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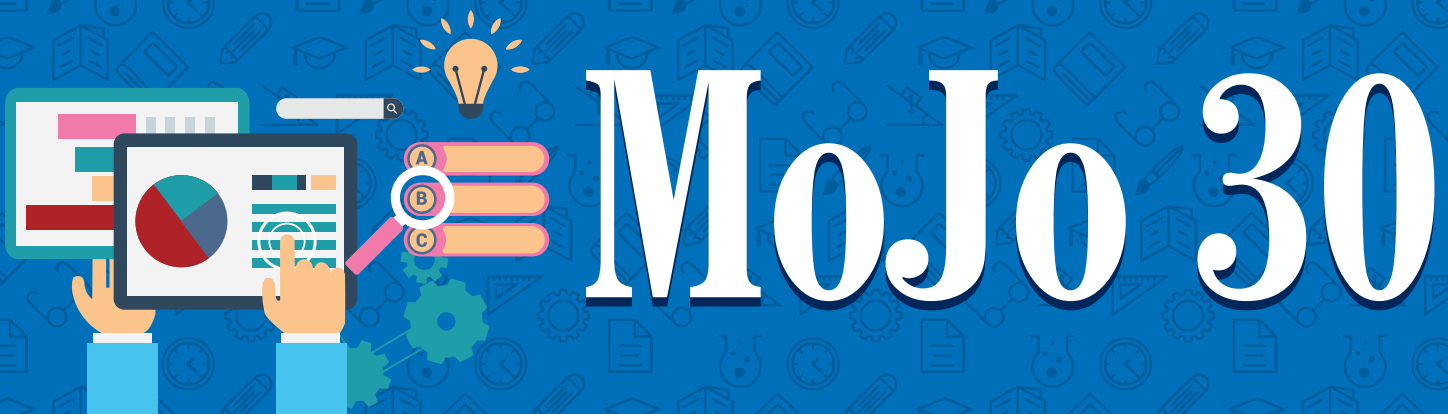
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STUDY BLAMES CLIMATE CHANGE FOR 37% OF GLOBAL HEAT DEATHS

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

A general view of a lake running dry on a hot summer day near Ajmer on June 2, 2019. | Photo Credit: [AFP](#)

More than one-third of the world's heat deaths each year are due directly to global warming, according to the latest study to calculate the human cost of climate change.

But scientists say that's only a sliver of climate's overall toll — even more people die from other extreme weather amplified by global warming such as storms, flooding and drought — and the heat death numbers will grow exponentially with rising temperatures.

Dozens of researchers who looked at heat deaths in 732 cities around the globe from 1991 to 2018 calculated that 37% were caused by higher temperatures from human-caused warming, [according to a study](#) published Monday in the journal *Nature Climate Change*.

That amounts to about 9,700 people a year from just those cities, but it is much more worldwide, the study's lead author said. “These are deaths related to heat that actually can be prevented. It is something we directly cause,” said Ana Vicedo-Cabrera, an epidemiologist at the Institute of Social and Preventative Medicine at the University of Bern in Switzerland.

The highest percentages of heat deaths caused by climate change were in cities in South America. Vicedo-Cabrera pointed to southern Europe and southern Asia as other hot spots for climate change-related heat deaths. Sao Paulo, Brazil, has the most climate-related heat deaths, averaging 239 a year, researchers found.

About 35% of heat deaths in the United States can be blamed on climate change, the study found. That's a total of more than 1,100 deaths a year in about 200 U.S. cities, topped by 141 in New York. Honolulu had the highest portion of heat deaths attributable to climate change, 82%.

Scientists used decades of mortality data in the 732 cities to plot curves detailing how each city's death rate changes with temperature and how the heat-death curves vary from city to city. Some cities adapt to heat better than others because of air conditioning, cultural factors and environmental conditions, Vicedo-Cabrera said.

Then researchers took observed temperatures and compared them with 10 computer models simulating a world without climate change. The difference is warming humans caused. By applying that scientifically accepted technique to the individualized heat-death curves for the 732 cities, the scientists calculated extra heat deaths from climate change.

“People continue to ask for proof that climate change is already affecting our health. This attribution study directly answers that question using state-of-the-science epidemiological methods, and the amount of data the authors have amassed for analysis is impressive,” said Dr. Jonathan Patz, director of the Global Health Institute at the University of Wisconsin.

Patz, who wasn't part of the study, said it was one of the first to detail climate change-related heat deaths now, rather than in the future.

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Diplomatic Affairs Editor Suhasini Haidar discusses the search for SARS-CoV-2's origin and the lab-leak theory

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RARE BIRD OF CHINA CLICKED IN INDIA

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

Last November, Gurugram-based wildlife photographer Rajeev Dasgupta hit the jackpot when he got the first photographic evidence of the rare subspecies of male Koklass pheasant (*Pucrasia macrolopha meyeri*) near the Helmet top in Walong, Arunachal Pradesh.

Earlier, a few birders had caught a flitting glance in April-May 2015, and later in January 2021. But there had been no definitive evidence as the elusive, reclusive bird is not easy to photograph. The previous birders had recorded their observations about the rare subspecies only verbally on the eBird website.

Avibase, the world bird online taxonomic database, and books such as *Birds of the Indian Subcontinent* by Richard Grimmet, Carol and Tim Inskipp and *Birds of South Asia: The Ripley Guide* mention Koklass pheasant as a resident bird of the Western Himalayas. Of the nine subspecies identified across the world, four are found in the states of Uttarakhand, Jammu and Kashmir and Himachal Pradesh in India. The male subspecies — meyeri — had not been not recorded outside China and Tibet. The bird bears a distinctive golden ring around the neck and its emerald green head distinguishes it from the female. While the bird has been declared extinct in Tibet now, the golden ring is not seen in the other subspecies found in India.

On November 22, 2020, Dasgupta got lucky enough to get a clear shot of the bird. “It is not one of my best photographs,” he says, “because the bird was perched on a pine tree 500 metres away. Not only was the distance long, there was no place to fix the tripod either.” He then climbed down a steep valley to reduce the distance between him and the rare catch by 200 metres. Hiding behind the trees, he finally found a narrow gap between him and the bird and clicked with his Canon 1D X Mark2 held in hand.

“Initially, the bird stay put, oblivious of my presence. When I tried to get closer, I stepped on a twig, accidentally. With that soft crackling sound, the bird flew away immediately,” he recalls.

Binanda Hatiboruah, a well known birding guide from the Northeast who has been taking birders to Walong since 2011, is the happiest. “I go into the Walong forests at least six times a year but had never seen this bird. On this trek, when I heard the prolonged ‘keek-kew-kok-kok’ throaty territorial call of the Koklass pheasant, I told Dasgupta to quickly take a photo,” he says over a phone call from Assam. “And he gave us a lifer in the year of pandemic and lockdown!”

“While reviewing the images, we noticed the golden ring near the bird's neck, which was not there in my earlier images of Koklass pheasant taken in Uttarakhand. I checked with ornithologist Neerav Bhatt, and Pravin Jayadevan, the editor of *Indian Birds*, who confirmed this was indeed the rare male subspecies,” says Dasgupta.

Dasgupta is now writing a paper on his experience of sighting the rare subspecies and hopes to get it published in *Indian Birds* or the *Bombay Natural History Society Journal*.

Delhi-based ornithologist Sarwandeep Singh says though people know about the existence of Koklass pheasant, since the subspecies has not been mentioned in popular literature and guides for lack of evidence, Dasgupta's photographic documentation is a rare record.

He says Koklass pheasants are not known for migration and are essentially residential birds of mid-altitude dense forests in the Himalayas. The easternmost town in India, Walong is roughly

20 km south of the China border, so there is a possibility that the birds may have flown as part of general shift in their geographical location. It can be assumed that the subspecies may be residing in Walong's terrain but not spotted as hunting is rampant in that area. "You have to be lucky to photograph the shy bird in dense foliage and from that distance," he says.

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LAST RESORT: THE SEEDS KEPT SAFE IN A SOUTH KOREAN MOUNTAIN

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

This picture taken on May 21, 2021 shows the exterior of the Seed Vault Centre at the Baekdudaegan National Arboretum in the southeastern mountainous county of Bonghwa, as the centre head Lee Sang-yong (2nd L) interviews with AFP. | Photo Credit: [AFP](#)

Hidden in a South Korean mountain tunnel designed to withstand a nuclear blast, the seeds of nearly 5,000 wild plant species are stored for safekeeping against climate change, natural disaster and war.

Plant extinction is progressing at an alarming rate, researchers warn, driven by increasing human population, pollution and deforestation, even before many species are catalogued.

The Baekdudaegan National Arboretum Seed Vault Centre preserves nearly 100,000 seeds from 4,751 different wild plant species to ensure they are not lost to "apocalyptic events", says its head Lee Sang-yong.

It is one of only two such facilities in the world, he told *AFP*: unlike more commonplace seed banks, where samples are stored and regularly withdrawn for various purposes, deposits in seed vaults are meant to be permanent, with use intended only as a last resort to prevent extinction.

The vault is designated as a security installation by South Korea's National Intelligence Service, surrounded by wire fences and dozens of cameras, with restrictions on filming in place and police patrolling on a regular basis.

Inside, a lift leads about eight floors down to a cavernous concrete tunnel, where two heavy steel doors guard the storage room and its hand-cranked shelving racks, kept at minus 20 degrees Celsius to preserve the seeds and 40 percent humidity to keep them viable.

The vault's samples are largely of flora from the Korean peninsula, but with a capacity of two million seeds, the South makes its space available to other countries, with Kazakhstan and Tajikistan among those to have taken up the offer.

Depositors retain ownership of their samples and control over withdrawals.

But Lee pointed out: "The seed vault stores seeds to prevent their extinction, so the best scenario would be that the seeds never have to be taken out."

Despite its doomsday-defying role, it was built by a country that in 1950 was invaded by the neighbouring North, and Pyongyang has since developed a nuclear and missile arsenal.

The facility was built in the "safest spot" in South Korea, Lee said, designed to withstand a 6.9-magnitude earthquake and even an atomic strike.

"It's geographically very safe," Lee said. "And we paved a 46 metre-deep underground tunnel to ensure it's safe from war and nuclear threats."

The world's biggest and best-known seed vault is buried deep inside a former coal mine on

Svalbard, a remote Arctic Norwegian archipelago around 1,300 kilometres from the North Pole.

What's inside the Svalbard Global Seed Vault ?

Dubbed the "Noah's Ark" of food crops, the Global Seed Vault focuses on agricultural and related plants, storing more than one million seed samples from nearly every country on the planet.

But researchers say preserving the seeds of wild plants — the original source of the crops we eat today — should not be overlooked.

Many crop relatives in the wild that could provide genetic diversity to help long-term food security "lack effective protection", according to a recent U.N. report.

It warned that farming was likely to be less resilient against climate change, pests and pathogens as a result, adding: "The biosphere, upon which humanity as a whole depends... is declining faster than at any time in human history."

Wild plants hold promise as future medicines, fuels and food, said the Royal Botanic Gardens Kew in a report last year, but around two-fifths of them are threatened with extinction, largely due to habitat destruction and climate change. It was a "race against time" to identify them before they disappeared, it added.

Research on wild plant seeds is "lacking tremendously", said Na Chae-sun, a senior researcher at the Baekdudaegan National Arboretum. She and her team collect samples and carry out a meticulous and extensive process including X-ray tests and trial plantations before seeds are catalogued and stored in the seed vault.

"One might ask why is that wild flower on the kerbside important?" she said. "Our job is to identify these one by one and letting people know how important they are...The crops that we eat today may have come from that nameless flower on the kerbside."

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STRONG POLICIES ON BLACK CARBON CAN SHARPLY CUT GLACIER MELT: WORLD BANK STUDY

Relevant for: Environment | Topic: Environmental Conservation, Sustainable Development, and EIA

Glacial melt can lead to flash floods and soil erosion.

Black carbon (BC) deposits produced by human activity which accelerate the pace of glacier and snow melt in the Himalayan region can be sharply reduced through new, currently feasible policies by an additional 50% from current levels, a study by World Bank (WB) specialists has said.

The research covers the Himalaya, Karakoram and Hindu Kush (HKHK) mountain ranges, where, the report says, glaciers are melting faster than the global average ice mass. The rate of retreat of HKHK glaciers is estimated to be 0.3 metres per year in the west to 1.0 metre per year in the east. BC adds to the impact of climate change.

Full implementation of current policies to mitigate BC can achieve a 23% reduction but enacting new policies and incorporating them through regional cooperation among countries can achieve enhanced benefits, the WB said in the report titled "Glaciers of the Himalayas, Climate Change, Black Carbon and Regional Resilience" released on Thursday.

"BC is a short-lived pollutant that is the second-largest contributor to warming the planet behind carbon dioxide (CO₂). Unlike other greenhouse gas emissions, BC is quickly washed out and can be eliminated from the atmosphere if emissions stop," the publication says. Unlike historical carbon emissions, it is also a localised source with greater local impact.

Some of the ongoing policy measures to cut BC emissions are enhancing fuel efficiency standards for vehicles, phasing out diesel vehicles and promoting electric vehicles, accelerating the use of liquefied petroleum gas for cooking and through clean cookstove programmes, as well as upgrading brick kiln technologies, says the publication, edited by Muthukumara Mani, lead economist, South Asia Region, World Bank. However, with all existing measures, water from glacier melt is still projected to increase in absolute volume by 2040, with impacts on downstream activities and communities.

At a virtual panel discussion on the release of the report, Hartwig Schafer, vice-president, South Asia Region, World Bank Group, said regional integration and collaboration was one way to address the question of melting glaciers. Glacier melt produces flash floods, landslips, soil erosion, and glacial lake outburst floods.

Air temperature

Deposits of BC act in two ways hastening the pace of glacier melt: by decreasing surface reflectance of sunlight and by raising air temperature, the researchers point out.

"Specifically, in the Himalayas, reducing black carbon emissions from cookstoves, diesel engines, and open burning would have the greatest impact and could significantly reduce radiative forcing and help to maintain a greater portion of Himalayan glacier systems. More detailed modelling at a higher spatial resolution is needed to expand on the work already completed," says the study, calling upon regional governments to review policies on water management, with an emphasis on basin-based regulation and use of price signals for

efficiency, careful planning and use of hydropower to reflect changes in water flows and availability, and increasing the efficiency of brick kilns through proven technologies. There must also be greater knowledge sharing in the region.

The WB publication says “Industry [primarily brick kilns] and residential burning of solid fuel together account for 45–66% of regional anthropogenic [man-made] BC deposition, followed by on-road diesel fuels (7–18%) and open burning (less than 3% in all seasons)” in the region.

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HUNDREDS OF LAKES IN U.S., EUROPE ARE LOSING OXYGEN: STUDY

Relevant for: Environment | Topic: Environmental Conservation, Sustainable Development, and EIA

Lake Oroville in Oroville, California. | Photo Credit: [AFP](#)

Oxygen levels have dropped in hundreds of lakes in the United States and Europe over the last four decades, [a new study](#) found. And the authors said declining oxygen could lead to increased fish kills, algal blooms and methane emissions.

Researchers examined the temperature and dissolved oxygen — the amount of oxygen in the water — in nearly 400 lakes and found that declines were widespread. Their study, published Wednesday in the journal *Nature*, found dissolved oxygen fell 5.5 % in surface waters of these lakes and 18.6% in deep waters.

The authors said their findings suggest that warming temperatures and decreased water clarity from human activity are causing the oxygen decline.

“Oxygen is one of the best indicators of ecosystem health, and changes in this study reflect a pronounced human footprint,” said co-author Craig E. Williamson, a biology professor at Miami University in Ohio.

That footprint includes warming caused by climate change and decreased water clarity caused in part by runoff from sewage, fertilizer, cars and power plants.

Dissolved oxygen losses in Earth’s water systems have been reported before. A 2017 study of oxygen levels in the world’s oceans showed a 2% decline since 1960. But less was known about lakes, which lost two to nine times as much oxygen as oceans, the new study's authors said.

Prior to this study, other researchers had reported on oxygen declines in individual lakes over a long period of time. But none of have looked at as many lakes around the world, said Samuel B. Fey, a Reed College biology professor who studies lakes and was not involved in this study.

“I think one of the really interesting findings here is that the authors were able to show that there’s this pretty pronounced decline in dissolved oxygen concentrations in both the surface and (deep) parts of the lake,” Fey said.

The deep water drop in oxygen levels is critical for aquatic organisms that are more sensitive to temperature increases, such as cold water fish. During summer months, they depend on cooler temperatures found deeper in the water, but if deep waters are low on oxygen, these organisms can’t survive.

“Those are the conditions that sometimes lead to fish kills in water bodies,” said study co-author Kevin C. Rose, a professor of biology at Rensselaer Polytechnic Institute. “It really means that a lot of habitats for cold water fish could become inhospitable.”

Other organisms, Rose said, are more tolerant of warmer temperatures found at the surface level and can get enough oxygen by remaining near the surface, where water meets air.

About a quarter of the lakes examined actually showed increasing oxygen in surface waters,

which Rose says is a bad sign because it's likely attributable to increased algal blooms — sudden growth of blue green algae.

In these lakes, he said, dissolved oxygen was “very low” in deep waters and was unlivable for many species. And the sediment in such oxygen-starved lakes tends to give off methane, a potent greenhouse gas, research shows.

Lakes examined in the new study were in the U.S. or Europe, except for one in Japan and a few in New Zealand. The authors said there was insufficient data to include other parts of the world.

Rose said lakes outside the study area probably are experiencing drops in dissolved oxygen, too. The reason, he said, is that warmer temperatures from climate change reduce the ability of oxygen to dissolve in water — its solubility.

“We know that most or many places around the planet are warming,” he said. “And so we would expect to see declining solubility.”

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NITI AAYOG RELEASES SDG INDIA INDEX AND DASHBOARD 2020–21

Relevant for: Environment | Topic: Environmental Conservation, Sustainable Development, and EIA

The third edition of the SDG India Index and Dashboard 2020–21 was released by NITI Aayog today. Since its inaugural launch in 2018, the index has been comprehensively documenting and ranking the progress made by States and Union Territories towards achieving the Sustainable Development Goals. Now in its third year, the index has become the primary tool for monitoring progress on the SDGs in the country and has simultaneously fostered competition among the States and Union Territories.

NITI Aayog Vice Chairperson Dr Rajiv Kumar launched the report titled, *SDG India Index and Dashboard 2020–21: Partnerships in the Decade of Action*, in the presence of Dr Vinod Paul, Member (Health), NITI Aayog, Shri Amitabh Kant, CEO, NITI Aayog, and Ms. Sanyukta Samaddar, Adviser (SDGs), NITI Aayog. Designed and developed by NITI Aayog, the preparation of the index followed extensive consultations with the primary stakeholders—the States and Union Territories; the UN agencies led by United Nations in India; Ministry of Statistics and Programme Implementation (MoSPI), and the key Union Ministries.

“Our effort of monitoring SDGs through the SDG India Index & Dashboard continues to be widely noticed and applauded around the world. It remains a rare data-driven initiative to rank our States and Union Territories by computing a composite index on the SDGs. We are confident that it will remain a matter of aspiration and emulation and help propel monitoring efforts at the international level,” Dr. Rajiv Kumar, Vice Chairman, NITI Aayog said during the launch.

With one-third of the journey towards achieving the 2030 Agenda behind us, this edition of the index report focuses on the significance of partnerships as its theme. Shri Amitabh Kant, CEO, NITI Aayog said, “The report reflects on the partnerships we have built and strengthened during our SDG efforts. The narrative throws light on how collaborative initiatives can result in better outcomes and greater impacts.”

On the theme of partnerships which is central to Goal 17, Dr. Vinod Paul, Member (Health), NITI Aayog, said, “It is clear that by working together we can build a more resilient and sustainable future, where no one is left behind.”

“From covering 13 Goals with 62 indicators in its first edition in 2018, the third edition covers 16 Goals on 115 quantitative indicators, with a qualitative assessment on Goal 17, thereby reflecting our continuous efforts towards refining this important tool,” said Ms. Sanyukta Samaddar, Adviser (SDGs), NITI Aayog.

NITI Aayog has the twin mandate to oversee the adoption and monitoring of the SDGs in the country, and also promote competitive and cooperative federalism among States and UTs. The index represents the articulation of the comprehensive nature of the Global Goals under the 2030 Agenda while being attuned to the national priorities. The modular nature of the index has become a policy tool and a ready reckoner for gauging progress of States and UTs on the expansive nature of the Goals, including health, education, gender, economic growth, institutions, climate change and environment.



From right to left: Dr Vinod Paul, Member (Health); Dr Rajiv Kumar, Vice Chairperson; Shri Amitabh Kant, CEO; and Ms. Sanyukta Samaddar, Adviser (SDGs), NITI Aayog

SDG India Index and Dashboard 2020–21: An Introduction to the Third Edition

The SDG India Index 2020–21, developed in collaboration with the United Nations in India, tracks progress of all States and UTs on 115 indicators that are aligned to MoSPI's National Indicator Framework (NIF). The initiative to refine and improve this important tool with each edition has been steered by the need to continuously benchmark performance and measure progress, and to account for the availability of latest SDG-related data on States and UTs. The process of selecting these 115 indicators included multiple consultations with Union Ministries. Feedback was sought from all States and UTs and as the essential stakeholder and audience of this localisation tool, they played a crucial role in shaping the index by enriching the feedback process with localised insights and experience from the ground.

The SDG India Index 2020–21 is more robust than the previous editions on account of wider coverage of targets and indicators with greater alignment with the NIF. The 115 indicators incorporate 16 out of 17 SDGs, with a qualitative assessment on Goal 17, and cover 70 SDG targets. This is an improvement over the 2018–19 and 2019–20 editions of the index, which had utilised 62 indicators across 39 targets and 13 Goals, and 100 indicators across 54 targets and 16 Goals, respectively.

Monitoring progress of localization: SDG India Index

First comprehensive measure of SDG performance and localisation with national and State/UT ranking

Goal-wise ranking of States/ UTs and overall ranking based on performance on all goals

Promotes competition among the States/ UTs in line with NITI Aayog's approach of competitive federalism

Enable States/ UTs to learn from peers

Supports States/ UTs in identifying priority areas

Highlights gaps in statistical systems

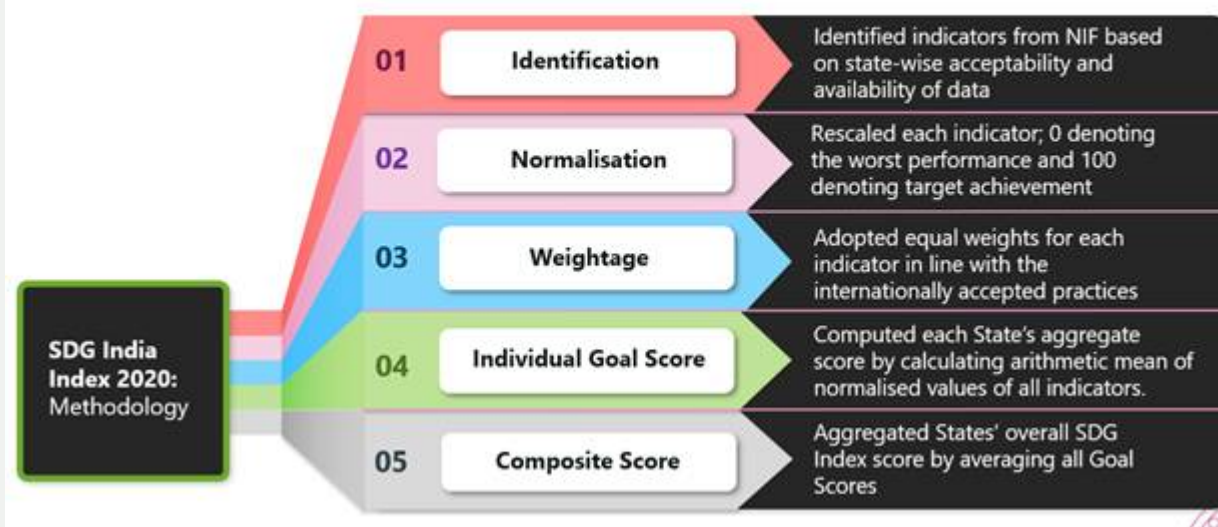
Baseline report – 2018	V2.0 report – 2019-20	V3.0 report – 2020-21
13 goals	16 goals + qualitative analysis on goal 17	16 goals + qualitative analysis on Goal 17
39 targets	54 targets	70 targets
62 indicators	100 indicators	115 indicators
Goal-wise ranking on States/ UTs	Goal-wise ranking on States/ UTs + State/ UT profiles	Goal-wise ranking on States/ UTs + State/ UT profiles
Preceded National Indicator Framework (NIF)	Aligned with NIF: 68 indicators completely aligned, 20 refined, 12 new to cover goals 12, 13, and 14	Aligned with NIF: 76 indicators completely aligned, 31 refined, 8 in consultation with the line ministries

The SDG India Index computes goal-wise scores on the 16 SDGs for each State and Union Territory. Overall State and UT scores are generated from goal-wise scores to measure aggregate performance of the sub-national unit based on its performance across the 16 SDGs. These scores range between 0–100, and if a State/UT achieves a score of 100, it signifies it has achieved the 2030 targets. The higher the score of a State/UT, the greater the distance to target achieved.

