (CEEW).

- **Amazon tribe film themselves in Nat Geo documentary, “The Territory”**



"The Territory," to be released by National Geographic on Friday, follows the plight of some 200 hunter-gatherers who live in a protected area of rainforest.

When Covid-19 reached Brazil's Amazon, and an indigenous tribe sealed off its borders, director Alex Pritz found an innovative way to finish his documentary - he handed the cameras over to the Uru-eu-wau-wau themselves.

"The Territory," to be released by National Geographic on Friday, follows the plight of some 200 hunter-gatherers who live in a protected area of rainforest, surrounded and encroached upon by aggressive and illegal settlers, farmers and loggers.

While shown in the movie dressed in traditional garb and honoring ancient customs, the Uru-eu-wau-wau and their young leader Bitate -- the film's main subject -- were more than happy to use modern technology to fight back.

"When Covid happened, Bitate made the really bold decision to say 'Okay, no more journalists coming into our territory, no more filmmakers, no more Alex, no more documentary crew, nobody,'" said Pritz.

"We had to have a conversation with him like, 'Okay, are we done with the film? Do we have everything we need? Is there more? Should we start editing?'"

"Bitate was really clear: 'No, we're not done. We still have a lot left to do. You guys weren't done before, why should you be done now?'"

"Just send us better cameras, send us audio equipment, and we'll shoot and produce the last part of the movie."

The result was a "co-production model" in which an Uru-eu-wau-wau filmmaker is credited as cinematographer, and the community more broadly acted as producers with a share of profits and a say in business decisions about the film's distribution.

Besides enabling filming to continue into the pandemic, Pritz believes the decision to provide equipment and training directly to the Uru-eu-wau-wau benefited the film by adding a "firsthand perspective" on the group's activities, which include patrolling the land to arrest interlopers.

"I shot a bunch of surveillance missions myself. None of them made the cut!" said Pritz.

"Not because we wanted to transfer the filmmaking... it was more raw, it was more urgent."

### - 'Digital children' -

Even before Pritz's crew arrived, the Uru-eu-wau-wau had become adept at using the power of modern technology and media to champion their cause, positioning themselves on the global stage as guardians of a forest whose survival is bound up in issues of climate change and biodiversity.

Bitate and this younger generation within the Uru-eu-wau-wau are digital children. He's born in the late 90s. He's on Instagram. And that's part of how he engages with the world," said Pritz.

When drones capturing stunning and harrowing footage of vast deforestation appear early in the documentary, many audiences assume they belong to the filmmakers, said Pritz.

But in fact, the flying cameras were bought and are operated by the Uru-eu-wau-wau themselves.

"Whereas it would have taken four days to walk over a mountain range of thick, dense, old-growth rainforest... with the drone, you're there in 30 minutes, you have images tagged with metadata," said Pritz. "People can't argue with that."

It is a stark contrast to the farmers and settlers, who are also central subjects of the film.

In astonishing footage, the documentary follows one group as they brazenly chainsaw and set ablaze protected forest, illegally clearing space for roads to territory they one day wish to settle and claim as their own.

Access was possible because many settlers see themselves as heroic pioneers, speaking in interviews to Pritz about opening up the rainforest for the good of



their nation -- a heady mix of "Wild West" cowboy culture borrowed from American movies, and nationalist propaganda stoked by Brazilian President Jair Bolsonaro.

"The settlers were these naive people who had no understanding of the historical context of their actions, the ecological consequences, what they were doing for the rest of the planet," said Pritz.

For the settlers, many of whom lack education or any other economic opportunities, "it was just about 'me and mine,' 'just this one little plot,' 'if only I can get this.'"

Whereas Bitate has this expansive outlook. He's thinking about climate change. He's thinking about the planet. He's politically savvy, media-oriented.

- **Race to find unknown reptiles, mammals, trees, more before Amazon is destroyed**



The largest rainforest on Earth, still largely unexplored by science, is assailed by deforestation for farming, mining and illegal timber extraction. In a remote part of the Brazilian Amazon, a scientific expedition is cataloguing species. Time is of the essence. "The rate of destruction is faster than the rate of discovery," says botanist Francisco Farronay, of the National Institute of Amazonian Research (INPA), as he cuts into the bark of an enormous tree and smells its insides.

