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'AIR POLLUTION SHORTENED LIFESPAN BY 30 MONTHS'

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

The current high level of air pollution has shortened the average lifespan of a South Asian child by two-and-a-half years while globally the reduction stands at 20 months, according to a global study released on Wednesday.

State of Global Air 2019, published by Health Effects Institute (HEI), said exposure to outdoor and indoor air pollution contributed to over 1.2 million deaths in India in 2017. The report added that worldwide, air pollution was responsible for more deaths than many better-known risk factors such as malnutrition, alcohol abuse and physical inactivity.

In India, air pollution is the third highest cause of death among all health risks, ranking just above smoking; each year, more people globally die from air pollution-related diseases than from road traffic injuries or malaria.

The study found that China and India together were responsible for over half of the total global attributable deaths, with each country facing over 1.2 million deaths from air pollution in 2017.

China has made initial progress, and is beginning to achieve a decline in air pollution.

Overall, long-term exposure to outdoor and indoor air pollution contributed to nearly 5 million deaths due to stroke, diabetes, heart attack, lung cancer, and chronic lung disease in 2017.

Out of these, 3 million deaths were directly attributed to PM2.5, half of which were from India and China together. South Asian countries — Bangladesh, India, Nepal and Pakistan — led the world as the most polluted region, accounting for over 1.5 million air-pollution related deaths, according to the report.

“At the same time, India has initiated major steps to address pollution sources: the Pradhan Mantri Ujjwala Yojana Household LPG programme, accelerated Bharat Stage VI clean vehicle standards, and the new National Clean Air Programme. These and future initiatives have the potential — if fully implemented as part of a sustained commitment to air quality — to result in significant health benefits in coming years,” said Robert O’Keefe, vice-president of HEI. Meanwhile, for the first time this year’s report and website include worldwide estimates of the effect of air pollution on how long people live, or life expectancy.

Worldwide, air pollution reduced life expectancy by an average 20 months in 2017, a global impact rivaling that of smoking; this means a child born today will die 20 months sooner, on average, than would be expected without air pollution.

The report also highlighted that nearly half of the world’s population — a total of 3.6 billion people — were exposed to household air pollution in 2017. Globally, there has been progress: the proportion of people cooking with solid fuels has declined as economies develop. But in India, 60% of the population still used solid fuels; in Bangladesh that number rose to 79%, underscoring the importance of achieving success in government initiatives to address the problem.

The State of Global Air 2019 annual report and accompanying interactive website are designed

and implemented by the Health Effects Institute in cooperation with the Institute of Health Metrics and Evaluation (IHME) at the University of Washington, the University of British Columbia, and the University of Texas - Austin.

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OVER 1.2 MILLION EARLY DEATHS IN INDIA IN 2017 DUE TO AIR POLLUTION, SAYS REPORT

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

Overall, long-term exposure to outdoor and indoor air pollution contributed to nearly 5 million deaths from stroke, diabetes, heart attack, lung cancer, and chronic lung disease in 2017. File Photo Credit: [Sushil Kumar Verma](#)

The current high level of air pollution has shortened the average lifespan of a South Asian child by two-and-a-half years while globally the reduction stands at 20 months, according to a global study released on Wednesday.

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In India, air pollution is the third-highest cause of death among all health risks, ranking just above smoking; each year, more people globally die from air pollution related disease than from road traffic injuries or malaria.

The study found that China and India together were responsible for over half of the total global attributable deaths, with each country witnessing over 1.2 million deaths from all air pollution in 2017. China has made initial progress, beginning to achieve air-pollution decline.

Overall, long-term exposure to outdoor and indoor air pollution contributed to nearly 5 million deaths from stroke, diabetes, heart attack, lung cancer, and chronic lung disease in 2017.

Out of these, 3 million deaths are directly attributed to PM2.5, half of which are from India and China together. The South Asian region — Bangladesh, India, Nepal and Pakistan — led the world as the most polluted, with over 1.5 million air-pollution related deaths according to the report.

“At the same time, India has initiated major steps to address pollution sources: the Pradhan Mantri Ujjwala Yojana Household LPG program, accelerated Bharat Stage 6/VI clean vehicle standards, and the new National Clean Air Programme. These and future initiatives have the potential, if fully implemented as part of a sustained commitment to air quality, to result in significant health benefits in coming years,” said Robert O’Keefe, vice president, Health Effects Institute.

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Most places in India's southern States – Kerala, Tamil Nadu, Karnataka, Andhra Pradesh and Telangana experienced a hotter February and March this year

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92% IN ASIA EXPOSED TO HARMFUL AIR

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

A tourist wearing an anti-pollution mask in the Capital. File photo: Sushil Kumar Verma Sushil Kumar Verma

Around 92% of the population in the Asia Pacific region are exposed to levels of air pollution that pose a significant risk to their health, according to UN Environment. Some of the Asian countries have taken steps to limit its effects.