States and Union Territories are classified as below based on their SDG India Index score:

Methodology

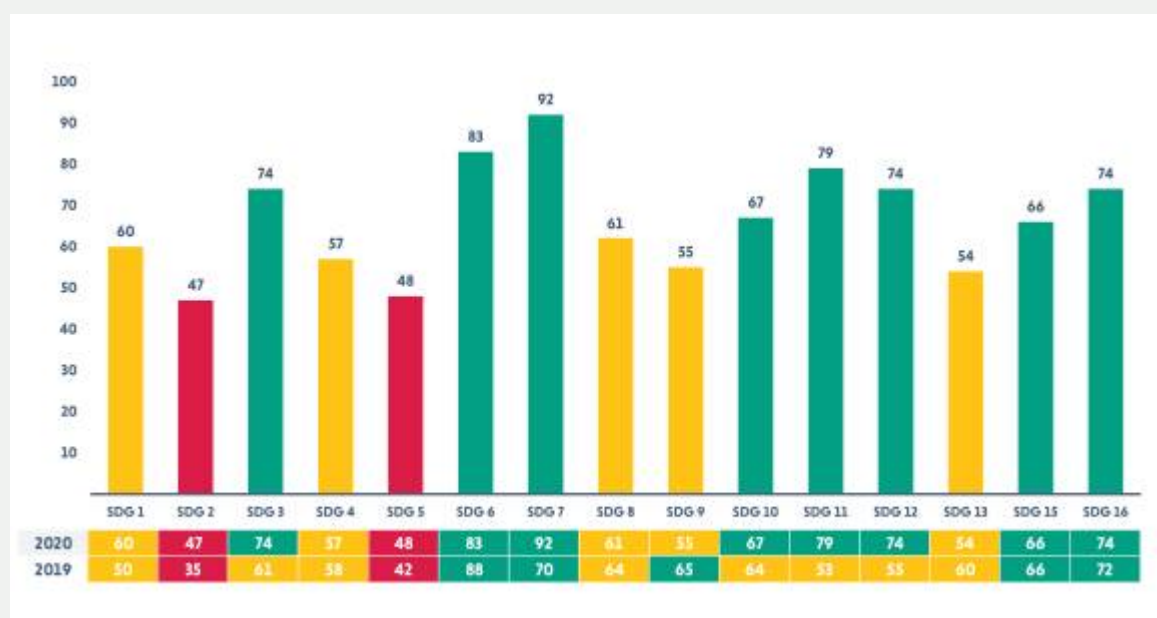
Based on globally accepted SDSN methodology



Overall Results and Findings

The country's overall SDG score improved by 6 points—from 60 in 2019 to 66 in 2020–21. This positive stride towards achieving the targets is largely driven by exemplary country-wide performance in Goal 6 (Clean Water and Sanitation) and Goal 7 (Affordable and Clean Energy), where the composite Goal scores are 83 and 92, respectively.

Goal-wise India results, 2019–20 and 2020–21:



The top-five and bottom-five States in SDG India Index 2020–21:

Top-5 States	75	Kerala
	74	Himachal Pradesh, Tamil Nadu
	72	Andhra Pradesh, Goa, Karnataka, Uttarakhand
	71	Sikkim
	70	Maharashtra
Bottom-5 States	61	Chhattisgarh, Nagaland, Odisha
	60	Arunachal Pradesh, Meghalaya, Rajasthan, Uttar Pradesh
	57	Assam
	56	Jharkhand
	52	Bihar

Performance and Ranking of States and UTs on SDGs 2020–21, including change in score from last year:

Crackly

States



UTS



GOAL-WISE TOP STATES/UTs



Mizoram, Haryana, and Uttarakhand are the top gainers in 2020–21 in terms of improvement in score from 2019, with an increase of 12, 10 and 8 points, respectively.

Top Fast-Moving States (Score-Wise):

State	2019-20 Score	2020-21 Score	Change in Score
Mizoram	56	68	12
Haryana	57	67	10
Uttarakhand	64	72	8

While in 2019, ten States/UTs belonged to the category of Front-Runners (score in the range 65–99, including both) twelve more States/UTs find themselves in this category in 2020–21. Uttarakhand, Gujarat, Maharashtra, Mizoram, Punjab, Haryana, Tripura, Delhi, Lakshadweep, Andaman and Nicobar Islands, Jammu and Kashmir and Ladakh graduated to the category of Front-Runners (scores between 65 and 99, including both).

OVERALL	Aspirant (0-49)	Nil
	Performer (50-64)	Manipur, Madhya Pradesh, West Bengal, Chhattisgarh, Nagaland, Odisha, Arunachal Pradesh, Meghalaya, Rajasthan, Uttar Pradesh, Assam, Jharkhand, Bihar Dadra and Nagar Haveli and Daman and Diu
	Front Runner (65-99)	Kerala, Himachal Pradesh, Tamil Nadu, Andhra Pradesh, Goa, Karnataka, Uttarakhand, Sikkim, Maharashtra, Gujarat, Telangana, Mizoram, Punjab, Haryana, Tripura Chandigarh, Delhi, Lakshadweep, Puducherry, Andaman and Nicobar Islands, Jammu and Kashmir, Ladakh
	Achiever (100)	Nil

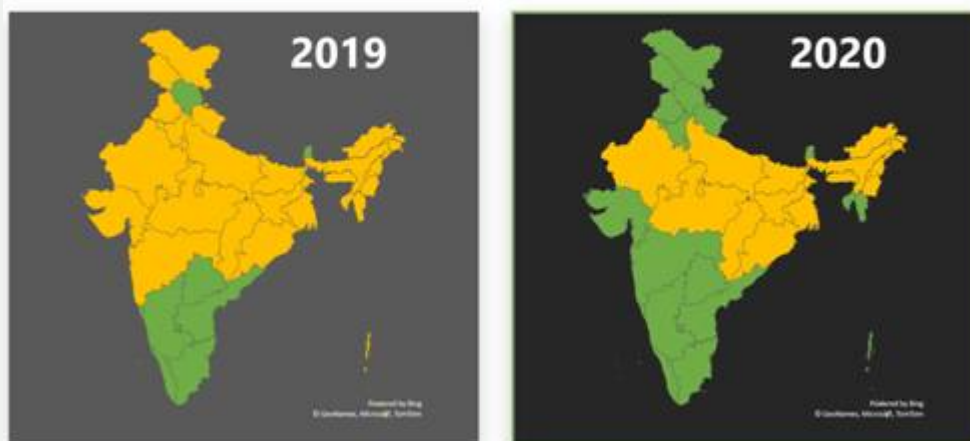
India's Index Score: State/UT Performance (2018 to 2019)

In 2019, 3 states moved from being Aspirants to becoming Performers



India's Index Score: State/UT Performance (2019 to 2020)

In 2020, 12 States/UTs joined the category of Front Runners



A section of the SDG India Index report is dedicated to all the 36 States and UTs of the country. These State and UT profiles will be very useful for policymakers, scholars and the general public, to analyse the performance on the 115 indicators across all Goals.

Sample of a State/UT profile from the report:



It is followed by a unique section on the progress on SDG localisation in States and Union Territories. It provides an update on the institutional structures, SDG vision documents, State and District Indicator Frameworks and other initiatives taken by the State and UT governments.

Progress on SDG Localisation

Area	Parameter	No. of States completed	No. of UTs completed
Vision/Roadmap	SDG vision document	19	2
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Monitoring and reporting	SDG cell/ centre/ team at State level	18	2
	State Indicator Framework	19	3
	District Indicator Framework	10	1
	Block Indicator Framework	2	0
	Dashboard developed	6	1
Budgeting	SDGs linked to budget allocation	10	3
Capacity building	Capacity building/ training of officials	17	3
	Involvement of CSOs/ CSR in awareness generation and capacity building	13	2

The SDG India Index 2020–21 is also live on an online dashboard, which has cross-sectoral relevance across policy, civil society, business, and academia. The index is designed to function as a tool for focused policy dialogue, formulation and implementation through development actions, which are pegged to the globally recognisable metric of the SDG framework. The index and dashboard will also facilitate in identifying crucial gaps related to tracking the SDGs and the need for India to develop its statistical systems at the State/UT levels. As another milestone in the SDG localisation journey of the country, the Index is presently being adapted and developed by NITI Aayog at the granular level of districts for the upcoming North Eastern Region District SDG Index.

A snapshot of the SDG India Index 2020–21 dashboard:



NITI Aayog has the mandate for coordinating the adoption and monitoring of SDGs at the national and sub-national levels. The SDG India Index and Dashboard represents NITI Aayog's efforts in encouraging evidence-based policymaking by supporting States and UTs to benchmark their progress, identify the priority areas and share good practices.



The full SDG India Index report can be accessed here: <https://wgz.short.gy/SDGIndiaIndex>

The interactive dashboard can be accessed here: <http://sdgindiaindex.niti.gov.in/>

DS /AKJ

The third edition of the SDG India Index and Dashboard 2020–21 was released by NITI Aayog today. Since its inaugural launch in 2018, the index has been comprehensively documenting and ranking the progress made by States and Union Territories towards achieving the Sustainable Development Goals. Now in its third year, the index has become the primary tool for monitoring progress on the SDGs in the country and has simultaneously fostered competition among the States and Union Territories.

NITI Aayog Vice Chairperson Dr Rajiv Kumar launched the report titled, *SDG India Index and Dashboard 2020–21: Partnerships in the Decade of Action*, in the presence of Dr Vinod Paul, Member (Health), NITI Aayog, Shri Amitabh Kant, CEO, NITI Aayog, and Ms. Sanyukta Samaddar, Adviser (SDGs), NITI Aayog. Designed and developed by NITI Aayog, the preparation of the index followed extensive consultations with the primary stakeholders—the States and Union Territories; the UN agencies led by United Nations in India; Ministry of Statistics and Programme Implementation (MoSPI), and the key Union Ministries.

“Our effort of monitoring SDGs through the SDG India Index & Dashboard continues to be widely noticed and applauded around the world. It remains a rare data-driven initiative to rank our States and Union Territories by computing a composite index on the SDGs. We are confident that it will remain a matter of aspiration and emulation and help propel monitoring efforts at the international level,” Dr. Rajiv Kumar, Vice Chairman, NITI Aayog said during the launch.

With one-third of the journey towards achieving the 2030 Agenda behind us, this edition of the index report focuses on the significance of partnerships as its theme. Shri Amitabh Kant, CEO, NITI Aayog said, “The report reflects on the partnerships we have built and strengthened during our SDG efforts. The narrative throws light on how collaborative initiatives can result in better outcomes and greater impacts.”

On the theme of partnerships which is central to Goal 17, Dr. Vinod Paul, Member (Health), NITI

Aayog, said, “It is clear that by working together we can build a more resilient and sustainable future, where no one is left behind.”

“From covering 13 Goals with 62 indicators in its first edition in 2018, the third edition covers 16 Goals on 115 quantitative indicators, with a qualitative assessment on Goal 17, thereby reflecting our continuous efforts towards refining this important tool,” said Ms. Sanyukta Samaddar, Adviser (SDGs), NITI Aayog.

NITI Aayog has the twin mandate to oversee the adoption and monitoring of the SDGs in the country, and also promote competitive and cooperative federalism among States and UTs. The index represents the articulation of the comprehensive nature of the Global Goals under the 2030 Agenda while being attuned to the national priorities. The modular nature of the index has become a policy tool and a ready reckoner for gauging progress of States and UTs on the expansive nature of the Goals, including health, education, gender, economic growth, institutions, climate change and environment.



From right to left: Dr Vinod Paul, Member (Health); Dr Rajiv Kumar, Vice Chairperson; Shri Amitabh Kant, CEO; and Ms. Sanyukta Samaddar, Adviser (SDGs), NITI Aayog

SDG India Index and Dashboard 2020–21: An Introduction to the Third Edition

The SDG India Index 2020–21, developed in collaboration with the United Nations in India, tracks progress of all States and UTs on 115 indicators that are aligned to MoSPI’s National Indicator Framework (NIF). The initiative to refine and improve this important tool with each edition has been steered by the need to continuously benchmark performance and measure progress, and to account for the availability of latest SDG-related data on States and UTs. The process of selecting these 115 indicators included multiple consultations with Union Ministries. Feedback was sought from all States and UTs and as the essential stakeholder and audience of this localisation tool, they played a crucial role in shaping the index by enriching the feedback process with localised insights and experience from the ground.

The SDG India Index 2020–21 is more robust than the previous editions on account of wider coverage of targets and indicators with greater alignment with the NIF. The 115 indicators incorporate 16 out of 17 SDGs, with a qualitative assessment on Goal 17, and cover 70 SDG targets. This is an improvement over the 2018–19 and 2019–20 editions of the index, which had utilised 62 indicators across 39 targets and 13 Goals, and 100 indicators across 54 targets and 16 Goals, respectively.

Monitoring progress of localization: SDG India Index

First comprehensive measure of SDG performance and localisation with national and State/UT ranking

Goal-wise ranking of States/ UTs and overall ranking based on performance on all goals	Promotes competition among the States/ UTs in line with NITI Aayog's approach of competitive federalism	Enable States/ UTs to learn from peers
	Supports States/ UTs in identifying priority areas	Highlights gaps in statistical systems

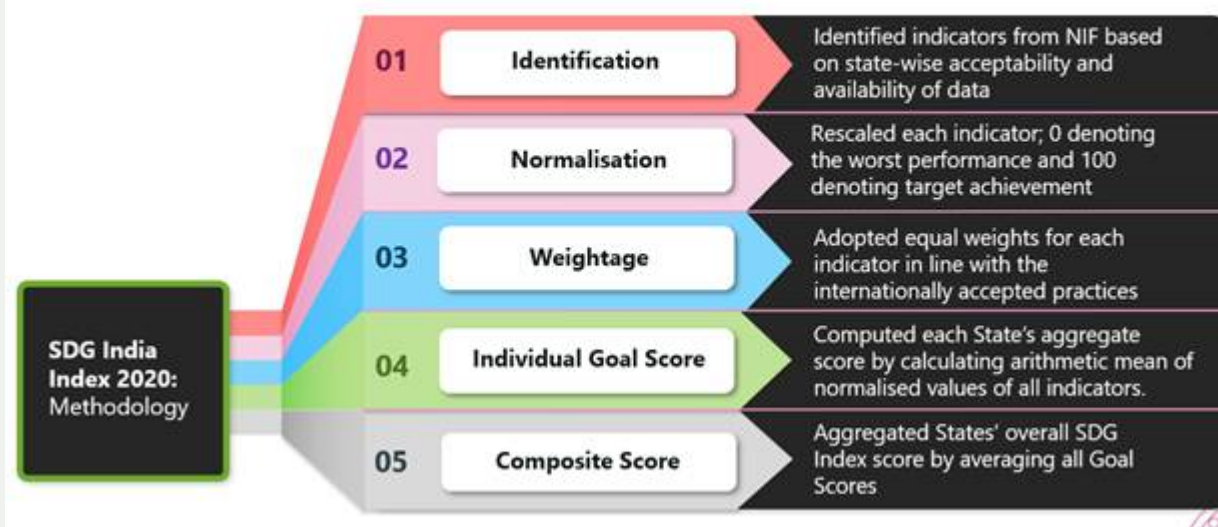
Baseline report – 2018	V2.0 report – 2019-20	V3.0 report – 2020-21
13 goals	16 goals + qualitative analysis on goal 17	16 goals + qualitative analysis on Goal 17
39 targets	54 targets	70 targets
62 indicators	100 indicators	115 indicators
Goal-wise ranking on States/ UTs	Goal-wise ranking on States/ UTs + State/ UT profiles	Goal-wise ranking on States/ UTs + State/ UT profiles
Preceded National Indicator Framework (NIF)	Aligned with NIF: 68 indicators completely aligned, 20 refined, 12 new to cover goals 12, 13, and 14	Aligned with NIF: 76 indicators completely aligned, 31 refined, 8 in consultation with the line ministries

The SDG India Index computes goal-wise scores on the 16 SDGs for each State and Union Territory. Overall State and UT scores are generated from goal-wise scores to measure aggregate performance of the sub-national unit based on its performance across the 16 SDGs. These scores range between 0–100, and if a State/UT achieves a score of 100, it signifies it has achieved the 2030 targets. The higher the score of a State/UT, the greater the distance to target achieved.

States and Union Territories are classified as below based on their SDG India Index score:

Methodology

Based on globally accepted SDSN methodology



Overall Results and Findings

The country's overall SDG score improved by 6 points—from 60 in 2019 to 66 in 2020–21. This positive stride towards achieving the targets is largely driven by exemplary country-wide performance in Goal 6 (Clean Water and Sanitation) and Goal 7 (Affordable and Clean Energy), where the composite Goal scores are 83 and 92, respectively.

Goal-wise India results, 2019–20 and 2020–21:



The top-five and bottom-five States in SDG India Index 2020–21:

Top-5 States	75	Kerala
	74	Himachal Pradesh, Tamil Nadu
	72	Andhra Pradesh, Goa, Karnataka, Uttarakhand
	71	Sikkim
	70	Maharashtra
Bottom-5 States	61	Chhattisgarh, Nagaland, Odisha
	60	Arunachal Pradesh, Meghalaya, Rajasthan, Uttar Pradesh
	57	Assam
	56	Jharkhand
	52	Bihar

Performance and Ranking of States and UTs on SDGs 2020–21, including change in score from last year:

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States



UTS



GOAL-WISE TOP STATES/UTs



Mizoram, Haryana, and Uttarakhand are the top gainers in 2020–21 in terms of improvement in score from 2019, with an increase of 12, 10 and 8 points, respectively.

Top Fast-Moving States (Score-Wise):

State	2019-20 Score	2020-21 Score	Change in Score
Mizoram	56	68	12
Haryana	57	67	10
Uttarakhand	64	72	8

While in 2019, ten States/UTs belonged to the category of Front-Runners (score in the range 65–99, including both) twelve more States/UTs find themselves in this category in 2020–21. Uttarakhand, Gujarat, Maharashtra, Mizoram, Punjab, Haryana, Tripura, Delhi, Lakshadweep, Andaman and Nicobar Islands, Jammu and Kashmir and Ladakh graduated to the category of Front-Runners (scores between 65 and 99, including both).

OVERALL	Aspirant (0-49)	Nil
	Performer (50-64)	Manipur, Madhya Pradesh, West Bengal, Chhattisgarh, Nagaland, Odisha, Arunachal Pradesh, Meghalaya, Rajasthan, Uttar Pradesh, Assam, Jharkhand, Bihar Dadra and Nagar Haveli and Daman and Diu
	Front Runner (65-99)	Kerala, Himachal Pradesh, Tamil Nadu, Andhra Pradesh, Goa, Karnataka, Uttarakhand, Sikkim, Maharashtra, Gujarat, Telangana, Mizoram, Punjab, Haryana, Tripura Chandigarh, Delhi, Lakshadweep, Puducherry, Andaman and Nicobar Islands, Jammu and Kashmir, Ladakh
	Achiever (100)	Nil

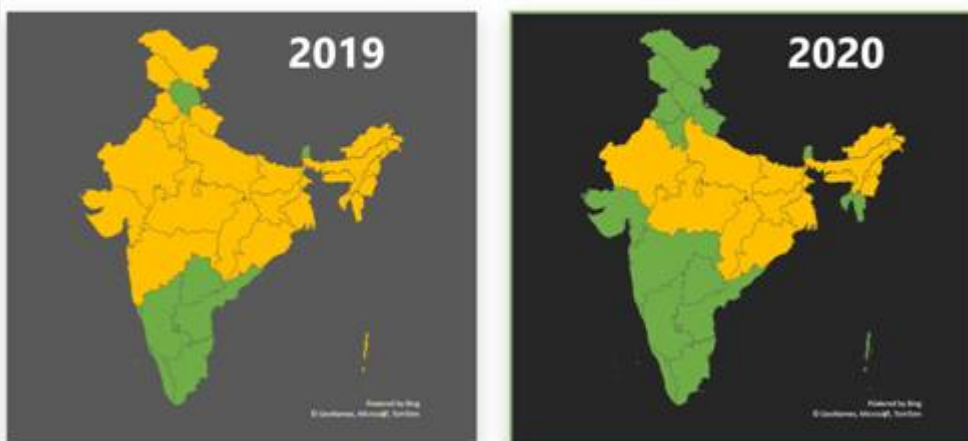
India's Index Score: State/UT Performance (2018 to 2019)

In 2019, 3 states moved from being Aspirants to becoming Performers



India's Index Score: State/UT Performance (2019 to 2020)

In 2020, 12 States/UTs joined the category of Front Runners



A section of the SDG India Index report is dedicated to all the 36 States and UTs of the country. These State and UT profiles will be very useful for policymakers, scholars and the general public, to analyse the performance on the 115 indicators across all Goals.

Sample of a State/UT profile from the report:



It is followed by a unique section on the progress on SDG localisation in States and Union Territories. It provides an update on the institutional structures, SDG vision documents, State and District Indicator Frameworks and other initiatives taken by the State and UT governments.

Progress on SDG Localisation

Area	Parameter	No. of States completed	No. of UTs completed
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Coordination	Mapping of SDG targets with schemes and departments	26	3
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TWO CHEERS: ON INDIA'S SUSTAINABLE DEVELOPMENT GOALS INDEX SCORE

Relevant for: Environment | Topic: Environmental Conservation, Sustainable Development, and EIA

[India's push in the right direction](#) in achieving [Sustainable Development Goals](#) (SDGs) related to clean energy, urban development and health has helped it improve its overall SDG score from 60 in 2019 to 66 in 2021, according to [NITI Aayog's SDG India Index 2020-21](#). Besides SDGs on eradication of poverty and hunger, measures related to the availability of affordable, clean energy in particular, showed improvements across several States and Union Territories. The campaign to improve the access of households to electricity and clean cooking fuel has been shown to be an important factor. While this is cause for cheer, the Index reveals that there has been a major decline in the areas of industry, innovation and infrastructure besides decent work and economic growth, again made worse by the lockdowns imposed by the governments seeking to tackle the COVID-19 pandemic. But the stark differences between the southern and western States on the one hand and the north-central and eastern States on the other in their performance on the SDGs, point to persisting socio-economic and governance disparities. These, if left unaddressed, will exacerbate federal challenges and outcomes, as seen in the public health challenges during the second wave across some of the worse-off States.