"It is a race against time."

The largest rainforest on Earth, still largely unexplored by science, is assailed by deforestation for farming, mining and illegal timber extraction.

According to a MapBiomas study last year, the Amazon lost some 74.6 million hectares of native vegetation -- an area equivalent to the entire territory of Chile -- between 1985 and 2020.

The destruction accelerated under the government of far-right President Jair Bolsonaro, accused by environmentalists of actively encouraging deforestation for economic gain.

The rainforest is considered vital to curbing climate change for its absorption of Earth-warming CO<sub>2</sub>.

Since 2019, when Bolsonaro took power, average annual deforestation in the Brazilian Amazon increased by 75 percent compared to the previous decade, according to official figures.

### - 'Science denialism' -

"Most plant species in the Amazon are to be found in encroached areas," said Alberto Vicentini, another member of the expedition launched by Greenpeace.

It is estimated that "we do not know 60 percent of the tree species, and every time an area is deforested, it destroys a part of the biodiversity that we will never know," said the INPA scientist.

For their research in this remote part of the northern Brazilian state of Amazonas, the team of took a plane from Manaus, flying over hundreds of kilometers of green forest cut by meandering rivers, to Manicore.

From there, a five-hour boat trip by river for a weeks-long expedition to collect plant samples and observe animal behavior, for which they installed cameras and microphones.

The group includes experts in mammals, birds, amphibians, reptiles and fish, trees and flowers. But it is a tough time to be a scientist in Brazil, they say.

"We are living in a moment of science denialism, as we saw with the pandemic in Brazil," with Bolsonaro railing against masks and vaccines, said Vicentini.

"Research institutions in Brazil are under attack by the policies of this government, universities are suffering many cuts," he added.

A sheet of newspaper used by one of the botanists in the group to press a flower has the headline: "Increase in wood extraction in Amazonas" with a photo of two trucks leaving the rainforest loaded with logs.

"There are places where no one has ever been, we have no idea what is there," said INPA biologist Lucia Rapp Py-Daniel.

"Without the resources to investigate, we do not have the necessary information to even explain why we have to conserve" the area, she said.

Resources have been dwindling for a decade -- another phenomenon that has sped up under Bolsonaro, according to critics.

In May, Brazil's two main scientific societies, the Brazilian Academy of Sciences (ABC) and the Brazilian Society for the Advancement of Science (SBPC) warned

that funding for scientific research in the country would be cut by almost 3.0 billion reais (about \$560 million) this year.

"We should accelerate the pace of research in the face of the destruction, but instead we are slowing down," says Py-Daniel.

- **Intensified and prolonged cyclones result of climate change: Scientists**



Cyclone Mocha is predicted to make a disastrous landfall in Bangladesh and western Myanmar with wind speeds reaching up to 175 kmph. Scientists on Friday said that cyclonic storms in the Bay of Bengal and the Arabian Sea are becoming more intense and lasting longer due to climate change. The researchers attribute the increase in the global mean temperature to the changes in the cyclogenesis, particularly over the Indian Ocean. According to a study titled 'Changing status of tropical cyclones over the North Indian Ocean', the Arabian Sea saw a significant increase in the intensity, frequency, and duration of cyclonic storms and very severe cyclonic storms during the period of 1982 to 2019.

The study found a 52-per cent increase in the frequency of cyclonic storms in the Arabian Sea during the recent epoch (2001–2019) while there was an 8 per cent decrease in the Bay of Bengal.

"Cyclones nowadays can retain their energy for quite a long number of days. One example of this trend was Cyclone Amphan, which continued to travel over land as a strong cyclone and resulted in massive devastation. As long as oceans are warm and winds are favourable, cyclones will retain their intensity for a longer period," said Roxy Mathew Koll, a climate scientist at the Indian Institute of Tropical Meteorology and a lead author of Intergovernmental Panel on Climate Change (IPCC) reports.

**camp in Bangladesh**

Cyclone Mocha, which rapidly intensified into a very severe cyclonic storm, is predicted to make a disastrous landfall in Bangladesh and western Myanmar with wind speeds reaching up to 175 kmph. The World Meteorological Organization has warned of violent winds, floods, and possible landslides in Bangladesh, and inundations of low-lying areas in Myanmar.