Notwithstanding the improvement in key indicators, the Index has curiously made some methodological changes that render comparisons on some SDGs over previous years moot. The SDG on inequality shows an improvement over 2019, but the indicators used to measure the score have changed. The 2020-21 Index drops several economic indicators and gives greater weightage to social equality indicators such as representation of women and people from marginalised communities in legislatures and local governance institutions, and crimes against SC/ST communities. By dropping the well-recognised Gini coefficient measure and the growth rate for household expenditure per capita among 40% of rural and urban populations (instead, only the percentage of population in the lowest two wealth quintiles is used), the SDG score on inequality seems to have missed out on capturing the impact of the pandemic on wealth inequality. This could be a significant miss as a UN assessment of the impact of COVID-19 had said that the South Asian region may see rising inequality. Methodological issues on measuring other SDGs have been flagged before, but the lack of adequate measurement of economic inequality seems to be a glaring miss. Like in the first wave, the second wave, with more fatalities, has had similar outcomes on livelihoods and jobs. While the better score for India in its endeavour to achieve SDGs will bring some cheer, governments must work on addressing pressing issues such as increased inequality and economic despair.

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From the abrogation of the special status of Jammu and Kashmir, to the landmark Ayodhya verdict, 2019 proved to be an eventful year.

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SAVING BIODIVERSITY, SECURING EARTH'S FUTURE

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

On this [World Environment Day](#) (June 5), with the novel coronavirus pandemic raging across our vast country, we must reflect on the ways to rebuild our relationship with nature. India's vast and rich biodiversity gives the nation a unique identity, of which we can be proud. The varied ecosystems across land, rivers, and oceans, feed our people, enhance public health security, and shield us from environmental disasters. Our biodiversity also serves as a perpetual source of spiritual enrichment, intimately linked to our physical and mental well-being.

And while the precise economic value of all ecosystem services provided by biodiversity may not be known, estimates suggest our forests alone may yield services worth more than a trillion rupees per year. Imagine how much greater this value will be with grasslands, wetlands, freshwater, and marine added.

The time to limit global warming is melting away

Sadly, today, we face not only one of the worst public health crises but also worldwide declines in biodiversity. Globally, we have lost 7% intact forests since 2000, and recent assessments indicate that over a million species might be lost forever during the next several decades. Our country is not an exception to these trends.

Climate change and the ongoing pandemic will put additional stresses on our natural ecosystems even though it is becoming clear that repairing our dysfunctional relationship with nature is one of the ways to mitigate climate change and curtail future outbreaks of infectious diseases that can bring unimaginable misery. Thus, preserving biodiversity is directly relevant to the social, economic, and environmental well-being of our people. We must rethink and reimagine the concept of One Health for all living organisms, including the invisible biota in soils that sustain our agricultural systems.

Fortunately, our government is considering major investments in biodiversity science to meet societal needs. In 2018, the Prime Minister's Science, Technology and Innovation Advisory Council (PM-STIAC) in consultation with the Ministry of Environment, Forest, and Climate Change and other Ministries approved an ambitious National Mission on Biodiversity and Human Well-Being (NMBHWP). A Bengaluru-based Biodiversity Collaborative is working with the National Biodiversity Authority to hold consultations and prepare road maps of the Mission that will be steered by a core of the country's leading biodiversity science and conservation organisations, from public, academic, and civil society sectors.

Strong policies on black carbon can sharply cut glacier melt, says World Bank study

The Mission will strengthen the science of restoring, conserving, and sustainably utilising India's natural heritage; embed biodiversity as a key consideration in all developmental programmes, particularly in agriculture, ecosystem services, health, bio-economy, and climate change mitigation; establish a citizen and policy-oriented biodiversity information system; and enhance capacity across all sectors for the realisation of India's national biodiversity targets and United Nations Sustainable Development Goals (UN SDGs).

Furthermore, the Mission will allow India (home to nearly 8% of global biodiversity on just 2.3% of global land area, and containing sections of four of the 36 global biodiversity hotspots) to emerge as a leader in demonstrating linkage between conservation of natural assets and

societal well-being.

The ongoing spread of COVID-19 places this Mission among the most significant national initiatives. The pandemic has exposed the dysfunctional relationship between humanity and nature, and we must urgently address the issues it has laid bare: the emergence of infectious diseases; lack of food and nutritional security; rural unemployment; and climate change, with all its stresses on nature, rural landscapes, and public health. In response to these critical and interrelated issues, the Mission offers a holistic framework, integrated approaches, and widespread societal participation.

Study blames climate change for 37% of global heat deaths

The Mission's comprehensive efforts will empower India to restore, and even increase, our natural assets by millions of crores of rupees. Mitigation programmes will lessen the impacts of climate change and other natural disasters, such as pandemics and floods. We can rejuvenate agricultural production systems and increase rural incomes from biodiversity-based agriculture while also creating millions of green jobs in restoration and nature tourism. Restoration activities across India's degraded lands, which amount to almost a third of our land area, alone could generate several million jobs.

The Mission will help India meet its commitments under the new framework for the Convention on Biological Diversity (CBD), and UN SDGs related to pressing social issues including poverty alleviation, justice and equity, and protection of life. It will generate a strong national community committed to sustaining biodiversity, promoting social cohesion and uniting the public behind an important goal.

Mission programmes will offer nature-based solutions to numerous environmental challenges, including degradation of rivers, forests, and soils, and ongoing threats from climate change, with the goal of creating climate-resilient communities. Scientific inputs, especially related to geospatial informatics and policy, can guide the development of strategies for conservation and ecosystem management.

Also read

Are our leaders awaiting a vaccine for the environment?

Equally important, the Mission's "One Health" programme, integrating human health with animal, plant, soil and environmental health, has both the preventive potential to curtail future pandemics along with the interventional capability for unexpected public health challenges. Additional programmes, directed at food and nutritional security, will in turn also influence public health outcomes.

The planned Mission recognises that we need a strong and extensive cadre of human resources required to meet the enormous and complex environmental challenges of the 21st century. This will require training professionals of the highest calibre in sustainability and biodiversity science, along with an investment in civil society outreach. The gains of environmental change will be upheld and carried forward by the cultural change from environmental education for millions of students, from kindergarten to postgraduate levels.

Editorial | [Regulation redux: On Supreme Court query on an environment watchdog](#)

Finally, biodiversity is everywhere, and we interact with biodiversity all the time in our daily lives. Public engagement, whether it is in the policymaking arena, or in exploration, restoration and

conservation of biodiversity, is a critical component of the planned Mission.

Today, on the heels of the International Day for Biological Diversity celebrated last month, nothing could be more important than to renew our pledge to nurture all life on earth.

Kamal Bawa is President of the Bengaluru-based Ashoka Trust for Research in Ecology and the Environment (ATREE), and currently leads the Biodiversity Collaborative. The views expressed are personal

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THE TIME TO LIMIT GLOBAL WARMING IS MELTING AWAY

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

This is an incredibly difficult time for the world. The world is facing two momentous challenges: COVID-19 and climate change. Both need us to come together globally to find a way forward. [World Environment Day](#) (June 5) is an important moment to take stock on climate change.

[When I was in India](#) earlier this year — my first visit to Asia in my new role — I saw first-hand India's ambitious work on renewable energy, and held vital discussions with government leaders, including Prime Minister Narendra Modi, businesses and civil society. I was inspired by the resolve I saw.

Strong policies on black carbon can sharply cut glacier melt, says World Bank study

India has a strong record on tackling climate change, including impressive domestic targets to have 450GW of renewable energy by 2030, and establishing the International Solar Alliance and the Coalition for Disaster Resilient Infrastructure (CDRI). India played a critical role in delivering the landmark Paris Agreement and we are working just as closely with India in the run-up to COP26, the 26th UN Climate Change Conference of the Parties, to be hosted by the United Kingdom in Glasgow from November 1-12, 2021. Last month, Mr. Modi and the U.K.'s Prime Minister Boris Johnson committed through the 2030 UK-India Roadmap to work closely together on the best ways to drive the green growth agenda. They reaffirmed their personal commitment to work together for an ambitious outcome in November and sustained action beyond.

When the U.K. welcomes the countries of the world to Glasgow in five months' time, it will be a moment to get the world on track to address the enormous threat of climate change and build a cleaner, brighter future for everyone.

In 2015, the world signed the Paris Agreement, to limit global temperature rises to well below 2°C, aiming for 1.5°C, because the science tells us that would avoid the worst effects of climate change.

Study blames climate change for 37% of global heat deaths

In terms of limiting warming, every fraction of a degree makes a difference. An average global temperature rise of 2°C, compared to 1.5°C, would see hundreds of millions more people affected. The Climate Action Tracker estimates that countries' current emissions reduction targets have us on course for average temperature rises of 2.4°C. To limit warming to 1.5°C, we must halve global emissions by 2030. So this is the decisive decade.

This is what makes this year's COP so critical, and as hosts of COP26, the U.K. is pressing for urgent action around four key goals.

Also read

Are our leaders awaiting a vaccine for the environment?

First, to keep 1.5°C within reach, globally, we need to reach net zero by the middle of this century. To achieve this we will need to take strong action over the next decade. In the U.K. we

have found that setting ambitious short-term targets backed up by a net zero target has given a clear signal that the future is low carbon. India will reach its own decisions, but I firmly believe India has an opportunity to show that a different development path is possible. An opportunity to be at the forefront of a new global green transition with all the benefits of jobs and cleaner air that brings. India has already proved it has the innovation and political will to do this. India has quadrupled wind and solar capacity in the last decade.

Our second goal is to protect people and nature from the worst effects of climate change. Even as the world has been dealing with the novel coronavirus pandemic, the dangers of global warming have continued to become more evident.

Editorial | [Regulation redux: On Supreme Court query on an environment watchdog](#)

Having been born in India and having spent time as the U.K.'s Secretary of State for International Development, I am committed that this COP will deliver for the communities most vulnerable to climate change. The two cyclones, Tauktae and Yaas, that hit India last month, show that we must act on the very real need for flood defences, warning systems and other vital efforts to minimise, avert and address the loss and damage caused by climate change. India's CDRI, which the U.K. is proud to partner on, is already a great initiative towards this.

Our third goal is for developed countries to deliver the \$100 billion they promised annually to support developing countries. The U.K. is pushing for all developed countries to increase their climate finance commitments ahead of COP26, to deliver the right flow of finance and technology to meet the needs of countries such as India in their transition. This is a personal priority for me, one that I am committing to work tirelessly to deliver — we need all developed countries to step up, as it is a matter of trust.

Also read | [Why we need development that is sensitive to the environment around us](#)

Fourth, we must work together to deliver on these goals. That includes building consensus among governments for an ambitious, balanced and inclusive outcome — so that the negotiations in Glasgow are a success. As well as bringing businesses and civil society on board behind our COP26 goals, and building up international collaboration in critical sectors.

We must act now, to launch a concerted effort to reduce emissions throughout the next decade. And use the COVID-19 recovery to reimagine our economies, building a better future.

I call on all countries to step up efforts on these goals, because COP26 is our last chance for keeping hopes of limiting global warming to 1.5°C alive, and our best chance of building a brighter future; a future of green jobs and cleaner air.

This is our moment. There are no second chances. Let us seize it together.

Alok Sharma is COP26 President

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To reassure Indian Muslims, the PM needs to state that the govt. will not conduct an exercise like NRC

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NEW PRODUCT CATEGORY OF GREEN ROOM AIR CONDITIONERS LAUNCHED ON GOVERNMENT E-MARKETPLACE (GEM) TO MARK THE WORLD ENVIRONMENT DAY TODAY

Relevant for: Environment | Topic: Environmental Conservation, Sustainable Development, and EIA

Today on the occasion of World Environment Day, a new product category of Green Room Air Conditioners was launched on the Government e-Marketplace (GeM). The Secretary, Department of Commerce, Shri Anup Wadhavan launched it. The launch event was organized in association with United Nations Environment Programme (UNEP).

Shri Anup Wadhavan said on the occasion that Public procurement spend in India is nearly 15-20% of its GDP. Introducing SPP to this huge quantum of government procurement will further complement the country's climate policy objectives. The addition of Green Room Air Conditioners on GeM is another example of GeM being a futuristic and technology driven platform, focusing on environmental, social and economic pillars of sustainable public procurement

Shri P K Singh, CEO, GeM, said, "We have Gross Merchandise Value of about 15 billion dollars, with a little under 2 million sellers, and 52,000 government agencies, as buyers, and that is why it not only becomes critical but also urgent for GeM to facilitate the use of sustainable and eco-friendly procurement practices."

He further added, "We recognize the potential GeM has in nudging our government buyers to choose green and sustainable products and services, and the many positive externalities this can cause by driving innovations and reforming supply chains. This innovation can provide financial savings for government buyers and will meet evolving environmental challenges by moving towards a circular economy. We have also recommended to the UNEP to examine the top three services which have been procured by government agencies and how they can be made more sustainable."

The GeM portal will enable and encourage all central and state government agencies to buy efficient and environment friendly green ACs, thereby paving a way for Sustainable Public Procurement in India. The purchase of Green RACs shall be a voluntary approach.

Last year, the GeM portal saw sales of over 44,000 air conditioners worth Rs 1.7 billion, and it continues to grow. Additionally, public procurement spend in India is estimated to be 15-20% of its GDP. Leveraging the procurement power and promoting sustainable public procurement that align with India's climate policies and priorities would play a key role in achieving India's Nationally Determined Contributions and its commitment towards relevant SDGs particularly SDG 12.7. Green Room Air Conditioner integration within the public procurement system is a catalyst for market transformation towards sustainable cooling.

The Government of India is taking proactive steps towards a circular and green economy. In March 2018, the Ministry of Finance constituted a Task Force on Sustainable Public Procurement. Additionally, the draft National Resource Efficiency Policy (2019) includes the agenda of Sustainable Public Procurement, that suggests establishing green procurement guidelines providing information on resource efficiency criteria to be used in the procurement processes for the prioritized products/service categories.

United Nations Environment Programme (UNEP) in collaboration with other partners is supporting the Sustainable Public Procurement (SPP) initiative of the Government of India with initial focus on three prioritized product categories including paper, disinfectant and Green Room Air Conditioners.

Jigmet Takpa, Joint Secretary MoEFCC, stated, the launch of Green Room Air conditioners on the Government e-Marketplace is an appropriate celebration of World Environment Day as an urgent, substantive and transformative system to reverse the damage done to our ecosystem. SPP is a key element in attaining a wide range of goals in strategic spending and implementation as a policy instrument to support programmes in priority areas and formulating national sustainable development strategies.

Saurabh Kumar, Executive Vice Chairperson, EESL Group, said public procurement most of the times moves the market towards better efficiency. There is an enormous demand for air conditioners in government offices and departments and led by such demands, with awareness outreach campaigns, we as public policy proponents have a massive opportunity to transform the market. This is what has inspired EESL to start with a super-efficient AC programme, and we would be happy to partner with GeM to move this movement towards super efficiency.

Aaron Bishop, USAID Acting Deputy Mission Director, said, USAID is honored to support the Government of India's priorities and objectives in greening the supply chain. It is inspiring to see that GeM has taken a lead by integrating green room air conditioner criteria onto its platform. This pioneering effort will propel the market towards adopting and expanding these green and sustainable products and services.

Aul Bagai, UNEP Country Head, highlighted that UNEP aims to support the government in establishing business models and policies for accelerating sustainable consumption and production, including through resource-efficient and circular approaches and sustainable public procurement will be a key enabling tool in this direction.

YB/SS

Today on the occasion of World Environment Day, a new product category of Green Room Air Conditioners was launched on the Government e-Marketplace (GeM). The Secretary, Department of Commerce, Shri Anup Wadhavan launched it. The launch event was organized in association with United Nations Environment Programme (UNEP).

Shri Anup Wadhavan said on the occasion that Public procurement spend in India is nearly 15-20% of its GDP. Introducing SPP to this huge quantum of government procurement will further complement the country's climate policy objectives. The addition of Green Room Air Conditioners on GeM is another example of GeM being a futuristic and technology driven platform, focusing on environmental, social and economic pillars of sustainable public procurement

Shri P K Singh, CEO, GeM, said, "We have Gross Merchandise Value of about 15 billion dollars, with a little under 2 million sellers, and 52,000 government agencies, as buyers, and that is why it not only becomes critical but also urgent for GeM to facilitate the use of sustainable and eco-friendly procurement practices."

He further added, "We recognize the potential GeM has in nudging our government buyers to choose green and sustainable products and services, and the many positive externalities this

can cause by driving innovations and reforming supply chains. This innovation can provide financial savings for government buyers and will meet evolving environmental challenges by moving towards a circular economy. We have also recommended to the UNEP to examine the top three services which have been procured by government agencies and how they can be made more sustainable.”

The GeM portal will enable and encourage all central and state government agencies to buy efficient and environment friendly green ACs, thereby paving a way for Sustainable Public Procurement in India. The purchase of Green RACs shall be a voluntary approach.

Last year, the GeM portal saw sales of over 44,000 air conditioners worth Rs 1.7 billion, and it continues to grow. Additionally, public procurement spend in India is estimated to be 15-20% of its GDP. Leveraging the procurement power and promoting sustainable public procurement that align with India’s climate policies and priorities would play a key role in achieving India’s Nationally Determined Contributions and its commitment towards relevant SDGs particularly SDG 12.7. Green Room Air Conditioner integration within the public procurement system is a catalyst for market transformation towards sustainable cooling.

The Government of India is taking proactive steps towards a circular and green economy. In March 2018, the Ministry of Finance constituted a Task Force on Sustainable Public Procurement. Additionally, the draft National Resource Efficiency Policy (2019) includes the agenda of Sustainable Public Procurement, that suggests establishing green procurement guidelines providing information on resource efficiency criteria to be used in the procurement processes for the prioritized products/service categories.

United Nations Environment Programme (UNEP) in collaboration with other partners is supporting the Sustainable Public Procurement (SPP) initiative of the Government of India with initial focus on three prioritized product categories including paper, disinfectant and Green Room Air Conditioners.

Jigmet Takpa, Joint Secretary MoEFCC, stated, the launch of Green Room Air conditioners on the Government e-Marketplace is an appropriate celebration of World Environment Day as an urgent, substantive and transformative system to reverse the damage done to our ecosystem. SPP is a key element in attaining a wide range of goals in strategic spending and implementation as a policy instrument to support programmes in priority areas and formulating national sustainable development strategies.

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SHRINKING GIANTS: NORTH ATLANTIC RIGHT WHALES GETTING TINIER

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

Credit: Stewart et al., Decreasing body lengths in North Atlantic right whales, *Current Biology* (2021), <https://doi.org/10.1016/j.cub.2021.04.067>

One of the giants of the deep is shrinking before our eyes, [a new study says](#).

The younger generation of critically endangered North Atlantic right whales are on average about three feet (one meter) shorter than whales were 20 years ago, drone and aircraft data show in a study in Thursday's journal *Current Biology*.

Scientists say humans are to blame. Entanglements with fishing gear, collisions with ships and climate change moving their food supply north are combining to stress and shrink these large whales, the study says.

Diminishing size is a threat to the species' overall survival because the whales aren't having as many offspring. They aren't big enough to nurse their young or even get pregnant, study authors said.

These marine mammals used to grow to 46 feet (14 meters) on average, but now the younger generation is on track to average not quite 43 feet (13 meters), according to the study.

"This isn't about 'short' right whales, it's about a physical manifestation of a physiological problem, it's the chest pain before the heart attack," said Regina Asmutis-Silvia, executive director of Whale and Dolphin Conservation North America, who wasn't part of the study. "Ignoring it only leads to an inevitable tragedy, while recognizing and treating it can literally save a life, or in this case, an entire species."

There are only about 356 North Atlantic right whales left, down from 500 in 2010, said study co-author Amy Knowlton, a senior scientist at the New England Aquarium. Other estimates put the population around 400, though researchers agree the population is shrinking.

In the past, scientists and activists have concentrated solely on whale deaths, but now they realize there's a problem afflicting surviving whales that can still cause populations to further dwindle, said study co-author Michael Moore, marine mammals director at Woods Hole Oceanographic Institute. The authors were able to take pictures of 129 of the right whales and use a computer program to compare them to right whales of similar age 20 years ago.

The issue emerged from a research trip several years ago when Knowlton and others saw a few small whales and a dead one. They figured the small whales were calves, less than a year old, because of their size, but checking showed the whales actually were about two years old. Whale calves normally double in size in two years, said study lead author Joshua Stewart, a National Oceanic and Atmospheric Administration researcher.

The study authors said the No. 1 issue with smaller right whales is entanglement in fishing gear, especially ropes that have become stronger and harder for whales to shed.

"Over 83% now of the species has been entangled at least once in their lifetime, some as many

as eight times,” Knowlton said. “If it doesn’t kill them, it’s certainly going to affect their ability to reproduce.”

Collisions with ships is another problem. Both fishing gear and ship crashes have been addressed with government regulations in some normal feeding grounds for the whales. But since 2010, climate change has caused plankton the marine mammals eat to move north and east to areas without regulations, so entanglements and crashes increased, Knowlton said.

The shifting of feeding grounds has added more physical stress to North Atlantic right whales, which already were skinny compared to their southern cousin species, Moore said.

“We know that climate change has affected some of their key prey sources, so entangled whales are likely experiencing a triple whammy of less food around, less ability to forage for it, while burning more energy,” said Dalhousie University marine biologist Boris Worm, who was not part of the study. “It’s heartbreaking to think about the lives that some of these whales lead.”

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MORE DEFORESTATION AND LESS RAIN THREATEN BRAZILIAN AGRIBUSINESS: STUDY

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

In this Nov. 25, 2019 file photo, highway BR-163 stretches between the Tapajos National Forest, left, and a soy field in Belterra, Para state, Brazil. | Photo Credit: [AP](#)

Brazilian agribusiness is losing up to \$1 billion dollars a year as rising deforestation cuts rainfall in the southern Amazon — a problem set to expand if forest loss continues, a group of Brazilian and German researchers have warned.

[In a study](#) published in the journal *Nature Communications* in May, they found that smaller-scale forest losses can enhance rainfall on adjoining agricultural land - but once losses pass 55-60%, rainfall plunges.

Losses of tree cover in particular seem to delay the start and shorten the length of the rainy season, they found.

As Brazilian Amazon forest destruction continues, drier conditions could put a massive strain on the region's mainly rainfed agricultural industry, the authors said.

Deforestation in Brazil's Amazon skyrockets to 12-year high

Brazil is the world's top soybean producer, and its second largest producer of beef, as well as the globe's biggest beef exporter.

In parts of the country, Brazil's farmers are already battling unusually dry weather this year, with government agencies warning in late May of drought threats as the country faces its worst dry spell in 91 years.

In the southern Amazonian state of Mato Grosso, Brazil's main soy producer, irregular rainfall is reducing potential harvests, according to the Mato Grosso Institute of Agricultural Economics.

Aprosoja Brasil, the country's main soy production association, similarly said farmers faced drought while planting last October and November, followed by excessively heavy rain at harvest time this year, lowering the expected harvest.

The new study looked at rainfall changes between 1999 and 2019 in the southern Brazilian Amazon, a 1.9 million sq km area that has so far lost about a third of its forests, as a model for future rainfall shifts.

Researchers predicted what might happen through 2050 under continued weakening of Brazil's conservation policies and strong political support for agricultural expansion compared to effective enforcement of forest protection laws.

Brazil's environment ministry to stop fighting deforestation in the Amazon

Co-author Britaldo Soares told the *Thomson Reuters Foundation* that the difference was stark. Unless Brazil's government quickly shifts its pro-development policies, which favor economic growth over conservation, agribusinesses could become victims of the measures many of them

support.

The effect would be like “shooting yourself in the foot,” said Soares, who is project coordinator for the Centre for Remote Sensing at the Federal University of Minas Gerais (UFMG).

Environmentalists say President Jair Bolsonaro’s policies have weakened conservation efforts and his rhetoric has emboldened illegal ranchers, loggers and land speculators to cut down the Amazon forest to expand their business.

Bolsonaro’s office did not respond to a request for comment.

Amazon forest losses have soared to a 12-year high since Bolsonaro took office in 2019, with deforestation rising 43% in April compared to the same month a year ago, according to government data published in May.

Removing trees to plant crops and raise cattle reduces the forest’s ability to trap and store planet-heating carbon dioxide in the atmosphere, and can contribute to emissions if forests are burned.

Amazon risks changing from forest to savanna: study

But more fragmented forest, as losses grow, also is less able to produce the same volume of water vapour that rises to become rain, and can make the forest drier and more vulnerable to burning.

Less rainfall can mean lower yields and force farmers in the southern Amazon and beyond to adapt by moving to new areas or growing more drought-resistant crops, the study noted.

It did not discuss prospects for irrigating crops in the region.

Farmers in the Amazon also commonly profit from double-cropping, or growing at least two crops per year.

But that could become more difficult or impossible if continuing tree losses cause rainy seasons to become delayed and shorter, the study noted.

Researchers said that if Brazil’s government fails to act against deforestation, international responses — including potential sanctions and exclusion of Brazil from international treaties — could also result in lost revenue for Brazil’s farm-related businesses.

Stopping forest loss in the Amazon is vital not only to protect biodiversity and the global climate but to protect agribusiness itself, they said.

As part of their study, the researchers used mathematical modeling to predict the economic losses that southern Amazonian agribusiness is expected to suffer if current policies continue and rainfall in the Amazon keeps dropping.

By 2050, the beef industry could lose more than \$180 billion and the soy industry up to \$5.6 billion in total due to the effects of decreased rainfall, the study found.

Soares said for long-term economic prosperity the Amazon region needed to find a more sustainable economic model not reliant on land-hungry commodities such as soy and beef whose expansion were leading to major forest loss.

A study he and other researchers carried out in 2018 found landowners could potentially earn more than \$700 per hectare each year in international payments to keep climate-stabilizing forests standing as well as by created processed products from forest species such as Brazil nuts.

Cattle ranching on deforested land, by comparison, earns a landowner about \$40 per hectare each year, it noted.

Brazil also needs better enforcement of its forest protection laws to preserve conservation zones and indigenous territories, he said.

As well, other nations need to put more pressure on the current Brazilian government to boost forest conservation, said Paulo Barreto, a researcher who has studied the Amazon for three decades and works at the nonprofit research institute Imazon.

That should include “immediate and concrete measures” such as refusing to purchase beef, soy or other products from deforested land, he said.

Argemiro Teixeira, one of the study’s co-authors and an environmental systems modeler, said profitable agriculture and forest protection in the Amazon did not have to be at odds.

Agribusiness can be profitable without continued expansion at the expense of the forest, he noted, calling it “possible and necessary to improve the industry while preserving the environment.”

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NEW SPECIES A-FLUTTER IN INDIA

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

Nacaduba sinhala ramaswamii | Photo Credit: [Ramasamy SRK](#)

Named after: Ramamsamy SRK a farmer based out of Saptur village, located at 45 kilometres from Madurai

“I have completed recording as many as 300 butterfly species in the Western Ghats, only a few are left,” declares Ramasamy SRK over phone from his farm at Saptur in Madurai. Recently, one of his discoveries, a new sub-species of a six line blue butterfly, earned him a rare honour. Named *Nacaduba sinhala ramaswamii*, the species bears the name of this naturalist and has been published in the *Journal of Threatened Taxa* in March, 2021. The common name of this butterfly is Ramasamy’s six line blue.

“It feels wonderful. The discovery is a boost to citizen initiatives happening all over India,” says this postgraduate, now a full-time farmer tending to his farm where he grows mangoes, and harvests paddy and sugarcane. “Some butterflies pose a challenge while identifying, especially the wing patterns. Most butterflies open wings only while basking in the sun. This new species looked different from day one and I kept at it.”

Line blues are small butterflies belonging to the family *Lycaenidae*. There are various species including transparent six line blue, rounded, dark Ceylon to name a few. Their distribution ranges from India and Sri Lanka, to the whole of South-East Asia, Australia and Samoa in the Pacific.

Ramasamy along with Kalesh Sadasivan of Travancore Nature History Society researched and looked up the records of British entomologist Ormiston that is available at Bombay Natural History Society (BNHS) before confirming that it was indeed a new species. The research team also investigated the lifecycle of the species starting with various states of egg to larvae on the host plant, *Dimocarpus longon*. “The edges of wings have heart shaped or well rounded chevron shaped spots while other species have more rectangular ones. The nearest species it resembles is the pale Ceylon six line blue.”

Many new species in the past were discovered by the British or Japanese researchers or in collaboration with native researchers, says Ramasamy, adding, “It is the first time that a butterfly species was discovered by an all-Indian research team from the Western Ghats. Explore your own backyard, and there is magic at every corner waiting to be discovered.”

Named after: Yeshwanth HM, a researcher who works with taxonomy of bugs at the University of Agriculture Sciences, GKVK, Bengaluru

“It’s a proud moment, a recognition of your contribution” says Yeshwanth about his name being associated with a large flightless insect resembling crickets in grasshopper family Stenopelmatidae. Yeshwanth also identifies insects, and collects samples for students and researchers, and works towards upkeep of a collection at the in-house insect museum of Department of Entomology, University of Agricultural Sciences. “Researchers SR Hiremath and KD Prathapan from the Department of Agricultural Entomology in Kerala were looking for this species for their study. This specimen collected from Kallar in Kerala was loaned and they named it after me to acknowledge my contribution. The task of describing a new species is not easy. Both the researchers from Kerala had spent more than two years working on this insect,”

explains Yeshwanth. “What makes the species unique is, it is a single and rare one that has never been described so far.

Elaborating on the nomenclature of the specimen, he says, “There are species named after named after people who have made enormous contributions in the field. However, according to the International Code of Zoological Nomenclature (ICZN), there are no restrictions to taxonomic freedom of naming as long as one follows the rules that are in place. For example, a species named after a female gender ends with ‘ae’ while for a male name an ‘i’ is added.”

The naming freedom is immensely helpful for taxonomists and researchers, he says. “ About 40-odd insects are named after retired professor CA Viraktamath, a renowned leafhopper taxonomist in the country. So is VV Ramamurthy, who has made significant contributions towards insect taxonomy in India, especially beetles. I have named one of my insect groups work after them, who have always motivated me to work on insects.”

Named after: Joshimath, a town in stretches of Uttarkhand that is highly biodiverse but disturbed by climate change and development

A certain moth fluttering amid the slopes of Uttarakhand has been found to be a new species, not only in India, but to Science as a whole. It took some time for Pritha Dey to thoroughly ascertain that a moth she had been observing, was new to Science. She first saw it in 2013 and 2015, while doing her fieldwork at the Nanda Devi Biosphere Reserve, but published a paper identifying it as a new species in 2021 after much verification. She named it *Prometopidia joshimathensis*, after Joshimath, the place where she found it.

“My PhD was split between two countries. So, though I saw the species in Uttarakhand while doing my research at the Wildlife Institute of India, I took the specimen to Germany for integrated taxonomy study,” says Pritha over a phone call, “Along with my supervisor in Germany, Dr Axel Hausmann and Dr Dieter Stüning after much discussion, I identified that this particular moth might be something new to Science.”

The realisation was exciting, but not all that rare. “Insects are the most biodiverse group in a terrestrial ecosystem. In tropical regions, the taxa that I study — moths — is quite unexplored. They are 10 to 12 times more diverse than their ‘cousins’, the butterflies, and we are yet to explore their diversity,” Pritha points out.

Pritha’s first step, with the *Prometopidia joshimathensis* , was realising that its description did not match any of the published literature. “What added to this finding, was access to different museum specimens of the genus *Prometopidia*, from Europe and UK. We had very kind collaborators who sent out photos and information to us,” she says.

Pritha’s discovery is significant in more ways than one. “It [the research] expanded to a revision of the entire genus, distributed from west to Central Himalaya and not just description of a new species,” she says, adding, “So many people contributed to this finding and gave it the shape that it has now.”

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PM ADDRESSES THE WORLD ENVIRONMENT DAY EVENT

Relevant for: Environment | Topic: Environmental Conservation, Sustainable Development, and EIA

Prime Minister Shri Narendra Modi addressed the World Environment Day event, jointly organized by the Ministry of Petroleum & Natural Gas and the Ministry of Environment, Forest and Climate Change today through a video conference. During the event the PM interacted with a farmer from Pune who shared his experience of organic farming and use of biofuel in agriculture.

The Prime Minister released the "Report of the Expert Committee on Road Map for ethanol blending in India 2020-2025". He also launched the ambitious E-100 pilot project in Pune for the production and distribution of ethanol across the country. The theme for this year's event is 'promotion of biofuels for a better environment'. Union Cabinet Ministers Shri Nitin Gadkari, Shri Narendra Singh Tomar, Shri Prakash Javadekar, Shri Piyush Goyal and Shri Dharmendra Pradhan were also present on the occasion.

Speaking on the occasion, the Prime Minister said that India has taken another leap by releasing a detailed roadmap for the development of the ethanol sector on the occasion of World Environment Day. He said that ethanol has become one of the major priorities of 21st century India. He added that the focus on ethanol is having a better impact on the environment as well as on the lives of farmers. He said that the Government has resolved to meet the target of 20 percent ethanol blending in petrol by 2025. Earlier the resolve was to achieve the target by 2030 which is now preponed by 5 years. He added that till 2014, on an average, only 1.5 percent of ethanol could be blended in India which has now reached about 8.5 percent. In 2013-14, about 38 crore liters of ethanol were purchased in the country which has now grown to more than 320 crore liters. He said that a large part of this eightfold increase in ethanol procurement has benefitted the sugarcane farmers of the country.

The Prime Minister remarked that the 21st century India can get energy only from the modern thinking and modern policies of the 21st century. With this thinking, the government is continuously taking policy decisions in every field. He said today, a lot of emphasis is being laid on building the necessary infrastructure for the production and purchase of ethanol in the country. Most of the ethanol manufacturing units are mostly concentrated in 4-5 states where sugar production is high but now Food Grain Based Distilleries are being established to expand this to the whole country. Modern technology based plants are also being set up in the country to make ethanol from agricultural waste.

The Prime Minister said that India is a strong proponent of climate justice and is moving ahead with a lofty global vision like the founding of International Solar Alliance for realizing the vision of One Sun, One World, One Grid and the Coalition for Disaster Resilient Infrastructure initiative. He noted India has been included in the top 10 countries of the world in the Climate Change Performance Index. He added that India is also aware of the challenges that are being faced due to climate change and is also working actively.

The Prime Minister spoke about the hard and soft approaches taken to fight climate change. On the hard approach, he noted that our capacity for renewable energy has increased by more than 250 percent in the last 6-7 years. India is today among the top 5 countries of the world in terms of installed renewable energy capacity. Especially the capacity of solar energy has increased by about 15 times in the last 6 years.

The Prime Minister said that the country has also taken historic steps with a soft approach, today the common man of the country has joined and leading the Pro-Environment Campaign like avoiding single use plastic, beach cleaning or Swachh Bharat. He added that the impact of giving more than 37 crore LED bulbs and more than 23 lakh Energy Efficient Fans are not discussed often. He said similarly, by providing free gas connections under the Ujjwala scheme, by providing electricity connections under the Saubhagya scheme, to crores of poor, their dependence on wood has greatly reduced. Apart from reducing pollution, it has also helped a lot in improving the health and strengthening environmental protection. He said India is setting an example to the world that it is not necessary to stop development for protecting the environment. He stressed that Economy and Ecology both can go together and move forward. And this is the path India has chosen. He said along with strengthening the economy, our forests have also increased by 15 thousand square kilometers in the last few years. The number of Tigers in our country has doubled and the number of leopards has also increased by about 60 percent in the last few years.

The Prime Minister said Clean and Efficient Energy Systems, Resilient Urban Infrastructure and Planned Eco-Restoration are a very important part of the AatmaNirbhar Bharat Campaign. He said due to all the efforts taken related to the environment, new investment opportunities are being created in the country, lakhs of youth are also getting employment. He said India is working with a holistic approach through the National Clean Air Plan to curb air pollution. He said the work on waterways and multimodal connectivity will not only strengthen the mission of green transport, but also improve the logistics efficiency of the country. Today, the service of metro rail in the country has increased from 5 cities to 18 cities which has helped in reducing the use of personal vehicles.

The Prime Minister said that today, a large part of the country's railway network has been electrified. Airports of the country are also made to use electricity from solar energy at a rapid pace. He elaborated that before 2014, only 7 airports had a solar power facility, whereas today this number has increased to more than 50. More than 80 airports have been installed with LED lights which would improve energy efficiency.

The Prime Minister spoke about a project which is underway to develop Kevadiya as an electric vehicle city. He said necessary infrastructure is being made available so that only battery based buses, two-wheeler, four-wheeler will run in Kevadiya in future. He said the water cycle is also directly related to climate change and imbalance in the water cycle will directly affect water security. He told that work is being done with a holistic approach from creation and conservation to use of water resources in the country through Jal Jeevan Mission. On one hand, every household is being connected with pipes, while on the other hand, the focus is on raising the ground water level through campaigns like Atal Bhujal Yojana and Catch the Rain.

The Prime Minister announced that the government has identified 11 sectors which can make good use of resources by recycling them through modern technology. He said a lot of work has been done in the last few years on the Kachra to Kanchan campaign and now it is being taken forward very fast in mission mode. The action plan related to this, which will have all the regulatory and development related aspects, will be implemented in the coming months. He stressed that to protect the climate, it is very important to organize our efforts to protect the environment. He urged that we will be able to give a safe environment to our coming generations only when every citizen of the country makes a united effort to maintain the balance of water, air and land.

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The Prime Minister said Clean and Efficient Energy Systems, Resilient Urban Infrastructure and Planned Eco-Restoration are a very important part of the AatmaNirbhar Bharat Campaign. He said due to all the efforts taken related to the environment, new investment opportunities are being created in the country, lakhs of youth are also getting employment. He said India is working with a holistic approach through the National Clean Air Plan to curb air pollution. He said the work on waterways and multimodal connectivity will not only strengthen the mission of green transport, but also improve the logistics efficiency of the country. Today, the service of metro rail in the country has increased from 5 cities to 18 cities which has helped in reducing the use of personal vehicles.

The Prime Minister said that today, a large part of the country's railway network has been electrified. Airports of the country are also made to use electricity from solar energy at a rapid pace. He elaborated that before 2014, only 7 airports had a solar power facility, whereas today this number has increased to more than 50. More than 80 airports have been installed with LED lights which would improve energy efficiency.

The Prime Minister spoke about a project which is underway to develop Kevadiya as an electric vehicle city. He said necessary infrastructure is being made available so that only battery based buses, two-wheeler, four-wheeler will run in Kevadiya in future. He said the water cycle is also directly related to climate change and imbalance in the water cycle will directly affect water security. He told that work is being done with a holistic approach from creation and conservation to use of water resources in the country through Jal Jeevan Mission. On one hand, every household is being connected with pipes, while on the other hand, the focus is on raising the ground water level through campaigns like Atal Bhujal Yojana and Catch the Rain.

The Prime Minister announced that the government has identified 11 sectors which can make good use of resources by recycling them through modern technology. He said a lot of work has been done in the last few years on the Kachra to Kanchan campaign and now it is being taken forward very fast in mission mode. The action plan related to this, which will have all the regulatory and development related aspects, will be implemented in the coming months. He stressed that to protect the climate, it is very important to organize our efforts to protect the environment. He urged that we will be able to give a safe environment to our coming generations only when every citizen of the country makes a united effort to maintain the balance of water, air and land.

DS/AK

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UNION MINISTER DR. JITENDRA SINGH SAYS, NATURAL IMMUNITY BOOSTERS ARE MORE BENEFICIAL THAN PHARMACOLOGICAL ONES

Relevant for: Environment | Topic: Environmental Conservation, Sustainable Development, and EIA

Union Minister Dr. Jitendra Singh, who is also a former Professor of Diabetes and Medicine besides being the Life Patron of the coveted RSSDI (Research Society for Study of Diabetes in India), said today that Natural Immunity boosters are more effective than pharmacological ones. Citing a number of studies published in leading medical journals of the world over the last two decades, he said, even though vitamin and immunity booster tablets are prescribed in allopathy but by and large the inference is that though it may be appropriate to prescribe vitamin supplements and anti-oxidant tablets or capsules to the patient, the natural source vitamins and the natural source antioxidants could be more reliable and effective.

Delivering the keynote address, as chief guest, at a seminar on “Safe Food Today for a Healthy Tomorrow” organized by the PHD Chamber of Commerce & Industry on the occasion of the World Food Safety Day 2021, Dr Jitendra Singh said, the concept of management of diseases, particularly infectious diseases through immunity boosting modalities has been an inherent part of medical management in India, especially before the arrival of antibiotics and antimicrobials, which came to be known to medical practitioners only when the first antibiotic, namely Penicillin, became available in the late 1940s. In a country like India, he said, Tuberculosis was rampant in the first half of the 20th century and before Streptomycin and other anti-tuberculosis drugs became available in early 1950s, the mainstay of treatment of tuberculosis was Sanatorium management, which included a clear, healthy open and airy environment, hygienic conditions, healthy diet, all of which were aimed at increasing the resistance of the body to fight the infection.



Only in the last few decades, Dr Jitendra Singh said, when the non-communicable and metabolic diseases took over, the focus on the treatment of infections, both through pharmacological and non-pharmacological regimens, got diluted, but it has been revived with the arrival of the unprecedented pandemic of COVID, which has swept the whole world. Even

though COVID has created more awareness and curiosity to understand the principles of diet, he said, a peculiar feature in the oriental society is that food and food habits have never been a priority and upon this, several myths have also been prevalent from time to time.

Drawing from his clinical experience of over three decades, Dr Jitendra Singh said, for example, a popular myth about the treatment in Diabetes is that carbohydrate intake is completely forbidden, but the matter of fact is that for any individual, regardless of whether he has Diabetes or not, carbohydrates are expected to constitute around 60% of the total intake of a balanced diet in 24 hours because these are the source of energy to the body and also stimulate the pancreas to produce Insulin. However, the issue of various categories of carbohydrates like simple carbohydrate or complex carbohydrate as well which one to choose from, has to be explained by the doctor depending upon the health status, the body weight, the level of physical activity, etc. of the individual, he said.

The Minister said that today, at the time of the pandemic COVID-19, it has become more important for each citizen to understand and to have awareness about good nutrition, the substances of food, and its impact on the immune system. He said, good and safe food will add to the immunity of the body which helps to fight the diseases and therefore effort should be made to keep food safe and healthy at each step of the food chain.

Dr Jitendra Singh said that the North Eastern Region is one of the most bio-diverse regions of the world with around 80 percent rural population, which practise agriculture and allied activities in a more sustainable way. He said, the Ministry of Development of North-eastern Region (DONER) is making a lot of effort to promote sustainable development in the North Eastern States.

Dr Jitendra Singh informed that Manipur and Meghalaya have recently been declared as the top two among India's smaller States for ensuring food security in 2019-20 by the Food Safety and Standards Authority of India (FSSAI). In January 2016, Sikkim became India's first "Organic" State.

In his address Ambassador of Argentina, Mr Hugo Javier Gobbi said that his country is fully cooperating with India in South-South Cooperation on all issues including Food Security and Safety.

Dr. Darlando Khathing, Vice Chancellor, NECU, Sanjay Aggarwal President, PHDCCI and Prof Bejon Kumar Misra, Chairman- Consumer Affairs, PHDCCI also addressed the gathering.

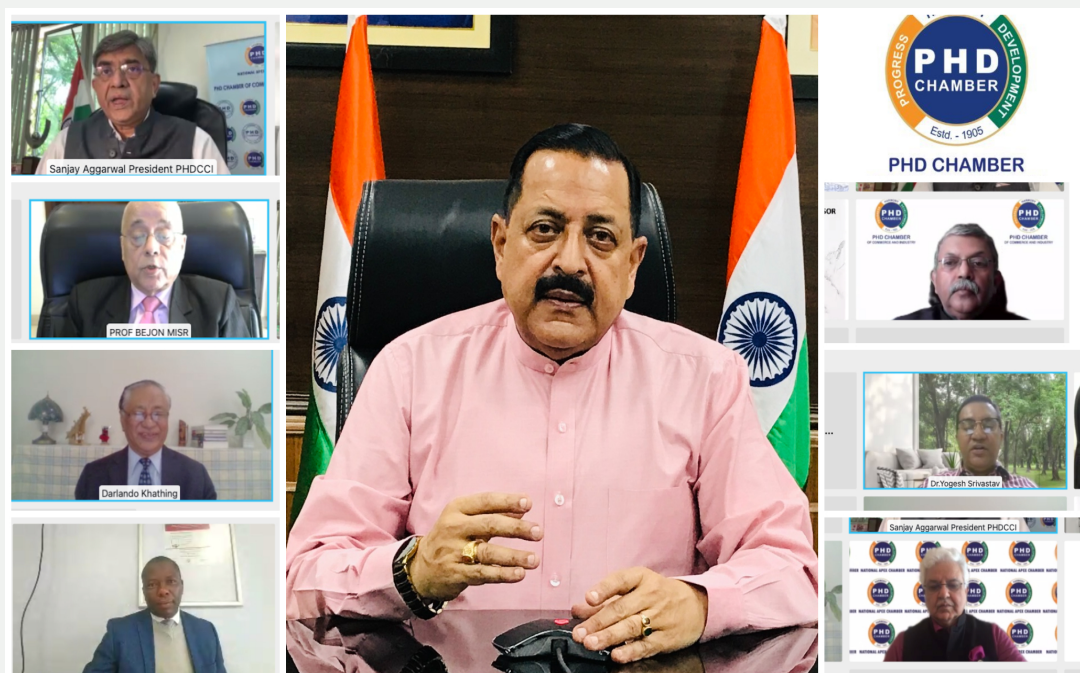
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TURKEY SAYS IT WILL DEFEAT 'SEA SNOT' OUTBREAK IN MARMARA SEA

Relevant for: Environment | Topic: Environmental Conservation, Sustainable Development, and EIA

This aerial photograph taken on May 30, 2021 shows mucilage, a thick, viscous fluid produced by phytoplankton, in Turkey's Marmara Sea at a harbor on the shoreline of Istanbul. | Photo Credit: [AFP](#)

Turkey's environment minister pledged on Sunday to defeat a plague of "sea snot" threatening the Sea of Marmara with a disaster management plan he said would secure its future.

A thick slimy layer of the organic matter, known as marine mucilage, has spread through the sea south of Istanbul, posing a threat to marine life and the fishing industry.

Harbours, shorelines and swathes of seawater have been blanketed by the viscous, greyish substance, some of which has also sunk below the waves, suffocating life on the seabed.

Environment Minister Murat Kurum said Turkey planned to designate the entire Sea of Marmara a protected area, reduce pollution and improve treatment of waste water from coastal cities and ships which has helped the sea snot to spread.

He also called on local residents, artists and NGOs to join what he said would be Turkey's biggest maritime clean-up operation, starting on Tuesday.

"Hopefully, together we will protect our Marmara within the framework of a disaster management plan," Kurum said, speaking from a marine research vessel which has been taking samples of the slimy substance. "We will take all the necessary steps within three years and realize the projects that will save not only the present but also the future together."

Kurum said the measures Turkey planned would reduce nitrogen levels in the sea by 40%, a move which he said scientists believed would help restore the waters to their previous state.

Scientists say climate change and pollution have contributed to the proliferation of the organic matter, which contains a wide variety of microorganisms and can flourish when nutrient-rich sewage flows into seawater.

President Tayyip Erdogan blamed the outbreak on untreated water from cities including Istanbul, home to 16 million people, and vowed to "clear our seas from the mucilage scourge".

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MEET A.COOPERENSIS, AUSTRALIA'S LARGEST DINOSAUR

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

This handout picture taken by Rochelle Lawrence on May 23, 2015 and released by The Eromanga Natural History Museum shows researchers digging for dinosaur fossils in Cooper Creek, the area near the town of Eromanga, in western Queensland where the fossils were discovered in 2007. | Photo Credit: [AFP](#)

A gigantic dinosaur discovered in Australia's outback has been identified as a new species and recognised as one of the largest to ever roam the Earth, according to palaeontologists.

Australotitan cooperensis, part of the titanosaur family that lived about 100 million years ago, has finally been described 15 years after its bones were first uncovered.

It is estimated to have stood at 5 to 6.5 metres (16-21 feet) high and measured 25 to 30 metres (82-98 feet) in length — which would make it Australia's biggest dinosaur.