According to the Ministry of Earth Sciences' report titled 'Assessment of Climate Change over the Indian Region', climate model simulations project a rise in tropical cyclone intensity (medium confidence) and precipitation intensity (medium-to-high confidence) in the North Indian Ocean basin.

The report compared pre-1950 and post-1950 periods and found the number of severe cyclonic storms rose from 94 to 140 (a 49 per cent increase) in the Bay of Bengal region and from 29 to 44 (a 52 per cent increase) in the Arabian Sea region annually.

Despite three consecutive years of La Nina conditions, 58 per cent of the ocean surface experienced at least one marine heat wave in 2022. In contrast, only 25 per cent of the ocean surface experienced a marine cold spell, the WMO said.

Global mean sea level is at a record high, having risen by 4.62 mm per year from 2013 to 2022, double the rate between 1993 and 2022.

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- **Brazilian ecologists try new approach against deforestation, poverty in Amazon**



The goal is ambitious, counter the forces that have destroyed 10% of the forest in less than four decades and create something that can be replicated. In a remote corner of the Amazon, Brazilian ecologists are trying to succeed where a lack of governance has proved disastrous. They're managing a stretch of land in a way that welcomes both local people and scientists to engage in preserving the world's largest tropical forest.

The goal is ambitious, counter the forces that have destroyed 10% of the forest in less than four decades and create something that can be replicated in other parts of the Amazon.

It began with a four-month expedition along the Juruá River in 2016. Researchers visited some 100 communities that at first sight looked similar: rows of wooden homes on stilts along the water. But they were struck by contrasts in the living conditions.

To understand what they saw, it's important to know that 29% of the Amazon, an area roughly three times the size of California, is either public land with no special protection, or public land for which no public information exists, according to a study by the Amazon Institute of People and the Environment.

These areas have been shown to be more vulnerable to deforestation. Land robbers drive traditional communities off the land and then clear it, hoping the government will recognize them as owners, which usually happens.

"It's very unequal. Inside protected areas, there are many positive things happening, but outside, they seemed to be 40 years behind," João Vitor Campos-Silva, a tropical socio-ecologist, told The Associated Press.

The researchers were aware that the part of the river known as Medio Juruá, near the city of Carauari, has remarkable social organization and people manage its fish and forest products, such as acai, sustainably. The land designation here is

“extractive reserves,” public lands where residents are allowed to fish and harvest some crops.

But outside these reserves, in many places, people take orders from self-appointed landowners, Campos-Silva said. Entire communities are denied access to lakes, even to fish to feed their families. People don’t own the land, and they don’t know who does.

“We started thinking that it might be interesting to design a conservation model based on a basin scale,” where communities could harvest forest produce and fish and protect the forest, instead of moving to the city or resorting to illegal activities, such as unlicensed logging and overfishing.

So they created the non-profit Juruá Institute and purchased a 13 km (8 miles) rainforest property along the Juruá River. It includes about 20 lakes, some with good potential for raising prized pirarucu, the world’s largest freshwater scale fish, which can reach up to 200 kilos (440 pounds).

The goal, Campos-Silva said, is to promote high-quality science, grounded in working together with the region's people.

In the vicinity of the Institute's land there are 12 communities of former rubber-tappers. Brazilians call them “ribeirinhos,” or river people, as distinguished from Indigenous residents.

In the past, the chance to make a living from rubber trees drew their grandparents to the Amazon. Nowadays the main revenue comes from pirarucu. Controlling that fishery has proved to be sustainable, reviving a species that was in decline and generating income without the need to clear the forest, with all that means for loss of biodiversity.

The Amazon rainforest, covering an area twice the size of India, also holds tremendous stores of carbon and is a crucial buffer against climate change. Driven by land-robbers, deforestation surged to a 15-year high in recent years while Jair Bolsonaro, who left office in January, was president. Destruction in the eastern Amazon has been so extensive that it has become a carbon source, rather than a carbon sink.

To involve the riverine communities in governance, the institute set up a steering committee and launched a series of public meetings called “community of dreams,” where people could prioritize the improvements they want most.