"Based on the preserved limb size comparisons, this new titanosaur is estimated to be in the top five largest in the world," said Robyn Mackenzie, a director of the Eromanga Natural History Museum.

The fossilised bones were found on Mackenzie's family farm in 2006 about 1,000 kilometres (620 miles) west of Brisbane in the Eromanga Basin and nicknamed "Cooper".

Initially kept secret as scientists painstakingly dug up and studied the bones, the skeleton first went on display to the public in 2007.

Scott Hocknull, a palaeontologist at Queensland Museum, said it had been a "very long and painstaking task" to confirm the *Australotitan* was a new species.

[The research](#), which relied on 3D scan models of bones to compare the dinosaur with its close relatives, was published in the peer-reviewed *PeerJ* journal Monday.

Numerous other dinosaur skeletons have been found in the same area, Hocknull said, adding that more work was needed as "discoveries like this are just the tip of the iceberg".

(Subscribe to Science For All, our weekly newsletter, where we aim to take the jargon out of science and put the fun in. [Click here.](#))

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The authors also suggest that the lines could be contemporary with the neighbouring memorial stones

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EXPLAINED

Relevant for: Science & Technology | Topic: IT, Internet and Communications

The major websites were inaccessible due to an issue with the content delivery network (CDN) of Fastly, an American cloud computing service provider. | Photo Credit: [Reuters](#)

(Subscribe to our Today's Cache newsletter for a quick snapshot of top 5 tech stories. Click [here](#) to subscribe for free.)

On Tuesday, a number of websites including [Amazon, Reddit, BBC, New York times, Guardian, Financial Times, and Reddit became unavailable](#). All users could see was a '503 error', meaning the browser was not able to access the server.

These major websites were inaccessible due to an issue with the content delivery network (CDN) of Fastly, an American cloud computing service provider. Fastly said it was investigating the impact of its CDN services and an hour later, it applied a fix. But what is CDN and why is it important for functioning of the Internet?

Dr. Corinne Cath-Speth, a P.H.D from The Oxford Internet Institute explained on Twitter the role of the content delivery network and cloud service providers like Fastly.

The internet was built as a peer-to-peer network that enables each user to request and access content on a peer's computer, which acts as a server hosting that particular content.

However, the requested content on the hosting server can be far away and will take longer to load. The size of the world and the physical limits of the cables and wires restricts connectivity.

People connect to websites and applications from different parts of the world to access content. If a website's servers are based in New York city for example, people farther from it will experience slower content delivery than those within the city. This creates inconsistency in user experience. Content Delivery Network, or CDN, solves this problem of delayed content.

CDN delivers content from the website to users in different geographies in a quick, reliable, secure and efficient way. It is made up of a distributed group of servers in different locations. This allows major websites to keep a copy of their website closer to the customers.

The CDN server closest to a user is termed as an edge server. Whenever a user requests content, they are connected to the closest edge server for fast delivery and improved user experience. Many platforms today keep their geographically relevant data closer to where it is consumed for this very reason.

Today, a large web traffic passes through CDNs. CDNs also help protect companies against traffic spikes and malicious attack such as Distributed Denial of Service (DDOS) attacks.

However, when a major CDN provider such as Fastly fails, multiple websites are affected. As requests to CDN hosted content were not serviceable, major websites went down.

This is not the first instance of CDNs causing many websites to go down. In 2020, issues with another CDN provider, Cloudflare, hit Discord, Shopify and few companies. These outages are an example for centralisation of internet in the hands of few.

Dr. Corinne reckons that this market is relatively small and each company serves a large number of clients.

"This means that a technical hiccup in a single company can have huge ramifications," she said. "This in turn--raises major questions about the dangers of (power) consolidation in the cloud market & the unquestioned influence these often invisible actors have over access to information."

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"Ever since I was five years old, I've dreamed of travelling to space. On July 20th, I will take that journey with my brother. The greatest adventure, with my best friend," Bezos wrote in an Instagram post.

Apple's video and audio chat app, FaceTime, adds the ability to schedule calls with multiple attendees and making the software compatible with Android and Windows devices.

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CARBON DIOXIDE IN THE AIR AT HIGHEST LEVEL SINCE MEASUREMENTS BEGAN

Relevant for: Environment | Topic: Environmental Pollution - Air, Water, Soil & E-waste

This Jan. 16, 2020 file photo shows a Uniper energy company coal-fired power plant and a BP refinery beside a wind generator in Gelsenkirchen, Germany. | Photo Credit: [AP](#)

Despite a massive reduction in commuting and in many commercial activities during the early months of the pandemic, the amount of carbon in Earth's atmosphere in May reached its highest level in modern history, a global indicator released on Monday showed.

Scientists from the National Oceanic and Atmospheric Administration (NOAA) and the Scripps Institution of Oceanography at the University of California San Diego, said the findings, based on the amount of carbon dioxide in the air at NOAA's weather station on Mauna Loa in Hawaii, was the highest since measurements began 63 years ago.

The measurement, called the Keeling Curve after Charles David Keeling, the scientist who began tracking carbon dioxide there in 1958, is a global benchmark for atmospheric carbon levels.

Instruments perched on NOAA's mountaintop observatory recorded carbon dioxide at about 419 parts per million last month, more than the 417 parts per million in May 2020.

Because carbon dioxide is a key driver of climate change, the findings show that reducing the use of fossil fuels, deforestation and other practices that lead to carbon emissions must be a top priority to avoid catastrophic consequences, Pieter Tans, a scientist with NOAA's Global Monitoring Laboratory, said in a report on the emissions.

"We are adding roughly 40 billion metric tons of CO₂ pollution to the atmosphere per year," Tans wrote. "That is a mountain of carbon that we dig up out of the Earth, burn, and release into the atmosphere as CO₂ - year after year."

The amount of carbon in the air now is as much as it was about 4 million years ago, a time when sea level was 78 feet higher than it is today and the average temperature was 7 degrees Fahrenheit higher than it was before the Industrial Revolution, the report said.

Despite the pandemic lockdown, scientists were not able to see a drop in the overall amount of carbon in the atmosphere partly because of wildfires, which also release carbon, as well as the natural behavior of carbon in the atmosphere, the report said.

The carbon dioxide levels measured were not affected by the eruption of Hawaiian volcanoes, Tans said, adding the station is situated far enough from active volcanoes that measurements are not distorted, and occasional plumes of carbon dioxide are removed from the data.

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It is well known that mammals including humans show a high capacity for brain and spinal cord

regeneration but only during young ages.

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MAKING PEACE WITH NATURE

Relevant for: Environment | Topic: Environmental Conservation, Sustainable Development, and EIA

On World Environment Day, the UN Environment Programme and the UN Food and Agriculture Organization launched the UN Decade on Ecosystem Restoration to prevent, halt and reverse the degradation of ecosystems on every continent and in every ocean. Photo: Twitter/@UNEP

There has never been a more urgent need to restore damaged ecosystems. The COVID-19 pandemic is a direct result of the degradation of natural areas, species loss, and exploitation. Zoonotic pathogens are more frequently jumping from wildlife to humans, creating public health emergencies. Healthier ecosystems and a healthier respect for the wild spaces of our world will give us a healthier planet and healthier people.

It is time to change how we cultivate our land, use our soils, exploit coastal and marine ecosystems, and manage our forests. The damage has been done over decades and the destruction cannot be reversed overnight. But we need to start somewhere. That's why this World Environment Day, the UN Environment Programme and the UN Food and Agriculture Organization launched the UN Decade on Ecosystem Restoration to prevent, halt and reverse the degradation of ecosystems on every continent and in every ocean.

Rewilding India

India must participate actively in this decade of restoration. Ten years of sustained action to protect and revive the country's ecosystems will help India to end poverty by enhancing livelihoods, combat climate change by reviving natural carbon stores, and halt the collapse of biodiversity by rebuilding homes for wildlife. Ecosystem restoration benefits people and nature.

Prime Minister Narendra Modi has already set India on this path. In 2019, he announced that India would raise its ambition for restoration, promising an increase in restored degraded land from 21 to 26 million hectares by 2030. There are several steps we can take to build on this commitment. First, there must be a concerted effort to reduce carbon dioxide emissions. Climate change is dangerous to humans, but also to the fragile ecosystems that sustain all life on earth. Globally, we must reduce net carbon dioxide emissions by 45% by 2030 compared to 2010. And we must reach net-zero emissions by 2050 to have a hope of achieving the 1.5°C Paris Agreement target. India needs to work towards this by transforming energy systems, land use, agriculture, forest protection, urban development, infrastructure, and lifestyles. Crucially, this has to be aligned with conserving and restoring biodiversity and minimising air and water pollution and waste. Given the interconnectedness of nature, all problems have to be dealt with simultaneously. We already have the goals, targets, commitments, and mechanisms under international environmental conventions that can direct this ambition. Let us use them.

Second, we need to transform our economic, financial and production systems towards sustainability. Including natural capital in decision-making, eliminating environmentally harmful subsidies, and investing in low-carbon and nature-friendly technologies are key elements of this. By making investments in sustainable development financially attractive, we can shift the financial flows and investment patterns towards sustainability. We already have the knowledge base, the scientific expertise, and the policymaking know-how through national and international scientific bodies that can guide this process. Let us use it.

Finally, the power to revive our environment lies with us as individuals. For a better future, India must work towards creating food systems that work with nature, reduce waste, and are adaptive

to change and resilient to shocks. Empowering small-scale farmers and women farmers, changing patterns of consumption and challenging social norms and business practices are key. This can be achieved through capacity building and education. We already have the power to effect change through cooperation and collaboration, and through changing how we consume, travel and use energy. Let us not shirk this responsibility. As UN Secretary-General António Guterres has stated, making peace with nature is the defining task of the 21st century.

Atul Bagai is Head, UN Environment Programme India and Shoko Noda is UNDP Resident Representative, India

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To reassure Indian Muslims, the PM needs to state that the govt. will not conduct an exercise like NRC

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TINY WORM COMES BACK TO LIFE AFTER 24,000 YEARS IN SIBERIAN DEEP FREEZE

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

This undated handout image received June 7, 2021 shows a rotifer. | Photo Credit: [AFP](#)

A microscopic organism has wriggled back to life and reproduced asexually after lying frozen in the vast permafrost lands of northeastern Siberia for 24,000 years.

Russian scientists found the tiny, ancient animal called the bdelloid rotifer in soil taken from the river Alazeya in Russia's region of Yakutia in the far north.

The bdelloid rotifer, a multicellular organism found in freshwater habitats across the world, is known to be able to withstand extreme cold.

Previous research suggested it could survive for a decade when frozen at -20 degrees Celsius.

This new case, which was detailed in a [study](#) in the journal *Current Biology*, is by far the creature's longest recorded survival period in a frozen state.

The organism was recovered from samples taken 3.5 metres below ground. The material was dated from between 23,960 and 24,485 years ago, the study said.

Land encased in permafrost — where the ground is frozen all year round — has for years thrown up startling scientific discoveries.

Scientists earlier revived microscopic worms called nematodes from sediment in two places in northern Siberia that were dated over 30,000 years old.

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The study was carried out by researchers from National Institute of Virology, ICMR and Bharat Biotech.

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AEROSOL PARTICLES BELOW 3 NM WHICH CAN REACH SIZES HAVING CLIMATIC IMPACTS, FORMED FREQUENTLY IN URBAN LOCATIONS IN INDIA

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

Scientists tracing the concentration, size and evolution of aerosol particles smaller than 3 nanometres at an urban location in India have found frequent formation of sub-3nm aerosol particles in the atmosphere. This has critical importance as a major fraction of these newly formed particles can reach to sizes of cloud condensation nuclei where they have climatic impacts.

The formation of small molecular clusters of sub-3nm size is technically called aerosol nucleation, and subsequent growth of these newly formed clusters to the large sizes is called atmospheric new particle formation (NPF). NPF occurs everywhere in the terrestrial troposphere, and therefore it is a large source of aerosol numbers to the atmosphere. Though extensively studied globally using field observations, laboratory experiments and modelling approach, it is largely unexplored in India.

Scientists from the University of Hyderabad measured neutral sub-3nm particles for the first time at an urban location in India. Dr Vijay Kanawade and Mr Mathew Sebastian used AIRMODUS nano Condensation Nucleus Counter (nCNC) to measure particle size distribution in the size range of 1 to 3 nm.

In the study supported by the Department of Science & Technology (DST) under Climate Change Programme Division, they conducted continuous observations since January 2019 at the University of Hyderabad campus site and reported the formation rate of small molecular clusters in sub-3nm size regime, where aerosol nucleation triggers. This work has been recently published in the journal '*Atmospheric Environment*'.

The research showed that a pool of sub-3nm particles is often present in the atmosphere, but how fast these clusters grow depends on various factors. The scientists observed that only half of these events showed newly formed molecular clusters growing past 10 nm size. Thus particle size distributions display a conventional banana-shaped aerosol growth, which is indicative of regional NPF event.

The team found a strong positive correlation between sub-3nm particle concentrations and sulphuric acid concentrations, confirming the potential role of sulfuric acid in the formation of sub-3nm particles. While NPF often starts with sulphuric acid in the atmosphere, sulphuric acid alone fails to explain observed particle formation and growth rates in the atmosphere. Other vapours such as ammonia, amines and organics play a crucial role in the growth of newly

formed particles. Moreover, these newly formed particles did not always grow to large sizes, and the team hypothesized that the particle growth was limited by lower concentrations of condensable vapours such as organic compounds, calling for research using state-of-the-art instrumentation to understand the mechanisms driving NPF in diverse environments across India.

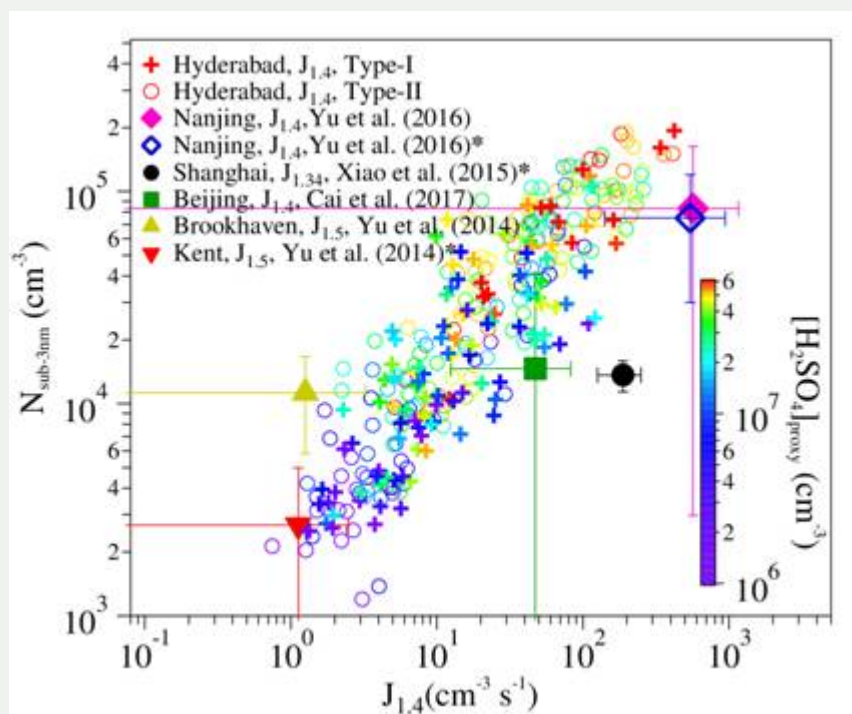


Figure 1. Scatter plot of hourly averaged particle formation rate of 1.4 nm particles ($J_{1.4}$) versus sub-nm particle concentrations ($N_{\text{sub-3nm}}$) as a function of sulfuric acid concentrations ($[\text{H}_2\text{SO}_4]_{\text{proxy}}$) for Type-I (open circle) and Type-II (plus sign) NPF events in Hyderabad. The mean values of $J_{1.4}$, $N_{\text{sub-3nm}}$, and $[\text{H}_2\text{SO}_4]_{\text{proxy}}$ for other sites in diverse environments across the globe are also plotted for comparison. * indicates winter-time measurements. The colour scale shows the concentration of $[\text{H}_2\text{SO}_4]_{\text{proxy}}$.

Publication link:

<https://doi.org/10.1016/j.atmosenv.2021.118460>

SS/RP (DST Media Cell)

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The research showed that a pool of sub-3nm particles is often present in the atmosphere, but how fast these clusters grow depends on various factors. The scientists observed that only half of these events showed newly formed molecular clusters growing past 10 nm size. Thus particle size distributions display a conventional banana-shaped aerosol growth, which is indicative of regional NPF event.

The team found a strong positive correlation between sub-3nm particle concentrations and sulphuric acid concentrations, confirming the potential role of sulfuric acid in the formation of sub-3nm particles. While NPF often starts with sulphuric acid in the atmosphere, sulphuric acid alone fails to explain observed particle formation and growth rates in the atmosphere. Other vapours such as ammonia, amines and organics play a crucial role in the growth of newly formed particles. Moreover, these newly formed particles did not always grow to large sizes, and the team hypothesized that the particle growth was limited by lower concentrations of condensable vapours such as organic compounds, calling for research using state-of-the-art instrumentation to understand the mechanisms driving NPF in diverse environments across India.

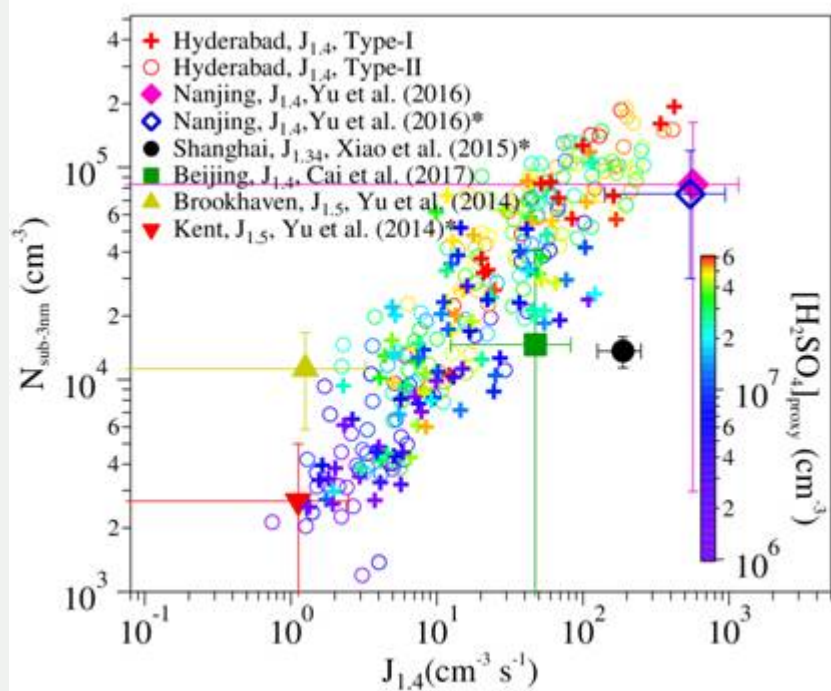


Figure 1. Scatter plot of hourly averaged particle formation rate of 1.4 nm particles ($J_{1.4}$) versus sub-nm particle concentrations ($N_{\text{sub-3nm}}$) as a function of sulfuric acid concentrations ($[\text{H}_2\text{SO}_4]_{\text{proxy}}$) for Type-I (open circle) and Type-II (plus sign) NPF events in Hyderabad. The mean values of $J_{1.4}$, $N_{\text{sub-3nm}}$, and $[\text{H}_2\text{SO}_4]_{\text{proxy}}$ for other sites in diverse environments across the globe are also plotted for comparison. * indicates winter-time measurements. The colour scale shows the concentration of $[\text{H}_2\text{SO}_4]_{\text{proxy}}$.

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FALL IN E-WASTE GENERATION IN POOR COUNTRIES SHOWS GROWING DIGITAL DIVIDE

Relevant for: Environment | Topic: Environmental Pollution - Air, Water, Soil & E-waste

The largest reductions were found in Northern Africa, Western Asia, Sub-Saharan Africa, and Central Asia, that have inadequate e-waste management infrastructure. | Photo Credit: [Reuters](#)

(Subscribe to our Today's Cache newsletter for a quick snapshot of top 5 tech stories. Click [here](#) to subscribe for free.)

Lower consumption of electronic and electrical devices in the first nine months of 2020 (compared to a "business-as-usual" scenario) led to a drop in e-waste generation by 4.9 million metric tonnes. But low- and middle-income countries reported a 30% fall in e-waste, compared to just 5% in high-income countries, according to a [report](#) by the United Nations University and the UN Institute for Training and Research titled 'Impact of the COVID-19 pandemic on e-waste - First three quarters of 2020'.

The inequality in e-waste generation indicates a growing digital divide between rich and poor countries. "The population in low- and middle-income countries is continuously growing the gap of having access to modern communication technologies and other electronics, the so-called digital divide is increasing," the authors noted.

The largest reductions were found in Northern Africa, Western Asia, Sub-Saharan Africa, and Central Asia, that have inadequate e-waste management infrastructure. While this can be interpreted as positive, the effect is only temporary and e-waste production in the regions is likely to grow in the coming years, the authors stated.

Moreover, e-waste in poor countries is managed inappropriately by the informal sector in open burning and acid baths, which are polluting the environment and depleting valuable resources, the report noted. The pollution can also cause severe health effects to workers and children who often live in these sites in some countries.

Also Read | [COVID-19 widened educational divide: UNESCO report](#)

Waste generated by heavy equipments like IT and telecommunication equipment was much lesser than it would have been in a situation without the pandemic, generating only 60 million kg in the first three quarters. This was driven by low industrial activity during the first few months of the pandemic.

A contrary trend was observed in the case of gaming consoles, cell phones, electrical ovens, and laptops, whose consumption increased last year. This fuelled a slight increase in e-waste generation which was caused only by high-income countries, the report added.

It is desirable the temporary trend of low e-waste generation be used to improve e-waste management in many parts of the world, the authors suggested.

United Nations University (UNU) is an autonomous component of the UN General Assembly focusing on global issues of human security development and welfare. The United Nations Institute for Training and Research (UNITAR) is a training arm of the United Nations with a mission of developing the individual, institutional, and organisational capacity of countries and

other United Nations stakeholders.

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“Ever since I was five years old, I’ve dreamed of travelling to space. On July 20th, I will take that journey with my brother. The greatest adventure, with my best friend,” Bezos wrote in an Instagram post.

Apple's video and audio chat app, FaceTime, adds the ability to schedule calls with multiple attendees and making the software compatible with Android and Windows devices.

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'OPERATION OLIVIA' TO THE RESCUE OF OLIVE RIDLEYS

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

Helping hand: Coast Guard personnel rescuing an Olive Ridley turtle. Special Arrangement

Every year, the Indian Coast Guard's "Operation Olivia", initiated in the early 1980s, helps protect Olive Ridley turtles as they congregate along the Odisha coast for breeding and nesting from November to December.

"For optimal results, round-the-clock surveillance is conducted from November till May utilising Coast Guard assets such as fast patrol vessels, air cushion vessels, interceptor craft and Dornier aircraft to enforce laws near the rookeries," a Coast Guard officer said. "From November 2020 to May 2021, the Coast Guard devoted 225 ship days and 388 aircraft hours to protect 3.49 lakh turtles that laid eggs along the Odisha coast."

The Olive Ridley (*Lepidochelys olivacea*) is listed as vulnerable under the International Union for Conservation of Nature's Red list. All five species of sea turtles found in India are included in Schedule I of the Indian Wildlife Protection Act, 1972, and in the Appendix I of the Convention of International Trade in Endangered Species of Wild Fauna and Flora (CITES), which prohibits trade in turtle products by signatory countries. Odisha has also formulated laws for protecting Olive Ridley turtles, and the Orissa Marine Fisheries Act empowers the Coast Guard as one of its enforcement agencies.

"Studies have found three main factors that damage Olive Ridley turtles and their eggs — heavy predation of eggs by dogs and wild animals, indiscriminate fishing with trawlers and gill nets, and beach soil erosion," the officer said.

Dense fishing activity along the coasts of Andhra Pradesh, Odisha and West Bengal, especially ocean-going trawlers, mechanised fishing boats and gill-netters pose a severe threat to turtles.

Coordination of efforts is done at various levels, the officer explained, including enforcing the use of turtle excluder devices (TED) by trawlers in the waters adjoining nesting areas; prohibiting the use of gill nets on turtle approaches to the shore; and curtailing turtle poaching.

Nesting habits

The Olive Ridley has one of the most extraordinary nesting habits in the natural world, including mass nesting called arribadas. The 480-km-long Odisha coast has three arribada beaches at Gahirmatha, the mouth of the Devi river, and in Rushikulya, where about 1 lakh nests are found annually.

More recently, a new mass nesting site has been discovered on the Andaman and Nicobar Islands, with more than 5,000 nests reported in a season, according to the U.S. National Oceanic and Atmospheric Administration (NOAA) Fisheries.

"Sea turtles generally return to their natal beach, or where they were born, to lay eggs as adults," the Coast Guard officer explained. Mating occurs in the offshore waters of the breeding grounds and females then come ashore to nest, usually several times during a season. They crawl ashore, dig a flask-shaped nest about 1.5 to 2 feet deep, and lay 100 to 150 eggs in each

clutch. Hatchlings emerge from their nests together in seven to 10 weeks.

“Between the arrival of the mother and the hatchlings’ retreat to the sea, they go through various challenges. It is estimated that only one in a thousand survive to adulthood,” the officer added.

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HARDY, VIGOROUS CORALS

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

Corals underwater. | Photo Credit: [Aaron Bull](#)

Why do some corals withstand climate change better than others?

In 2014 and 2015, the brown rice coral in Hawaii was completely bleached, but the blue rice coral recovered quickly after bleaching, and blue coral was unaffected by the elevated ocean temperatures.

Researchers from the Smithsonian Conservation Biology Institute, U.S., have now decoded the reason for this resilience. Hawaiian blue rice corals have a deep blue pigment derived from algae called zooxanthellae that live inside the coral tissue. The researchers found that these algae produce sunscreen for the coral. This pigment has a protein named chromoprotein which filters out harmful UV radiation. The findings of this study were published this week in *Scientific Reports*.

After the 2014 and 2015 Hawaii bleaching events, the blue rice coral was found to have exceptional reproductive vigour at 90% motility. But the brown coral's motility was only half this. A key factor in the blue rice coral's ability to reproduce successfully might be its sunscreen pigment, which the coral may retain even if it bleaches.

Lead author Mike Henley, explains in a release that by studying blue rice corals' reproductive successes, we can better understand how other corals weather climate change and ocean warming.

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The study was carried out by researchers from National Institute of Virology, ICMR and Bharat Biotech.

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MEET BHARITALASUCHUS TAPANI, A CARNIVOROUS REPTILE THAT LIVED 240 MILLION YEARS AGO

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

Reconstructed fossil: *Bharitalasuchus tapani* were approximately the size of an adult male lion and might have been the largest predators in their ecosystems.

In the mid 20th century, researchers from the Indian Statistical Institute, Kolkata, carried out extensive studies on rocks of the Yerrapalli Formation in what is now Telangana, uncovering several fossils. By studying some of these specimens stored at the Institute, an international team has now thrown light on a carnivorous reptile that lived 240 million years ago.

This reptile belongs to a genus and species previously unknown to science. They named it *Bharitalasuchus tapani*. In the Telugu language, *Bhari* means huge, *Tala* means head, and *Suchus* is the name of the Egyptian crocodile-headed deity. The species is named after paleontologist Tapan Roy Chowdhury in honour of his contribution to Indian vertebrate paleontology and especially his extensive work on the Yerrapalli Formation tetrapod fauna.

Further studies revealed that the reptile belonged to a family of extinct reptiles named Erythrosuchidae. "A precise identification had not been possible earlier because the family was not known from other examples in India. It was neglected because the fossil specimen was not as complete as those of other erythrosuchids from other countries. Also, because the few palaeontologists with expertise in the family had not examined the fossil or carried out the detailed comparative work needed," explains David Gower from the Natural History Museum London, in an email to *The Hindu*. He is one of the authors of the paper recently published in *Ameghiniana*.

The team notes that *Bharitalasuchus tapani* were robust animals with big heads and large teeth, and these probably predated other smaller reptiles. They were approximately the size of an adult male lion and might have been the largest predators in their ecosystems.

"The first Erythrosuchidae remains were discovered in South Africa in 1905 and more were found in China and Russia. The South African one is about 245 million years old, while the ones from China and Russia are around 240 million years old. So the Indian one is one of the youngest fossil records we have of an erythrosuchid," explains the first author Martin D. Ezcurra from the Argentinian Museum of Natural Sciences in Buenos Aires.

He adds: "It was surprising to find tooth marks in the first trunk vertebra of *Bharitalasuchus*, indicating that a smaller animal took a bite probably after the death of the specimen. This is a nice example of evidence of biological interaction that occurred 240 million years ago." One of the authors Saswati Bandyopadhyay from the Indian Statistical Institute adds: "Apart from this erythrosuchid reptile, the fossil assemblage of the Yerrapalli Formation includes many other extinct creatures such as ceratodontid lungfish, rhynchosaur and allokosaurian."

She adds that future exploration and excavation in this unit are important in finding new fossils. "Unfortunately, deforestation, mining, agricultural expansion, urbanisation are gradually destroying the fossiliferous localities of India, and the Yerrapalli Formation of the Pranhita-Godavari Basin is not an exception," she concludes.

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The study was carried out by researchers from National Institute of Virology, ICMR and Bharat Biotech.

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TREE OF COFFEE FAMILY DISCOVERED IN ANDAMAN AND NICOBAR

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

Pyrostria laljii

A 15-metre-tall tree that belongs to the genus of the coffee family has recently been discovered from the Andaman Islands by a team of researchers from India and the Philippines. The new species, *Pyrostria laljii*, is also the first record of the genus *Pyrostria* in India, the researchers said.

Plants belonging to genus *Pyrostria* are usually found in Madagascar, but the recently discovered species is new to science.

The tree is distinguished by a long stem with a whitish coating on the trunk and oblong-obovate leaves with a cuneate base, and was first reported from the Wandoor forest in South Andaman.

The other places in the Andaman and Nicobar Islands where the tree could be located are the Tirur forest near the Jarawa Reserve Forest and the Chidia Tapu (Munda Pahar) forest.

Pyrostria laljii has been assessed as 'Critically Endangered' based on the International Union for Conservation of Nature's (IUCN) Red List criteria.

M.C. Naik from the Botanical Survey of India, M. Bheemalingappa from the Sri Krishnadevaraya University, Anantapuram, and Axel H. Arriola from University of the East, Manila, Philippines, published the details of the discovery a few months ago in an international, peer-reviewed journal *Annales Botanici Fennici*.

Mr. Naik pointed out that the discovery was unique as the species was a big tree and had not been recorded as a new species yet.

The species has been named *Pyrostria laljii* after Lal Ji Singh, Joint Director and Head of Office, Andaman and Nicobar Regional Centre, Botanical Survey of India. "While the genus *Pyrostria* is not found in India, there are several genera from the family Rubiaceae that are common in India. These plants, including cinchona, coffee, adina, hamelia, ixora, galium, gardenia, mussaenda, rubia, morinda, have high potential for economic value. More studies should be carried out to ascertain whether *Pyrostria laljii* could have some economic value," Dr. Singh said.

Other physical features that distinguish the tree from other species of the genus is its umbellate inflorescence with eight to 12 flowers.

Dr. Singh and Mr. Naik have also discovered a new species of pokeweed named *Rivina andamanensis*.

They said it was found growing under large trees, shaded and rocky areas, along with herbs and shrubby plants.

"This discovery of new species, representing the first record of the pokeweed family Petiveriaceae in the Andaman and Nicobar Islands, adds one more family to the islands' flora," the researchers said.

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INDIA'S CONTRIBUTION TO CLIMATE CHANGE IN LAST 200 YEARS JUST 3%: JAVADEKAR

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

Union Minister Prakash Javadekar. File | Photo Credit: [PTI](#)

Unbridled carbon emissions especially by Europe and the US over the last 200 years, and in the last 40 years by China have caused the climate change disaster, Union Environment Minister Prakash Javadekar said on Monday.

He also said that India's contribution to climate change in the last 200 years has been only 3%.

Developed nations owe USD 1.1 trillion to developing nations as a part of climate change mitigation under the Paris Agreement, and this was discussed at the G7 Summit, which concluded on Sunday, Mr Javadekar said at the virtual 'Environment Conclave: Revival, Regeneration and Conservation of Nature'.

"India's contribution to climate change in the last 200 years is just three per cent. The unbridled carbon emissions particularly by Europe, USA and in the last 40 years by China, caused climate change disaster. These countries prospered economically but polluted the world," he said.

"India is one of the countries with the least contribution in climate change," Mr Javadekar said at the webinar organised by the FICCI Ladies Organisation (FLO).

The FLO is a wing of apex trade body Federation of Indian Chambers of Commerce and Industry (FICCI).

The minister said that as part of the Paris Agreement, rich countries promised to provide USD 100 billion each year to help developing nations combat climate change. "But for the last 11 years nothing has come. In the just concluded G7 meet yesterday they discussed this financial issue seriously because they know they cannot postpone it further," Mr Javadekar said.

He said that as soon as schools -- shut due to the Covid pandemic -- reopen, his ministry will initiate a nursery programme in 5,000 schools.

Under this programme, students of classes six to eight will plant saplings and nurture them till they pass out from their schools, Mr Javadekar said.

"This will inculcate (in them) a habit of taking care of plants, bring discipline and will also help in generating much-needed oxygen (O₂). This will be also introduced in IITs (Indian Institutes of Technology) and other higher education institutes soon," he said.

Mr Javadekar lauded the government's efforts to combat air pollution by introducing BS-VI emission norms for vehicles in April last year and completing the construction of the western and eastern peripheral expressways around Delhi, saying these have helped reduce pollution in the national capital in a big way.

"The adoption of the zig-zag technology in 3,000 out of 6,000 brick kilns around the National Capital Region (NCR) has also helped in reduction of air pollution. Soon all brick kilns will follow the suit," he said.

In zig-zag kilns, bricks are arranged to allow hot air to travel in a zigzag path which results in better mixing of air and fuel, allows complete combustion, reducing coal consumption by about 20 per cent.

Mr Javadekar added that the central government is also taking steps to ensure the country becomes free of single-use plastic by next year.

In a statement the FICCI FLO said that the conclave was aimed at spreading awareness about issues related to the environment and to collectively work together for a better world.

Speaking at the conclave, FICCI FLO president Ujjwala Singhania said the FLO encourages its members' enterprises to manage their triple bottom line - profits, people and planet.

"There is an urgent need to formulate a development model which focuses on responsible and eco-friendly government policies that will promote sustainable use of natural resources," she said.

"The FLO this year has taken the pledge of planting over one lakh trees by our 18 chapters across India. An impactful beginning to this initiative was made on World Environment Day," Ms Singhania said.

She said that the FLO has adopted 143 villages across India with an objective to ensure integrated development with adequate infrastructure and to develop eco-friendly small-scale industries to create sustainable livelihood.

Chair of the FICCI environment committee Mukund Rajan said that with global warming and climate change taking a toll on the planet, there is a need to focus more on preserving biodiversity.

"Global warming and climate change is taking its toll on us in form of various natural disasters, cyclones, extreme climate events and ongoing COVID-19 pandemic. This shows we should focus more on preserving biodiversity and our corporates to find solutions for environmental challenges within the natural environment itself. Our markets are coping up to predict and cope with such events," he said.

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ENERGY INEFFICIENCY CAN SHORT CIRCUIT COOLING INDIA

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

More frequent and intense heat waves are expected with a rise in global temperatures due to climate change. In the last three decades, there have been [660 heat waves across India](#) causing 12,273 deaths. India, with currently low penetration levels of air conditioners (ACs), will likely require substantial cooling services to keep citizens healthy and productive. The [India Cooling Action Plan](#) projects the number of room air conditioners to become about four times in the next 10 years, and about 10 times in the next 20 years, making India the world's largest energy user for cooling.

Here lies a conundrum. Cooling will likely be at the forefront of India's adaptation to climate change, but if cooling needs are met with inefficient ACs, it could be the bane of India's mitigation efforts. Indian homes will be an important site where this conundrum between cooling needs and potential emissions will play out. Despite its clear importance, the implications of an increase in residential cooling demand have not been carefully examined. Estimates of AC ownership and usage, the two factors which will determine the extent of future cooling demand, have little empirical backing. We know little about what cooling appliances people seek, and how and why people make their purchase decisions. The pursuit of energy efficiency, too — for instance, who buys efficient technologies and why — remains underexplored.

Also read | [Report sees climate risk from rise in Indian AC units](#)

In a recently [published paper](#) in the *Environmental Research Letters*, my colleagues and I look at household cooling patterns, and unpack household characteristics that are leading to increased use of air conditioners and adoption of energy efficient choices. The findings are based on a door-to-door household survey in areas of Delhi, with above average levels of AC penetration.

We find that the desired levels of cooling vary greatly even among relatively homogenous communities. In Delhi's wealthy neighbourhoods, 43% of the households own an AC, 39% own coolers and 18% only have a fan. Further, the way households use ACs also differs quite a bit. While most households use an AC for three to four hours a day during peak summer months, about 15% use ACs for over eight hours a day. It is interesting to note that the India Cooling Action Plan in its estimation of residential cooling demand, assumes that an average household uses an AC for eight hours a day, which as per our study seems to be an upper bound. People prefer different AC set-point temperatures, again indicative of varying perceptions of thermal comfort. Half of the households set their ACs between 24°C-26°C, and 27% prefer their AC temperature to be between 21°C-23°C. This wide range of preferred AC temperatures have important implications on energy demand requirements, as [every 1°C increase in AC set-point temperature can lead to additional 6% energy savings](#).

Unfortunately, energy efficiency does not feature as a priority in the purchase of cooling appliances. Only 7% of the households have an energy efficient (star-rated) fan, and 88% of the coolers are locally assembled. Most people prefer to buy a three-star AC, and less than 20% of AC-owning households bought the highest rated five-star AC.

Large-scale adoption of efficient cooling appliances will be essential to providing the required thermal comfort in a low carbon manner. We find that low levels of energy efficiency awareness

are a major bottleneck that hinders the purchase of more efficient appliances. A third of the households did not know of the Star Labelling programme, which is a government programme mandatory for refrigerators and air conditioners. Of the households that had heard of the programme, only half of them understood what it meant. We find that it is this set of informed households that are more likely to own a higher efficiency AC, and also likely to use the appliance efficiently. Higher upfront cost and low market availability of more efficient air conditioners (four-star and five-star) are other reasons for buying a less efficient AC. We find that many households also use alternative cooling strategies to keep cool, with the use of a fan being the favourite non-AC cooling option, and use of non-energy cooling methods such as natural ventilation being a common practice. Households using such non-AC cooling methods were found to use their AC for fewer hours.

Also read | [The right temperature for a building](#)

The impending cooling demand transition in India offers a potential advantage. Because a majority of investments in cooling technologies, infrastructure, and behaviours are yet to be made, there is a unique opportunity to lock-in energy efficient consumption patterns. Awareness campaigns on the benefits of energy efficiency along with subsidies and financial incentives that help with the higher upfront costs can help drive up the adoption of more efficient technologies. Encouraging the use of passive cooling alternatives including energy efficient building designs can help provide the desired thermal comfort with reduced dependence on energy intensive cooling technologies.

Anna Agarwal is a fellow at the Centre for Policy Research, New Delhi. The views expressed are personal

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HALF OF U.S. COSMETICS CONTAIN TOXIC CHEMICALS: STUDY

Relevant for: Developmental Issues | Topic: Health & Sanitation and related issues

The chemicals also pose the risk of environmental contamination associated with manufacturing and disposal | Photo Credit: [REUTERS](#)

More than half the cosmetics sold in the United States and Canada are awash with a toxic industrial compound associated with serious health conditions, [according to a new study](#).

Researchers at the University of Notre Dame tested more than 230 commonly used cosmetics and found that 56% of foundations and eye products, 48% of lip products and 47% of mascaras contained fluorine — an indicator of PFAS (Per- and polyfluoroalkyl substances), so-called “forever chemicals” that are used in nonstick frying pans, rugs and countless other consumer products.

Some of the highest PFAS levels were found in waterproof mascara (82%) and long-lasting lipstick (62%), according to the study published Tuesday in the journal *Environmental Science & Technology Letters*. Twenty-nine products with higher fluorine concentrations were tested further and found to contain between four and 13 specific PFAS chemicals, the study found. Only one item listed PFAS as an ingredient on the label.

A spokeswoman for the U.S. Food and Drug Administration, which regulates cosmetics, said the agency does not comment on specific studies. The FDA said on its website that there have been few studies of the presence of the chemicals in cosmetics, and the ones published generally found the concentration is at very low levels not likely to harm people, in the parts per billion level to the 100s of parts per million.

A fact sheet posted on the agency’s website says that, “As the science on PFAS in cosmetics continues to advance, the FDA will continue to monitor voluntary data submitted by industry as well as published research.

But PFAS chemicals are an issue of increasing concern for lawmakers who are working to regulate their use in consumer products. The study results were announced as a bipartisan group of senators introduced a bill to ban the use of PFAS in cosmetics and other beauty products.

The move to ban PFAS comes as Congress considers wide-ranging legislation to set a national drinking water standard for certain PFAS chemicals and clean up contaminated sites across the country, including military bases where high rates of PFAS have been discovered.

“There is nothing safe and nothing good about PFAS,” said Sen. Richard Blumenthal, D-Conn., who introduced the cosmetics bill with Sen. Susan Collins, R-Maine. “These chemicals are a menace hidden in plain sight that people literally display on their faces every day.”

Rep. Debbie Dingell, D-Mich., who has sponsored several PFAS-related bills in the House, said she has looked for PFAS in her own makeup and lipstick, but could not see if they were present because the products were not properly labeled.

“How do I know it doesn't have PFAS?” she asked at a news conference Tuesday, referring to

the eye makeup, foundation and lipstick she was wearing.

The Environmental Protection Agency also is moving to collect industry data on PFAS chemical uses and health risks as it considers regulations to reduce potential risks caused by the chemicals.

The Personal Care Products Council, a trade association representing the cosmetics industry, said in a statement that a small number of PFAS chemicals may be found as ingredients or at trace levels in products such as lotion, nail polish, eye makeup and foundation. The chemicals are used for product consistency and texture and are subject to safety requirements by the FDA, said Alexandra Kowcz, the council's chief scientist.

"Our member companies take their responsibility for product safety and the trust families put in those products very seriously, she said, adding that the group supports prohibition of certain PFAS from use in cosmetics. "Science and safety are the foundation for everything we do."

But Graham Peaslee, a physics professor at Notre Dame and the principal investigator of the study, said the cosmetics poses an immediate and long-term risk. "PFAS is a persistent chemical. When it gets into the bloodstream, it stays there and accumulates," Peaslee said.

No specific companies were named in the study, although supporting material indicates that researchers tested dozens of brands, including many household names.

The study did not seek to link any health effects to cosmetics use, but Peaslee said researchers found PFAS levels that ranged from a few parts to billion to thousands of parts per billion. He called the latter totals "worrisome."

The chemicals also pose the risk of environmental contamination associated with manufacturing and disposal, he said.

The man-made compounds are used in countless products, including nonstick cookware, water-repellent sports gear, cosmetics and grease-resistant food packaging, along with firefighting foams.

Public health studies on exposed populations have associated the chemicals with an array of health problems, including some cancers, weakened immunity and low birth weight. Widespread testing in recent years has found high levels of PFAS in many public water systems and military bases.

Blumenthal, a former state attorney general and self-described "crusader" on behalf of consumers, said he does not use cosmetics. But speaking on behalf of millions of cosmetics users, he said they have a message for the industry: "We've trusted you and you betrayed us."

Brands that want to avoid likely government regulation should voluntarily go PFAS-free, Blumenthal said. "Aware and angry consumers are the most effective advocate" for change, he said.

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How scientists make out the difference between variants of a virus

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GOVERNMENT RELEASES DESERTIFICATION AND LAND DEGRADATION ATLAS OF INDIA

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

Minister of State for Environment, Forest and Climate Change, Shri Babul Supriyo today called for generating awareness towards preventing and restoring land degradation for healthier and sustainable ecosystems. Speaking at a virtual event celebration of the Desertification and Drought Day, Shri Supriyo said, this will help better economy and overall human wellbeing.

The Desertification and Drought day was commemorated by the Ministry, with an aim to generate large scale awareness towards understanding the key role of land in all environmental and economic concerns, that world, as well as India is facing now-a days.

On the occasion, the Minister of State released the latest version of "Desertification and Land Degradation Atlas of India. It has been published by Space Application Centre, ISRO, Ahmedabad. The Atlas provides state wise area of degraded lands for the time frame 2018-19. It also provides the change analysis for the duration of 15 years, from 2003-05 to 2018-19.

Secretary in the Ministry Shri RP Gupta said, the salient findings of this Atlas are not only useful as a ready reference, but, will also be helpful in strengthening the envisaged National Action Plan for achieving land restoration targets by providing important baseline and temporal data and technical inputs.

The secretary further stated that the salient findings of this Atlas are not only useful as a ready reference, but, will also be helpful in strengthening the envisaged National Action Plan for achieving land restoration targets by providing important baseline and temporal data and technical inputs.

The event also observed release of Coffee Table Book "India Hosting UNCCD-COP 14" and a short film on UNCCD-COP 14. The commemoration of this event encourages individuals and groups to take initiatives that can keep the land healthy and productive.

India hosted the 14th session of Conference of Parties (COP 14) of United Nations Convention to Combat Desertification (UNCCD) in September 2019. India is striving towards achieving the national commitments of Land Degradation Neutrality (LDN) and restoration of 26 Million ha of degraded land by 2030 which focus on sustainable and optimum utilisation of land resources.

India has been at the forefront of bringing the issue of land degradation to the core of relevant international alliances for protection and conservation of environment. The government of India has adopted collective approach for making progress towards achieving the national commitments related to land restoration.

GK

Minister of State for Environment, Forest and Climate Change, Shri Babul Supriyo today called for generating awareness towards preventing and restoring land degradation for healthier and

sustainable ecosystems. Speaking at a virtual event celebration of the Desertification and Drought Day, Shri Supriyo said, this will help better economy and overall human wellbeing.

The Desertification and Drought day was commemorated by the Ministry, with an aim to generate large scale awareness towards understanding the key role of land in all environmental and economic concerns, that world, as well as India is facing now-a days.

On the occasion, the Minister of State released the latest version of “Desertification and Land Degradation Atlas of India. It has been published by Space Application Centre, ISRO, Ahmedabad. The Atlas provides state wise area of degraded lands for the time frame 2018-19. It also provides the change analysis for the duration of 15 years, from 2003-05 to 2018-19.

Secretary in the Ministry Shri RP Gupta said, the salient findings of this Atlas are not only useful as a ready reference, but, will also be helpful in strengthening the envisaged National Action Plan for achieving land restoration targets by providing important baseline and temporal data and technical inputs.

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EXPLAINED

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

The story so far: The [latest phenomenon that has taken America by storm](#) is the song of the cicadas. Billions of cicadas have emerged across eastern parts of the United States. [Periodical cicadas](#), so called because of their 13- or 17-year life cycle, most of which is spent underground, emerge from their earthy digs to romance, reproduce and retire. This year is the year of the Brood X periodical cicadas. Here, X stands for the Roman numeral and refers to the sequence of emergence. Certain questions arise in the research on cicadas — how do they grow underground, what do they eat during their 13- or 17-year nymph stages spent burrowed in, or how do they know it is time to emerge?

Periodical cicadas of the genus *Magicicadae* have intrigued entomologists since they were noticed. Though Native Americans in the east of America knew about them earlier, the earliest recorded mention of these insects was in 1633 (there is some doubt whether this was in 1631 or 1634) by William Bradford, the governor of Plymouth Colony in America, according to [Gene Kritsky's article](#) in *American Entomologist* in 2001. This area later developed into the town of Plymouth, Massachusetts. The next mention was in 1666 by an unsigned note published by Henry Oldenberg where he referred to “swarms” of “locusts”. However, these insects are neither locusts nor do they swarm.