To avoid potential gender and age biases, they worked in three groups - women, youth, and men, said Campos-Silva.

The president of the river communities' association, Fernanda de Araujo Moraes, said the main purpose is to prevent river people from moving to Amazon cities, where unemployment among low-skilled people is rampant and violence is widespread, thanks to drug-trafficking.

In her own community of Lago Serrado, where 12 families live in stilt houses, both the women and men listed 24-hour electricity as their top priority. Currently, it's only available three hours a day. The youths chose fishing training.



Moraes believes this kind of collaboration is the fastest route to progress. “We want to improve people’s lives and the Institute wants the same thing,” she said, seated on the floor of her house, tending to her infant daughter. The government, she said, is not always on the same page.

“This is something that doesn’t exist here in the Amazon, it doesn’t exist anywhere in Brazil. If it works, which it will, it will attract a lot of people’s attention,” said resident José Alves de Moraes, in an interview by the lake just behind the community.

Moraes works as a lake keeper, watching for trespassers who might take fish or cut trees. His family hopes to take part in the institute's management of pirarucu fishing, which awaits federal approval.

On the scientific front, the institute has built a houseboat and a wooden house for as many as 20 researchers to spend seasons along the Juruá River. One is studying the uakari monkey. Others are looking at what makes social arrangements successful in the region. They created a program, Forest Scientists, to train local high school students in field collection, data systematization, and how to prepare reports.

The initiative is led by Carlos Peres, an Amazon-born professor of tropical conservation ecology at the University of East Anglia, in the United Kingdom. In April this work, begun as an experiment, got some recognition from a Swiss nonprofit when he and three other scientists won the Frontiers Planet Prize, which comes with \$1.1 million. The money will be reinvested in the project, which has already received support from Synchronicity Earth, National Geographic and Rolex within Perpetual Planet Project.

he winning study used data gathered during that 2016 trip. Co-authored by Campos-Silva and others, it found communities living inside protected areas enjoy better access to health care, education, electricity, and basic sanitation, plus a more stable income, than communities in undesignated areas. They found only 5% of adults inside protected areas aspire to move to a city, compared with 58% of adults in unprotected areas.

The article argues that in tropical countries with limited resources, it is possible to achieve conservation and benefit local communities at the same time, by putting more power in their hands.

Peres, the Institute's scientific director, says it hopes to inspire solutions across the Amazon region, by integrating traditional knowledge with the science of Western models.

“We do not have all the answers,” he said. “But we have the audacity to try to advance on these issues.”

- **‘Enhanced rock weathering’ can help combat climate change: Report**



Enhance rock weathering increases the contact area between rainwater and rock, consequently facilitating greater carbon removal. The natural rock weathering process, while effective in breaking down carbon and storing it within rocks over thousands of years, may not provide the immediate solution to combat climate change. With the urgency of the situation, waiting millions of years might not be feasible as our planet continues to accumulate greenhouse gases without significant mitigation efforts. One potential solution is “enhanced rock weathering” which aims to accelerate the natural process. This technique involves grinding a substantial quantity of rocks into fine powder to maximize their surface area, which is then spread over the ground. By increasing the rate of weathering, the enhanced process holds the potential to capture and store carbon more rapidly. According to a *BBC report*, scientists affiliated with the United Nations have warned that simply reducing greenhouse gas emissions will not suffice to prevent perilous levels of global warming. They emphasised the need to actively remove carbon dioxide from the atmosphere.

### **How does ‘enhanced rock weathering’ help remove CO<sub>2</sub>?**

Over millions of years, carbon dioxide in the atmosphere has been combining with rainwater, forming carbonic acid. This natural process occurs when the acid falls on mountains, forests, and grasslands. As a result, the carbon dioxide interacts with rocks and soil, undergoing mineralisation and secure storage in the form of carbonate.

Enhanced rock weathering takes advantage of this phenomenon by utilizing finely crushed rock particles. This increases the contact area between rainwater

and rock, consequently enhancing the weathering process and facilitating greater carbon removal.

UNDO, a pioneering company, aims to expedite the process of rock weathering by applying crushed basalt rock onto farmland.

The company focuses on reducing the timescale required for the process, condensing it from millions of years to mere decades. Once the reaction between carbon dioxide and the weathered rock takes place, the resulting greenhouse gas is sequestered and securely stored for thousands of years.

How does the process help crop and soil?

Enhanced weathering, achieved through the application of nutrient-rich rocks to soil, offers multiple benefits. It not only facilitates carbon dioxide storage but also improves crop yields by providing essential nutrients like phosphorus and potassium.

Furthermore, it enhances soil fertility, nutrient availability, and reduces the dependence on fertilizers. The process also aids in ocean restoration by reducing ocean acidification through the release of bicarbonate ions. Additionally, weathering products increase soil water retention, assisting plants during drought conditions.

- **Asia heatwave '30 times more likely' due to climate change**



The record breaking humid heat wave that hit India; Bangladesh; Laos and Thailand in April were made at least 30 times more likely by climate change. The record breaking humid heat wave that hit east and north India; Bangladesh; Laos and Thailand in April were made at least 30 times more likely by climate change, a rapid attribution analysis said on Wednesday. The analysis by an international team of scientists with the World Weather Attribution group said a highly

vulnerable population was subjected to a deadly combination of high heat and humidity which amplified the impacts in early summer this year.

Large populations across South Asia during a 4-day period between April 17 and 20 were exposed to a heat index or ‘feels like’ temperature of over 41-degree C and some areas particularly in Laos recorded heat index of over 54-degree C which can be deadly, scientists said. WWA’s report coincided with a statement issued by World Meteorological Organisation on Wednesday cautioning that there is a 66% likelihood that the annual average global temperature between 2023 and 2027 will be more than 1.5-degree C above pre-industrial levels for at least one year.

India and Pakistan also experienced a severe heat spell last March and April. The 2022 heatwave is estimated to have led to around 90 deaths across India and Pakistan; triggered an extreme Glacial Lake Outburst Flood in northern Pakistan; forest fires in India; reduced India’s wheat crop yields; power outages that impacted millions of people. WWA scientists had said the climate crisis had made such an event 30 times more likely. On Wednesday they said while India experienced a dry heat episode last year, this year it was in more humid, coastal regions of the country.

This April, parts of south and southeast Asia experienced an intense heatwave spell, with record-breaking temperatures that passed 44-degree C over east India; 42-degree C in Laos and 45-degree C in Thailand. The heat caused widespread hospitalisations, damaged roads, sparked fires and led to school closures. The number of deaths remains unknown, scientists said.

In Bangladesh, Dhaka observed the highest maximum temperature recorded in decades of 40.6-degree C on April 15. In India, several northern and eastern cities recorded maximum temperatures above 44-degree C on April 18. Thailand recorded its highest ever temperature of 45.4-degree C on April 15 in the city of Tak. The Sainyabuli province in Lao PDR reported 42.9-degree C on April 19 as its all-time national temperature record. Vientiane, the capital of Lao PDR, recorded 41.4-degree C on April 15, the hottest day ever for the capital. On the same day, Luan Prabang in Lao PDR reported 42.7-degree C.

The analysis states that there was a sudden surge in heat strokes, electricity demand, around 13 casualties and about 50-60 hospitalisations due to heat stroke were reported in Navi Mumbai, Maharashtra on April 16. Other sources mention 650 hospitalisations. Casualties were also reported from Thailand. “The true cost to human lives will only be known months after the event. In India, in the states of West Bengal, Tripura and Odisha, schools closed three weeks earlier than planned due to the heat. In addition, a large number of forest fires occurred during the same time in India, Thailand and Lao PDR,” the analysis said on Wednesday. Scientists from India, Thailand, France, Australia, Denmark, Germany, Kenya, the Netherlands, the US and the United Kingdom collaborated to assess how the climate crisis made such a heat spell in April more likely. Using peer-reviewed

methods, available datasets, scientists analysed how climate change altered the likelihood and intensity of the 4-day April heatwave event. They measured the impact of the heat spell as a heat index which integrates temperature and humidity. The analysis released on Wednesday has not yet been peer reviewed but is expected to go through peer review soon.