As species, [periodical cicadas are older than the forests](#) that they inhabit, writes Chris Simon in an article in *The Conversation*. Molecular analysis has shown that about 4 million years ago, the ancestor of the current *Magicicada* species split into two lineages. Some 1.5 million years later, one of those lineages split again. The resulting three lineages are the basis of the modern periodical cicada species groups, *Decim*, *Cassini* and *Decula*. Each of these three species has 13-year and 17-year broods.

Cicada sushi, anyone? U.S. chef serves up sustainable delicacy

The term ‘brood’ is used to refer to all periodical cicadas that emerge the same year and occupy a geographically contiguous area. Charles Marlatt assigned roman numerals to designate their year of emergence, and the sequence started arbitrarily in 1893. The brood with the 17-year cycle that emerged in 1893 was denoted [Brood I](#) and so on. So the 17-year broods were designated I to XVII, and the 13-year broods were designated XVIII to XXX.

These cicadas spend most of their lives underground. They grow burrowed in their earthy homes by feeding on root xylem for 13 or 17 years. During this time, they complete five developmental stages, known as “instars”, entirely underground. The fifth-instar nymphs emerge from the ground by making holes and then transform into adults, only to perish approximately four weeks later. As adults, they gather in so-called chorus groups, where the males sing to woo the females. After mating, the female lays eggs in thin twiggy branches of trees and then dies. The eggs hatch and the nymphs drop into the earth like rain, burrowing into it. About 95% of the nymphs die, and the ones that are left feed on root sap and remain underground, till it is time to emerge. This is described in [an article by Kathy S. Williams and Chris Simon](#) in *Annual Review of Entomology* (1995).

They are found to the east of the Great Plains in the U.S. and north of Florida, says Chris Simon, Professor of Ecology and Evolutionary Biology at the University of Connecticut, in an email. “They emerge earlier in the warmer southern areas (late April-May) and later in the colder zones (late May-June),” she adds.

“In any given place, they come out only once every 13 or 17 years. Occasionally, part of a population will come out four years early and part four years late. With climate warming, we are seeing more four-year early emergences in larger numbers,” says Prof. Simon. For instance, the [Brood X periodical cicadas were documented in 2017 too](#), according to an article in the *Washington Post*.

There are three species of cicadas found in the Indian subcontinent — [Chremistica mixta](#) (found in Sri Lanka), *C. seminiger* (found in the Nilgiri hills) and [C. ribhoi](#) (discovered in Ri-Bhoi district of Meghalaya).

Mass emergence has been noticed only in the case of *Chremistica ribhoi*. The emergence takes place after dusk and once in four years. The phenomenon is well known among the villagers, who refer to the insect in the local Khasi language as ‘niangtaser’ (*niang* stands for “insect” and *taser* is believed to be derived from the name of the village “Iewsier”, which refers to the area in which the phenomenon occurs, and the forest region around it). This periodical cicada is used as food and fish bait and has been observed in May 2006 and in May 2010, according to a 2013 article in *Zootaxa* by Sudhanya Ray Hajong and Salmah Yaakop.

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Solar flares from the surface of the Sun generate particles that can have particularly devastating impacts on human health and penetrate current generation spaceships.

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FOREST FRAGMENTS IN AGRICULTURAL AREAS ARE KEY TO BAT CONSERVATION: STUDY

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

Megaderma spasma, an insectivorous bat. Credit: Harish Prakash

Along with protected areas and reserves, forests within human-modified landscapes play an important role in the conservation of existing flora and fauna. [A recent study](#) has noted that bats preferred forest patches for foraging more often than agricultural habitats, highlighting that remnant forest fragments in human-modified landscapes are key to bat conservation.

Researchers from the Indian Institute of Science, Bangalore, and St. Xavier's College, Kolkata studied the area in and around Kadari village in Udipi district, Karnataka. The area had evergreen forests and plantations of areca, coconut, and rubber. Previous studies have identified numerous roosts of an insectivorous bat, *Megaderma spasma* in this area.

The team tracked 18 bats using radio telemetry to understand their preferred habitats. The bats were glued with radio transmitters weighing about 1gm and the transmitters' signal was tracked using receivers and antennas across nights to pinpoint the location of the bat. The analysis of these bat locations suggested that the bats preferred the forest habitats and the odds of bats using forest habitats was nearly six times higher than open habitats.

To understand why this love towards forests, the team started studying the bat's meal - insects. They quantified the insect resources available in forests and plantations using nets, light traps and sometimes physically catching insects. The team noted that the abundance of one of the bat's favorite prey - a bush cricket belonging to the genus Mecopoda - was higher in forest habitats than in plantations. This suggests that insect prey abundance in forests may be driving the bat's habitat selection.

"Bats as a community has been receiving brickbats in recent times since many zoonotic diseases trace their possible origin to them. But if bat populations are left alone and their habitats are preserved, the chance of a spill-over is highly unlikely. Moreover, bats in the landscape perform important ecosystem services like seed dispersal, pollination and insect pest control that will benefit us humans," explains Harish Prakash, Research Associate at the Centre for Ecological Sciences, Indian Institute of Science (IISc), Bangalore. He is the first author of the paper published recently in paper published in *Forest Ecology and Management*. It is co-authored by Kasturi Saha and Rohini Balakrishnan from IISc and Soham Sahu from the Department of Biotechnology, St. Xavier's College, Kolkata.

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FISH ONCE LABELED A 'LIVING FOSSIL' SURPRISES SCIENTISTS AGAIN

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

Staff of department of fish studies at the National Museum of Kenya on Nov. 19, 2001, display a coelacanth fish caught by Kenyan fishermen at the coastal town of Malindi in April 2001. | Photo Credit: [REUTERS](#)

The coelacanth — a wondrous fish that was thought to have gone extinct along with the dinosaurs 66 million years ago before unexpectedly being found alive and well in 1938 off South Africa's east coast — is offering up even more surprises.

Scientists said [a new study](#) of these large and nocturnal deep-sea denizens shows that they boast a lifespan about five times longer than previously believed — roughly a century — and that females carry their young for five years, the longest-known gestation period of any animal.

Focusing on one of the two living species of coelacanth (pronounced SEE-lah-canth), the scientists also determined that it develops and grows at among the slowest pace of any fish and does not reach sexual maturity until about age 55.

The researchers used annual growth rings deposited on the fish's scales to determine the age of individual coelacanths - "just as one reads tree rings," said marine biologist Kélig Mahé of the French oceanographic institution IFREMER, lead author of the study published this week in the journal *Current Biology*.

Coelacanths first appeared during the Devonian Period roughly 400 million years ago, about 170 million years before the dinosaurs. Based on the fossil record, they were thought to have vanished during the mass extinction that wiped out about three-quarters of Earth's species following an asteroid strike at the end of the Cretaceous Period.

After being found alive, the coelacanth was dubbed a "living fossil," a description now shunned by scientists.

"By definition, a fossil is dead, and the coelacanths have evolved a lot since the Devonian," said biologist and study co-author Marc Herbin of the National Museum of Natural History in Paris.

It is called a lobe-finned fish based on the shape of its fins, which differ structurally from other fish. Such fins are thought to have paved the way for the limbs of the first land vertebrates to evolve.

Coelacanths reside at ocean depths of as much as half a mile (800 meters). During daylight hours they stay in volcanic caves alone or in small groups. Females are somewhat larger than males, reaching about seven feet (two meters) long and weighing 240 pounds (110 kg).

The two extant species, both endangered, are the African coelacanth, found mainly near the Comoro Islands off the continent's east coast, and the Indonesian coelacanth. The study focused on the African coelacanth, using scales from 27 individuals in two museum collections.

Previous research had suggested roughly a 20-year lifespan and among the fastest body growth of any fish. It turns out that this was based on a misreading decades ago of another type of ring

deposited in the scales.

"After reappraisal of the coelacanth's life history based on our new age estimation, it appears to be one of the slowest - if not the slowest - among all fish, close to deep-sea sharks and roughies," said IFREMER marine evolutionary ecologist and study co-author Bruno Ernande. "A centenarian lifespan is quite something."

The Greenland shark, a big deep-ocean predator, can claim the distinction of being Earth's longest-living vertebrate, with a lifespan reaching roughly 400 years.

Ernande said the researchers were astounded when they figured out the coelacanth's record gestation period, which exceeds the 3.5 years of frilled sharks and the two years of elephants and spiny dogfish sharks.

The researchers said late sexual maturity and a lengthy gestation period, combined with low fecundity and a small population size, makes coelacanths particularly sensitive to natural or human-caused environmental disturbances such as extreme climate events or too much accidental fishing.

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FOSSILS SHOW NEW SPECIES OF EXTINCT GIANT RHINO THAT ROAMED ASIA

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

Paraceratherium linxiaense giant rhinos in the Linxia Basin during the Oligocene are seen in this handout rendering provided by the Institute of Vertebrate Paleontology and Paleoanthropology (IVPP) of the Chinese Academy of Sciences June 18, 2021. Chen Yu/Institute of Vertebrate Paleontology and Paleoanthropology/Handout via REUTERS

Fossils found in northwest China's Gansu province indicate a new species of giant rhino that lived more than 26 million years ago, [according to a paper](#) published in the journal *Communications Biology* on Thursday.

The fossils including a skull and two vertebrae found in the reddish-brown sandstone of the Linxia basin shed light on how the ancient rhinos, some of the largest land mammals ever, evolved and moved across what is now Asia.

The dispersal of giant rhino fossils — others have been found on the far side of the Himalayas in Pakistan — indicate “Tibet, as a plateau, did not yet exist and was not yet a barrier to exchange of largest land mammals,” the paper said.

Giant rhinos like the newly discovered species, named *Paraceratherium linxiaense*, were hornless, long-necked herbivores, perhaps weighing 20 tonnes - equal to several elephants - and likely living in open woodland.

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PACT SIGNED TO CONSERVE RARE TURTLE IN ASSAM

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

The freshwater black softshell turtle. Special Arrangement Special Arrangement

A major temple in Assam has signed a memorandum of understanding with two green NGOs, the Assam State Zoo-cum-Botanical Garden and the Kamrup district administration for the long-term conservation of the rare freshwater black softshell turtle or the *Nilssonina nigricans*.

A vision document 2030 was also launched after Turtle Survival Alliance India and Help Earth signed the pact involving the Hayagriva Madhava Temple Committee. The temple, revered by both Hindus and Buddhists, is at Hajo, about 30 km northwest of Guwahati.

Until sightings along the Brahmaputra's drainage in Assam, the black softshell turtle was thought to be "extinct in the wild" and confined only to ponds of temples in northeastern India and Bangladesh. The International Union for Conservation of Nature had in 2021 listed the turtle as "critically endangered". But it does not enjoy legal protection under the Indian Wildlife (Protection) Act of 1972, although it has traditionally been hunted for its meat and cartilage, traded in regional and international markets.

"Various temple ponds in Assam such as that of the Hayagriva Madhava Temple harbour various threatened species of turtles. Since the turtles are conserved in these ponds only based on religious grounds, many biological requirements for building a sustainable wild population have since long been overlooked," Arpita Dutta of Turtle Survival said.

"This multi-stakeholder association [conservation pact] aims to restock the wild with viable, self-sufficient and genetically pure threatened turtle populations in the region. We will offer assistance for the required improvement of husbandry of turtles kept in such ponds, and further recovery efforts are recommended for the long-term survival and existence of the endangered freshwater turtles," she added.

Kamrup Deputy Commissioner Kailash Kartik N. emphasised the mass awareness on the conservation issues of all species of turtles in the region while working on threats and opportunities to strengthen the black softshell turtle population in Assam.

Zoo director Tejas Mariswamy and Help Earth's Jayaditya Purkayastha attended the programme on June 19, along with members of the Hayagriva Madhava Temple Committee.

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CORPSES DID NOT ADD TO GANGA POLLUTION: CENTRE

Relevant for: Environment | Topic: Environmental Pollution - Air, Water, Soil & E-waste

Revered rivers: Pilgrims at the Sangam, the confluence of rivers Ganga and Yamuna, during Ganga Dussehra festival in Prayagraj on Sunday. AP

The dumping of bodies in the Ganga, allegedly of those who died of COVID-19, did not increase pollution in the river, the Jal Shakti Ministry has said.

The National Mission for Clean Ganga (NMCG) had solicited reports in May from the Centre, the State Pollution Control Boards of Uttar Pradesh and Bihar and the Central Water Commission on whether the disposal of corpses in the river had affected water quality.

Data for April-June suggested that the water quality in terms of pH, DO (dissolved oxygen), BOD (biochemical oxygen demand) conformed with the bathing water quality criteria except “marginal deviations at few locations” and these were not dissimilar from the water quality observed in previous years. They may not be attributed to incidents of floating bodies, the NMCG said in a report based on responses from these departments. *The Hindu* has viewed this report.

On May 14, the National Human Rights Commission (NHRC) had asked the Centre and the Bihar and the Uttar Pradesh State governments to furnish a report following a complaint by a private citizen that several unclaimed or unidentified, unburnt/ partially burnt bodies were found floating in the “sacred” river Ganga. Some of the bodies were suspected to be of COVID-19 victims.

The complainant alleged that the disposal of bodies in and around the river would not only pollute the river but also seriously affect all those persons who are dependent on the river.

Sample study

Along with assessing water quality, the Secretary, Jal Shakti Ministry decided after a meeting with the Chief Secretaries of Uttar Pradesh and Bihar on May 18 to study if the river water was contaminated with SARS-CoV-2 from the bodies being disposed in it. They also wanted to know if the virus could spread and infect those who came into contact with the water.

The ICMR-National Institute of Virology was approached to study water samples from the river but they declined to take part in the study. The CSIR-Indian Institute of Toxicology Research (IITR), Lucknow has now been entrusted with the project.

Results awaited

They have collected samples from burial sites (Kannauj, Unnao, Kanpur, Prayagraj and Ghazipur districts) in Uttar Pradesh and Buxor and Saran districts in Bihar though results of the analysis are not yet public.

Previous studies from the CSIR-Centre for Cellular and Molecular Biology, Hyderabad have shown that the coronavirus can be found in sewage and wastewater, and these have been used to estimate the prevalence of the infection in other urban locations.

The NMCG, a Jal Shakti Ministry body, is the nodal agency tasked with coordinating the over Rs. 20,000 crore initiative to clean the Ganga, a flagship programme of the government. One of the measures employed is to discourage a practice of disposing bodies in the river. To this end, the NMCG had funded projects to improve crematoria along the banks of the river in riparian States.

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RIVER RUNOFF, GLACIER MELT AND SEASONALITY OF FLOW IN RIVERS PROJECTED TO INCREASE IN FUTURE

Relevant for: Environment | Topic: Environmental Conservation, Sustainable Development, and EIA

Snow and glaciers are melting rapidly in the Himalayan range due to climate change, altering water supplies in the rivers like Indus, Ganga and Brahmaputra in the Himalaya-Karakoram (HK) ranges.

The HK region in South Asia, often called the water tower of Asia or the Third Pole is one of the most heavily glacierized mountain regions on Earth. Understanding the response of HK rivers to climate change is crucial for almost 1 billion people who partly depend on these water resources.

Total river runoff, glacier melt, and seasonality of flow in these rivers are projected to increase until the 2050s, with some exceptions and large uncertainties, according to a study "[Glacio-hydrology of the Himalaya-Karakoram](#)" published in the journal 'SCIENCE'

The research led by Dr Mohd. Farooq Azam, assistant professor at the Indian Institute of Technology Indore gathered the results from more than 250 scholarly research papers to arrive at a more accurate understanding —something approaching a consensus— of the links between climatic warming, precipitation change and glacier shrinkage.

The study shows that glacier and snow melt are important components of HK rivers with greater hydrological importance for the Indus than Ganga and Brahmaputra basins.

"The Himalayan river basins cover an area of 2.75 million km² and have the largest irrigated area of 577,000 km², and the world's largest installed hydropower capacity of 26,432 MW. The melting glaciers fulfils the water requirements of more than a billion people of the region who will be affected when much of the glacier ice mass melts throughout this century and gradually stops supplying the required amount of water," said Dr Azam.

He added "region-wide, the total impact on each year's water supply varies. Glacier meltwater, and climate change impacts on glaciers, are more crucial for the Indus basin in comparison to the Ganga and Brahmaputra basins which are predominantly fed by monsoon rains and are affected mainly due to the changing rainfall patterns."

Smriti Srivastava, a PhD student of Dr. Azam and co-author of the study said "projected trends in river runoff volume and seasonality over the 21st century are consistent across a range of climate change scenarios. Total river runoff, glacier melt, and seasonality of flow are projected to increase until the 2050s, and then decrease, with some exceptions and large uncertainties."

The work supported by INSPIRE Faculty fellowship funded by the Department of Science and Technology (DST), Govt identified gaps in understanding the impacts of climate change on the Himalayan water resources, and highlighted prospective solutions to bridge these gaps. This INSPIRE Faculty project also resulted in a research documentary earlier (<https://youtu.be/sPaqNs-btfl>).

Policymakers need to assess the current status and potential future changes of rivers for sustainable water resource management for agriculture, hydropower, drinking, sanitation, and

hazard situations.

The authors recommend a tiered approach to address the identified gaps: Tier-1 includes an expanded observation network that places fully automatic weather stations on selected glaciers. They also suggest developing comparison projects to examine glacier area and volumes, glacier dynamics, permafrost thaw, and snow and ice sublimation. Meanwhile, Tier-2 recommendations implement the knowledge of these studies in detailed models of glacier hydrology to reduce the uncertainty in projections of future change.



Publication link: [10.1126/science.abf3668](https://doi.org/10.1126/science.abf3668) (2021)

For more information contact: Mohd. Farooq Azam at farooqazam@iiti.ac.in (cell: 0091-8476085786).

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COLOMBIA HAS THE WORLD'S LARGEST VARIETY OF BUTTERFLY SPECIES: STUDY

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

Monarch butterfly feeding on a Duranta flower | Photo Credit: [AP](#)

Colombia is home to the world's largest variety of butterflies, approximately 20% of all known species, according to a study published Tuesday by the Natural History Museum in London.

An international team of scientists cataloged 3,642 species and 2,085 subspecies, registering them in a document titled "Checklist of Colombian Butterflies."

More than 200 butterfly species are found only in Colombia, said Blanca Huertas, the senior butterfly collection curator at the Natural History Museum in London, who was part of the research team.

Project researchers traveled widely in Colombia, analyzed more than 350,000 photographs, and studied information collected since the late 18th century, the museum said.

"Colombia is a country with a great diversity of natural habitats, a complex and heterogeneous geography and a privileged location in the extreme northeast of South America," the report reads. "These factors, added to the delicate public order in the last century in certain regions, has limited until now, the advancement of field exploration."

Colombia has endured more than half a century of armed conflict, with some areas controlled by leftist guerrillas, right-wing paramilitary groups or drug lords, and with little government presence.

Protecting butterflies in Colombia will also help protect its forests as well as other, less likeable species, Huertas said.

Between 2000 and 2019 Colombia lost nearly 2.8 million hectares of forest, equivalent to the area of Belgium, according to the National Department of Planning.

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WATCH

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

The Saiga Antelope has been a critically endangered species since 2018. But the antelope species is [making a comeback](#).

Kazakhstan is home to a majority of the world's Saiga. The population of the Saiga antelope has more than doubled in Kazakhstan since 2019. It rose from 3,34,000 to 8,42,000 since the last aerial survey.

This gives conservationists fresh hope for the animal's long-term survival as it suggests a continuing rebound after a massive die-off in 2015.

Also read: [A struggle to co-exist with humans](#)

Around 2,00,000 antelopes were wiped out by what scientists later determined was a nasal bacterium that spread in unusually warm and humid conditions in 2015. This was well over half the total global population of Saiga at the time.

The International Union for Conservation of Nature deems the Saiga to be among five critically endangered antelope species. The Saiga is known for its distinctive bulbous nose.

The threat of poaching is fuelled by the demand for the Saiga's horn in traditional Chinese medicine. Kazakhstan's leaders have pledged to intensify their crackdown on poaching.

Climate change and the expansion of human activity through farming and infrastructure projects are other threats to the Saiga.

Earlier this month the ecological ministry estimated that around 350 female saiga antelopes had been killed by lightning amid storms in the west of the country.

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Besides models, all-cause mortality numbers from India's Civil Registration System suggest that official figures may have been exceeded by far

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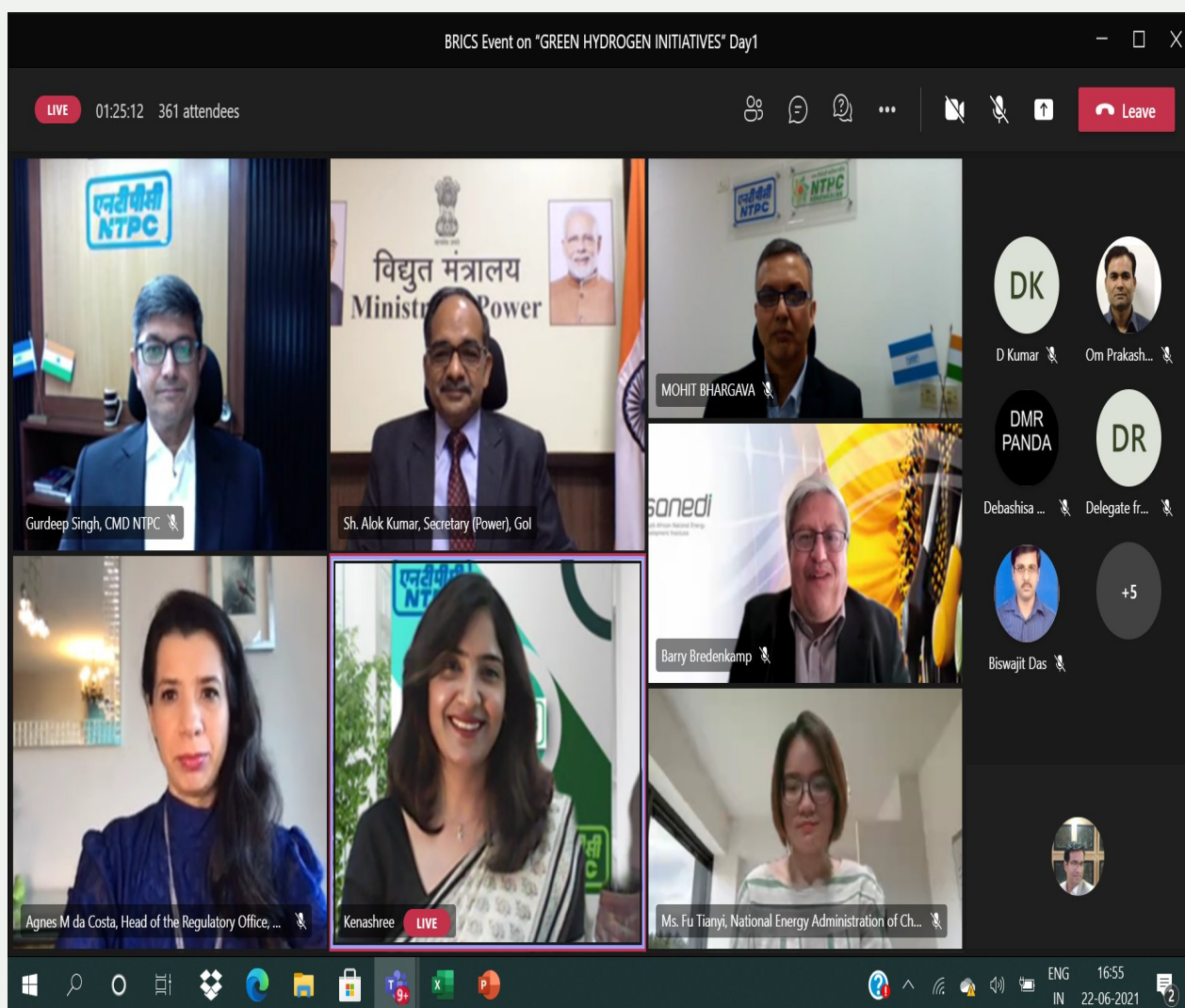
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NTPC ANCHORS TWO DAY BRICS GREEN HYDROGEN SUMMIT

Relevant for: International Relations | Topic: BRICS, IBSA and India

NTPC Ltd, India's largest energy integrated company under Ministry of Power anchored a two day workshop on Green Hydrogen, one of the most popular and demanding fields in the current times and considered to be the next carrier of energy.

The online event saw leading experts from the Brazil, Russia, India, China, South Africa (BRICS) countries who shared their insights and professional views on the subject as well as the latest developments going on in their countries in the area of green hydrogen.



The key note speakers from BRICS virtual summit were, Ms. Agnes M da Costa (Ministry of Mines & Energy, Brazil), Mr. Kovalev Andrey (Russian Energy Agency, Russia), Dr. Prakash Chandra Maithani, (Scientist G, MNRE, Government of India), Ms. Fu Tianyi (National Energy Administration of China), Mr. Makgabo H Tsiri (International Relations, National Department of Energy, South Africa).

Shri Alok Kumar, Secretary Ministry of Power, in his key note address said that Government and industry must work together to ensure existing regulations are not an unnecessary barrier to investment. Trade will benefit from common international standards for the safety of transporting and storing large volumes of hydrogen and having appropriate certificate of origin. BRICS

countries could work together on these aspects.

He further said that India has launched an ambitious National Hydrogen Mission to introduce hydrogen purchase obligations for fertilizers, refineries involving private sector in transparent and competitive manner to produce green hydrogen.

During the welcome remarks, Shri Gurdeep Singh, CMD, NTPC Ltd said that Five BRICS countries share a common vision of sustainable development and inclusive economic growth. Strengthening energy cooperation and ensuring affordable, reliable, accessible and secure energy for all, has always been a strategic area of importance in the agenda of BRICS countries.

He added that for India, the transition to a hydrogen economy will not only reduce India's import dependency on hydrocarbon fuels but also provide clean air to its citizens, reduce GHG emissions in absolute terms and fulfil India's Atmanirbhar Bharat vision.

These BRICS countries are capable of ensuring that there is net-zero carbon emission since the cost of deployment of these emerging technologies in these countries is a fraction in comparison to that of other developed countries. The prevention of CO₂ will have a worldwide positive impact.

NTPC is pioneering Green Hydrogen Initiatives in India. NTPC which is undertaking extensive study, experimentations in the areas of Carbon Capture & Hydrogen has also announced a few pilot projects on Green Hydrogen to this.

Green hydrogen is of great topical interest to all the countries including BRICS as it has a great amount of potential to ensure sustainable energy supply, increase the level of energy availability and minimize the negative impact on the environment.

SS/IG

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HUNGER, DROUGHT, DISEASE: UN CLIMATE REPORT REVEALS DIRE HEALTH THREATS

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

In this file photo taken on April 22, 2016 a child remains at an area affected by a drought on Earth Day in the southern outskirts of Tegucigalpa, Honduras. | Photo Credit: [AFP](#)

Hunger, drought and disease will afflict tens of millions more people within decades, according to a draft UN assessment that lays bare the dire human health consequences of a warming planet.

After a pandemic year that saw the world turned on its head, a forthcoming report by the Intergovernmental Panel on Climate Change (IPCC), seen exclusively by *AFP*, offers a distressing vision of the decades to come: malnutrition, water insecurity, pestilence.

Policy choices made now, like promoting plant-based diets, can limit these health consequences — but many are simply unavoidable in the short term, the report says.

It warns of the cascading impacts that simultaneous crop failures, falling nutritional value of basic foods, and soaring inflation are likely to have on the world's most vulnerable people.

Depending on how well humans get a handle on carbon emissions and rising temperatures, a child born today could be confronted with multiple climate-related health threats before turning 30, the report shows.

The IPCC's 4,000-page draft report, scheduled for release next year, offers the most comprehensive rundown to date of the impacts of climate change on our planet and our species.

It predicts that up to 80 million more people than today will be at risk of hunger by 2050.

COVID-19, climate and carbon neutrality

It projects disruptions to the water cycle that will see rain-fed staple crops decline across sub-Saharan Africa. Up to 40% of rice-producing regions in India could become less suitable for farming the grain.

Global maize production has already declined 4% since 1981 due to climate change, and human-induced warming in West Africa has reduced millet and sorghum yields by up to 20 and 15% respectively, it shows.

The frequency of sudden food production losses has already increased steadily over the past 50 years.

"The basis for our health is sustained by three pillars: the food we eat, access to water, and shelter," Maria Neira, director of Public Health, Environmental and Social Determinants of Health at the World Health Organization, told *AFP*. "These pillars are totally vulnerable and about to collapse."

Even as rising temperatures affect the availability of key crops, nutritional value is declining, according to the report.

Are your staple rice and wheat losing their nutrients?

The protein content of rice, wheat, barley and potatoes, for example, is expected to fall by between six and 14%, putting close to 150 million more people at risk of protein deficiency.

Essential micronutrients — already lacking in many diets in poorer nations — are also set to decline as temperatures rise.

Extreme weather events made more frequent by rising temperatures will see "multi-breadbasket failures" hit food production ever more regularly, the report predicts.

As climate change reduces yields, and demand for biofuel crops and CO₂-absorbing forests grows, food prices are projected to rise as much as a third at 2050, bringing an additional 183 million people in low-income households to the edge of chronic hunger.

Across Asia and Africa, 10 million more children than now will suffer from malnutrition and stunting by mid-century, saddling a new generation with life-long health problems — despite greater socioeconomic development.

As with most climate impacts, the effects on human health will not be felt equally: the draft suggests that 80% of the population at risk of hunger live in Africa and Southeast Asia.

"There are hotspots emerging," Elizabeth Robinson, professor of environmental economics at the University of Reading, told *AFP*. "If you overlay where people are already hungry with where crops are going to be most harmed by climate you see that it's the same places that are already suffering from high malnutrition."

The report outlines in the starkest terms so far the fate potentially awaiting millions whose access to safe water will be thrown into turmoil by climate change. Just over half the world's population is already water insecure, and climate impacts will undoubtedly make that worse.

Research looking at water supply, agriculture and rising sea levels shows that between 30 million and 140 million people will likely be internally displaced in Africa, Southeast Asia and Latin America by 2050, the report says.

Up to three quarters of heavily tapped groundwater supply — the main source of potable water for 2.5 billion people — could also be disrupted by mid-century.

The rapid melting of mountain glaciers has already "strongly affected the water cycle", an essential source for two billion people that could "create or exacerbate tensions over water resources", according to the report.

And while the economic cost of climate's effect on water supply varies geographically, it is expected to shave half a percent off global GDP by 2050.

"Water is one of the issues that our generation is going to confront very soon," said Neira. "There will be massive displacement, massive migration, and we need to treat all of that as a global issue."

As the warming planet expands habitable zones for mosquitoes and other disease-carrying species, the draft warns that half the world's population could be exposed to vector-borne pathogens such as dengue, yellow fever and Zika virus by mid-century.

We need to urgently invest in public health

Risks posed by malaria and Lyme disease are set to rise, and child deaths from diarrhoea are on track to increase until at least mid-century, despite greater socioeconomic development in high-incidence countries.

The report also shows how climate change will increase the burden of non-communicable illnesses.

Diseases associated with poor air quality and exposure to ozone, such as lung and heart conditions, will "rise substantially", it says. "There will also be increased risks of food and water-related contamination" by marine toxins, it adds.

As with most climate-related impacts, these diseases will ravage the world's most vulnerable. The COVID-19 pandemic has already exposed that reality.

The report shows how the pandemic, while boosting international cooperation, has revealed many nations' vulnerability to future shocks, including those made inevitable by climate change.

"Covid has made the fault lines in our health systems extremely visible," said Stefanie Tye, research associate at the World Resources Institute's Climate Resilience Practice, who was not involved in the IPCC report. "The effects and shocks of climate change will strain health systems even more, for a much longer period, and in ways that we are still trying to fully grasp."

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On June 21, 1948, the Small-Scale Experimental Machine (SSEM), known popularly by its nickname Baby, executed its first program successfully. A.S.Ganesh takes a look at how the Baby, the world's first stored-program electronic computer, came to be...


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STUDY LINKS AIR POLLUTION TO COVID-19 CASES AND DEATHS

Relevant for: Environment | Topic: Environmental Pollution - Air, Water, Soil & E-waste

Cause of concern: Rising pollution load is a catalyst in aggravating COVID-19 cases, the study showed. 

A first-of-its-kind pan India study says Mumbai and Pune are among hotspots where high air pollution from the transport and industrial sectors is related to a higher number of COVID-19 cases and deaths.

The study is titled 'Establishing a link between fine particulate matter (PM2.5) zones and COVID-19 over India based on anthropogenic emission sources and air quality data'. The study was conducted by Dr. Saroj Kumar Sahu and Poonam Mangaraj from Utkal University, Bhubaneswar; Gufran Beig, senior scientist, and Suvarna Tikle, scientist, Indian Institute of Tropical Meteorology-Pune; Bishma Tyagi, National Institute of Technology, Rourkela; and V. Vinoj, Indian Institute of Technology, Bhubaneswar.

In the study, COVID-19 cases were observed from March to November 2020, while national PM2.5 emissions load was estimated from the base year 2019. Of 16 cities across 36 States, Mumbai and Pune were evaluated in Maharashtra. "Our findings suggest a significant correlation between district level air pollution data and COVID-19 cases. We found that regions using huge amounts of fossil fuels such as petrol, diesel and coal by combustion in transport and industrial activities also experience a far higher number of COVID-19 cases," said Dr. Sahu, adding, "Maharashtra recorded the second highest emission load in India — 828.3 gigagram per year (Gg/Yr) of PM2.5 — based on the National Emission Inventory developed by us. Uttar Pradesh had the highest."

Among the 16 cities captured in the study, Mumbai and Pune recorded the third- and fourth-highest number of "bad air quality days", respectively. Delhi and Ahmedabad stood first and second, respectively.

"Through our analysis, it has become clear that the rising pollution load is a catalyst in aggravating COVID-19 cases," Dr. Sahu said.

He added that polluted hotspots are also triggering long-term effects, and more studies are needed to understand this better.

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A FABLED WONDER IN DANGER

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

As a fabled wonder of the natural world, Australia's Great Barrier Reef and its diversity of marine life ranging from corals to whales found a place on UNESCO's World Heritage List in 1981. Made up of a couple of thousand individual reefs off the continent's northeastern coast, it has a geological history going back an estimated 23 million years to the Miocene epoch, and has survived many challenges.

The GBR is about 2,300 km long and extends across a breathtaking 346,000 sq. km. area, hosting an assemblage of fishes and invertebrates in the reefs, dugongs, green turtles and other species in seagrass meadows, and sharks, rays, anemones, sponges, worms and myriad other forms all of which need a delicate ecological balance to thrive.

Idyllic as it appears, the reef system faces severe environmental threats, and this year, the World Heritage Committee has sounded a warning by drawing up a resolution to inscribe the reef on the 'List of World Heritage in Danger'. The Committee took note of the 2019 Outlook Report of the Great Barrier Reef Marine Park Authority, which says in no uncertain terms that the long-term state of the ecosystem has further deteriorated from poor to very poor. At the heart of the crisis is climate change, which has led to three big events of coral bleaching in 2016, 2017 and 2020. UNESCO's move to list the GBR as 'in danger' brings pressure on Australia's government to review its record on responding to climate change. As a continent that has recorded a rise in its average temperature by 1.4 degrees C since 1910, the devastating fires of 2019-20 were another wake-up call on climate change aggravating extreme events.

Destructive impacts

The World Heritage Committee resolution calls upon Prime Minister Scott Morrison's government to heed the conclusions of the Outlook Report, particularly on accelerated action needed to address climate change with the Paris Agreement goals in focus. The updated Reef 2050 Plan that the country is pursuing for conservation should incorporate this. Further, the government should stop destructive impacts of human activity such as land-based and farm runoff that has polluted waters, coastal development and other commercial uses, it adds.

The World Heritage Centre, the administrative body, had sent a letter to Australia in 2019 raising concerns "about the approval of the Carmichael Coal Mine", a controversial project with impacts for the reef and the climate, to which it got a response noting "that the project's approval is subject to over 180 regulatory conditions and that compliance with these conditions will be monitored."

Canberra's response to the UNESCO Committee's move was to allege a conspiracy, hinting at pressure from China, which holds the chairmanship of the panel.

Close scrutiny of the GBR shows a variety of ecological impacts from environmental stresses, including climate change. The Outlook Report records harm to "the abundance and health of many species groups, including corals, invertebrates, some bony fishes, marine turtles and seabirds" from the rising sea temperatures and thermal extremes due to global warming. It adds that since 2014, there has been widespread and significant declines in many coral species. In 2018, coral larvae declined by 89% averaged across the region, arising from consecutive bleaching events, as the adult broodstock was reduced.

Warmer temperatures led to “feminisation of green turtles originating from nesting beaches in the northern Region, potentially leading to significant scarcity or absence of adult males in the future”. Coral growth is also endangered by the proliferation of crown-of-thorns starfish, which consumes them.

Some relief is available from the reported recovery of humpback whales, and slow gain in southern populations of green turtles. Urban coastal dugong populations also show an improved breeding rate. But overall, the reef is under threat.

A magnet for eco-tourists, the vast expanse coloured by algal hues draws thousands annually. The report says that in 2015-16, tourism, fishing, recreational uses and scientific activities contributed an estimated \$6.4 billion to the Australian economy, a rise of about 14% since 2011-12. Without resolute action on climate and pollution threats, though, all sectors stand to lose.

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QUESTION CORNER

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

Painted lady: This butterfly is a long distance migrant. | Photo Credit: [Sanket Bokil](#)

(Subscribe to Science For All, our weekly newsletter, where we aim to take the jargon out of science and put the fun in. [Click here.](#))

Many dragonflies, beetles, butterflies, locusts and moths are known to migrate during the breeding season and the distance travelled varies with species. Most insects travel in large groups and scientists have been studying these movements for several years.

[A recent study](#) (PNAS) noted that the painted lady butterfly (*Vanessa cardui*) can make 12,000 to 14,000 kilometre round trips. This is the longest annual insect migration circuit so far known.

Found in sub-Saharan Africa, the butterfly is able to travel to Europe, crossing the Sahara Desert when weather conditions are favourable. The caterpillars thrive in wetter winter conditions of sub-Saharan Africa and the adults migrate to North Africa during wet spring. They then cross the Mediterranean Sea to reach Europe.

Simulations in the laboratory showed that favourable tailwinds between Africa and Western Europe help these insects in transcontinental travel. They fly about one to three kilometres above sea level with a maximum speed of around 6 metres per second. The researchers studied a similar butterfly species and calculated that the painted lady may have enough body fat to sustain 40 hours of non-stop flying.

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New audio technique allows hearing ultrasonic sources

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EXOTIC DRAGON FRUIT OR KAMALAM FROM MAHARASHTRA EXPORTED TO DUBAI

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

In a major boost to export of exotic fruit, a consignment of fibre and mineral rich 'Dragon Fruit', also referred as *Kamalam*, has been exported to Dubai. A consignment of Dragon Fruit for exports was sourced from the farmers of Tadasar village, Sangli district, Maharashtra and it was processed and packed at APEDA recognized exporter – M/s Kay Bee.

Scientifically referred to as *Hylocereus undatus*, the dragon fruit is grown in countries such as Malaysia, Thailand, the Philippines, the USA and Vietnam.

Dragon fruit production commenced in India in early 1990s and was grown as home gardens. Dragon Fruit has become increasingly popular in recent years in the country as it has been taken up for cultivation by farmers across various states.

At present, dragon fruit is grown mostly in Karnataka, Kerala, Tamil Nadu, Maharashtra, Gujarat, Odisha, West Bengal, Andhra Pradesh, and Andaman and Nicobar Islands. The cultivation requires less water and can be grown in various kinds of soils. There are three main varieties of dragon fruit: white flesh with pink skin, red flesh with pink skin, and white flesh with yellow skin.

Prime Minister Shri Narendra Modi in 'Mann Ki Baat' programme in July 2020 on All India Radio had mentioned about the dragon fruit farming in the arid Kutch region of Gujarat. He had congratulated the farmers of Kutch for the cultivation of fruit for ensuring India's self-sufficiency in the production.

The fruit contains fiber, vitamins, minerals, and antioxidants. It can help in repairing the cell damage caused by oxidative stress and reduce inflammation, and also improving the digestive system. Since the fruit has spikes and petals resembling lotus, it is also referred as 'Kamalam'.

APEDA promotes exports of agricultural & processed food products by providing assistance to the exporters under various components such as Infrastructure Development, Quality Development and Market Development. Apart from this the Department of Commerce also supports exports through various schemes like Trade Infrastructure for Export Scheme, Market Access Initiative etc.



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THE COMMON HAWK-CUCKOO CALLS THE TUNE

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

A common hawk-cuckoo at Theosophical Society. Photo: Rama Neelamegam

Birder Rama Neelamegam lets on about a mid-click blooper from 2017. Executed at the woods of the Theosophical Society, the photographic click was a half measure — a half bird, actually. It left a common hawk-cuckoo's barred tail to the imagination.

The bird was at close quarters, and a neophyte with the camera then, Rama could not make the most of the moment. The image was clicked at the speed of greased lightning, but the other hand failed to rotate the focus-ring just that wee bit, to get the complete bird.

“At that time, I did not know how to shift the focus. After I learnt how to, I did not see the bird at close quarters,” Rama makes a laugh out of the botched operation.

The half-image and Rama's lighthearted behind-the-scenes remark about it reveal something about the common hawk-cuckoo. This representative of the cuculidae family is a sure-find in its habitats. Only that its presence is more often registered by the notes of its calls.

It belongs to that species-spanning category of skulking birds best described as “more heard than seen”. Thankfully, the call has a distinct quality that makes identification easy. One can hear the phrase “brain fever” being clearly enunciated in its call, three notes getting the three syllables (one for “brain” and two for “fever”) out as if the bird joined Eliza Doolittle (*My Fair Lady*) to be tutored in pronunciation and conversation by Henry Higgins.

Those living next-door to the common hawk-cuckoo vouch for this: It would be calling throughout the day, even occasionally “clear” its throat at the dead of night (particularly during the breeding season) — rather at the nebulous point where two days, one spent-out and the other barely sprouted, meet. The bird would however pipe down a bit in the non-breeding season. In the Indian sub-continent, the common hawk-cuckoo's breeding season stretches from March to July.

IIT-Madras campus is one of the spaces in Chennai where the common hawk-cuckoo is often heard.

Being an IIT-M resident and possessing a trained ear for avian calls, Mahathi Narayanaswamy has the right location and the requisite skill to appreciate this species.

Mahathi has this to say about her feathered neighbour: “On the IIT-M campus, common hawk-cuckoo vocalisation happens throughout the day. If you step out of the house, even if the bird is not right outside of the house, you just have to wait for 30 to 45 minutes utmost, and you would hear the vocalisation at least once. A couple of days ago, I woke up to its call around one a.m. as it was heard extremely close to the window. I have heard neighbours and other residents of IIT-M note from time to time that they heard the common hawk-cuckoo very close to the window at 11 p.m or extremely early in the morning. The best time to hear the common hawk-cuckoo is just before sunrise. At that time, if you are in any patch, you will hear at least three individuals calling. Common hawk-cuckoo calls also resonate quite a bit.”

“The common hawk-cuckoo is very common, very vocal, but you have to take the pains to look where it is found, tracking the call and heading there. This bird is a skulker. It does not usually sit out in the open, and tends to hide away in the canopy. As usual, with most skulky birds, the

juveniles of the species are bold and curious and would sit out in the open,” remarks Rama.

However, being around its habitat, one is bound to have a sighting sooner than later — because these birds seem to have numbers on their side.

The greatest pre-requisite for a common hawk-cuckoo showing up in a place is sufficient vegetation, and of the right kind, point out eBird reviewer Vikas Madhav Nagarajan and Rama.

Vikas elaborates, “You would not get to see it inside the city, for example. However, in IIT-M, GNP Children’s Park and Theosophical Society — there is bound to be common hawk-cuckoo sightings. This species basically needs some moderate forest tracts. There have been lots of sightings at SSN. That is also because of where it is located — in the outskirts and has the right vegetation.”

Rama reports impressive sightings of this bird at Adyar Poonga, because it prefers this bird the right “food bowl”. Here is her observation: “Like the other cuckoos — which include the Indian cuckoo and the Eurasian cuckoo — the common hawk-cuckoo has a taste for hairy caterpillars. It will prefer those trees that are larval hosts of the hairy caterpillar. Adyar Poonga offers a rich feeding habitat for this species.”

(Resident Watch discusses the resident birds of Chennai and its surrounding districts)

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AMAZON HYDROPOWER PLANT CONTRIBUTES SIGNIFICANT GREENHOUSE EMISSIONS: STUDY

Relevant for: Environment | Topic: Environmental Pollution - Air, Water, Soil & E-waste

View of the Belo Monte Hydroelectric Power Plant in Altamira, Para State, Brazil | Photo Credit: [AFP](#)

When climate researcher Dailson Bertassoli went to measure greenhouse gas emissions at the Belo Monte hydropower plant in Brazil, the first thing he noticed was the bubbles.

Developers have built hundreds of hydroelectric plants in the Amazon basin to take advantage of the allegedly "green" energy generated by its complex of rivers.

But climate researchers now know hydropower is not as good for the environment as once assumed. Though no fossil fuels are burned, the reservoirs release millions of tons of methane and carbon dioxide as vegetation decays underwater.

So called run-of-river (ROR) dams like Belo Monte along the Xingu River, which have smaller reservoirs and channels allowing reduced river flow, were meant to address the problem, [but a study Friday](#) in *Science Advances* found that has not been the case.

Bertassoli's team studied methane and carbon dioxide emissions during Belo Monte's first two years of operation and compared the results to levels prior to the reservoirs being filled, finding a threefold increase in greenhouse gas emissions.

"Once you have the flooding of dry land, the organic matter that was trapped in the soil starts to degrade," the professor of geology and climate change at the University of Sao Paulo told *AFP*.

These were the source of the bubbles he saw at one of the plant's reservoirs. "Instead of a natural river, we now have a reactor that favours the production of methane," he added.

And as fellow author and climate researcher Henrique Sawakuchi pointed out, these "smaller" reservoirs are still quite large, with the largest on a partly dammed river where dead trees stand starkly white amid vast stagnant green channels.

Sawakuchi's brother Andre Sawakuchi, a University of Sao Paulo professor focusing on climate change and river systems who also participated in the study, added that this analysis highlights two issues to consider when building hydropower plants in the region.

"One is the local environmental impact on aquatic species unique to the area," he told *AFP*. "The other is the social impact to indigenous communities that live along the river."

Checked history

Indigenous and environmental groups protested the Belo Monte's proposed construction back in the 1990s, causing it to be abandoned before being revived again as an ROR plant in 2011.

Environmental groups protested the loss of the forest that had to be cleared for the site while indigenous groups resisted the loss of flooded land and redirected or siphoned natural river flow.

Andre Sawakuchi argues it is important to keep the Amazon flowing, despite increasing energy needs, and not to "disrupt this natural cycle with hydropower plants of any type."

"This is the pulse of the river," he said. "With a hydroplant, there is no more pulse."

The authors concluded in their study that if Brazil must continue to build ROR dams along the Amazon, then it is important to at least avoid flooding vegetation, thereby increasing greenhouse gases.

A 2019 study by the Environmental Defense Fund found that some of the world's hydropower plants are carbon sinks — meaning they take in more carbon through photosynthesis by organisms living in the water than they emit through decomposition — while others are net emitters.

"There is no utopia here," Bertassoli said. "Especially for countries that look so hard at hydropower as a sustainable 'green' answer to their energy needs."

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