Due to the high humidity conditions during the heatwave, heat index values are higher than the actual temperatures. The team excluded the dry, semi-arid region that runs parallel to the Western Ghats where humidity is low in the pre-monsoon season for a clear assessment. The heat index values found by the team exceeded the threshold considered as “dangerous” (41-degree C) over the large parts of the South Asian regions studied this year. In a few areas, it was in “extremely dangerous” category (above 54-degree C) under which the body temperature is difficult to maintain, scientists said.

To decipher the influence of climate change on extreme heat, based on the 1.2-degree C warming in average global temperatures, the team combined observations and models which shows there is an increase in likelihood of such an event to occur by at least a factor of 30 over India and Bangladesh due to current warming levels. At the same time, a heatwave with a chance of occurrence of 20% in any given year over India and Bangladesh is now about 2-degree C hotter in terms of heat index than it would be without global warming. In India and Bangladesh, the likelihood of this April’s event reoccurring would increase by about a factor of 3 between now and reaching 2-degree C global warming, meaning that such an event could be expected every 1-2 years, the analysis said. The impacts of climate change on exacerbating heat are not uniform and vary greatly based on the region, scientists said. “Last year’s spring heat spell was largely a dry event. Its impact on crops was more but impact on human health was comparatively less. This year however the impact on health was more because it was humid heat. These regions are continuing to see very high temperatures. We are seeing an increase in both kinds of heat events- prolonged dry heat and extreme humid heat,” said Mariam Zachariah from the Grantham Institute, Imperial College London, UK who is a co-author of the analysis during a briefing.

“Frequency and severity of heat waves have been increasing over the country over the past few decades. Due to climate change, the water vapour holding capacity has increased and so, humidity levels are also expected to increase. But we have no study yet that we can refer to for increase of humidity over different regions,” said M Mohapatra, director general, IMD. There is a 66% likelihood that the annual average global temperature between 2023 and 2027 will be more than 1.5-degree C above pre-industrial levels for at least one year. There is a 98% likelihood that at least one of the next five years, and the five-year period as a whole, will be the warmest on record, WMO cautioned on Wednesday.

“This report does not mean that we will permanently exceed the 1.5-degree C level specified in the Paris Agreement which refers to long-term warming over many years. However, WMO is sounding the alarm that we will breach the 1.5-degree C level on a temporary basis with increasing frequency,” said WMO Secretary-General Petteri Taalas in a statement.

“A warming El Niño is expected to develop in the coming months and this will combine with human-induced climate change to push global temperatures into uncharted territory. This will have far-reaching repercussions for health, food security, water management and the environment. We need to be prepared,” said Taalas.

There is only a 32% chance that the five-year mean will exceed the 1.5-degree C threshold, according to the Global Annual to Decadal Climate Update produced by the United Kingdom’s Met Office, the WMO lead centre for such predictions. The chance of temporarily exceeding 1.5-degree C has risen steadily since 2015, when it was close to zero. For the years between 2017 and 2021, there was a 10% chance of exceedance.

### **Who feels the heat?**

Scientists who are part of WWA flagged that social vulnerability particularly religion, caste, gender, migration, and living conditions are critical when it comes to impact of extreme heat on people. “People are still recovering from disasters of covid, of extreme heat episodes of last year, of cyclones and extremely hard to recover or adapt because of the increased frequency of disasters. Age, gender, caste, hierarchy all determine how people are able to access certain resources. For example, the large number of informal settlements in areas affected by the April heat wave has an impact on whether accessed resources such as healthcare, cooling etc. Similarly, occupation also plays a central role such as street vendors and agricultural labourers who are out in the heat,” said Emmanuel Raju from Department of Public Health, Global Health Section & Copenhagen Centre for Disaster and co-author of the analysis.

Factors such as air pollution, the urban heat island effect, and wildfires further compound health impacts, particularly among the most vulnerable populations, scientists said.

There are a range of solutions to heat-related harms from the individual to the regional level. India among Bangladesh, Laos and Thailand has the most advanced heatwave planning presently. Solutions, such as self-protective action, early warning systems for heat, passive and active cooling, urban planning, and heat action plans can be effective at reducing fatalities and other negative impacts, the analysis said adding that people vulnerable in situations of extreme heat typically include the elderly, those with pre-existing medical conditions such as cardiovascular disease or diabetes, pregnant and breastfeeding women, those taking certain medications, and those with mental health considerations.

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