As public anger rises over toxic air, authorities have turned to spraying water, which is thought to stick to pollutants and carry them to the ground. But tools such as water cannons have been criticised as having little effect and being a “band-aid” solution that distracts from root causes.

While New Delhi — the world’s most polluted major city -- tried in 2017 to use helicopters to sprinkle water over the city, but the choppers were not able to fly due to low visibility caused by smog.

Bangkok tried a raft of measures to combat a murky haze that blanketed the city in January, including spraying overpasses with water, cloud seeding.

Cloud-seeding is used to stimulate rain by injecting chemicals into clouds using rockets, cannons or aircraft, but the technique is not always successful.

An attempt by South Korea to create artificial rain in January failed.

The northern Chinese city of Xi’an is experimenting with a giant air purifier the size of an industrial smokestack which can reduce PM2.5 concentration by 15 per cent within 10 square kilometres, according to researchers.

Hong Kong opened a tunnel equipped with air purification system.

The government says it will be able to remove at least 80 per cent of harmful particulates and nitrogen dioxide using large fans which suck exhaust into air purification plants in three ventilation buildings along the tunnel.

New Delhi had announced a plan to install huge air purifiers at traffic intersections and mount air filters on the roofs of buses that trap pollutants as they move, according to Hindustan Times.

During particularly bad spates of air pollution, which tend to come during the winter, many residents in smoggy Chinese cities escape to cleaner places, such as resorts in the south of the country, for a temporary break and return after it has cleared.

Ctrip, China’s largest online travel agent, estimated in 2016 that every year, over a million residents of smoggy cities such as Beijing and Shanghai leave the country to escape the smog.

Popular destinations for these so-called “smog refugees” include places such as Japan, Australia, and New Zealand. Some even travel to Antarctica on “lung-cleansing trips,” according to Ctrip.

Although experts say residents in smoggy cities are unlikely to see health effects from breathing

bottled air, that hasn't stopped entrepreneurs from selling them canisters of the stuff from New Zealand, Canada, Australia, and Switzerland.

For about USD 22, consumers can order an 8 litre can of Banff Air from the popular tourist spot in Canada, or pay USD 125 for a jar of air from the British countryside.

In China, "anti-smog" teas are promoted by vendors as a way to clean the lungs, while Mongolian residents drink "oxygen cocktails" - made by spraying oxygen into glasses of juice using machines or cans of air.

Advertisements boast that "drinking just one oxygen cocktail is equal to a three-hour-walk in a lush forest", despite no scientific evidence they protect from pollution.

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Project Kannamma provides access to sanitary napkins made by Irula tribeswomen, to over 300 students from across Government Schools in and around Chennai

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OCEAN HEAT HITS RECORD HIGH: UN

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

In this file photo a ship from the Greenpeace organisation flies a banner sail demanding “Stop climate change here”, as they float off shore, nearby Copenhagen Airport. | Photo Credit: [AP](#)

Ocean heat hit a record high in 2018, the United Nations has said, raising urgent new concerns about the threat global warming is posing to marine life.

In its latest State of the Climate overview, the World Meteorological Organization (WMO) reaffirmed that the last four years had been the hottest on record — figures previously announced in provisional drafts of the flagship report.

But the final version of the report highlighted worrying developments in other climate indicators beyond surface temperature.

“2018 saw new records for ocean heat content in the upper 700 metres,” a WMO statement said.

Last year also saw new heat records for the ocean's upper 2,000 metres, but data for that range only goes back to 2005. The previous records for both ranges were set in 2017.

UN Secretary-General Antonio Guterres described the latest findings as “another strong wake-up call” for governments, cities and businesses to take action.

The United Nations is hosting a major summit on September 23 that is billed as a last-chance opportunity for leaders to tackle climate change, which Mr. Guterres has described as the defining issue of our time.

The UN chief has urged world leaders to come to the summit with concrete plans to reduce greenhouse gas emissions by 45% over the next decade and to net zero by 2050.

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The team obtained 783 photo captures from around 27,500 trap nights between 2013 and 2018

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CLIMATE CHANGE MAY HIT INDIA'S WIND POWER

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

Long-term: The government could set up more projects in Tamil Nadu, says Meng Gao.

Increased warming in the Indian Ocean and the resultant weakening of the Indian summer monsoon may come in the way of India's goal of leading the world's wind power generation.

Analysing the available wind and atmospheric data from 1980-2016, researchers from Harvard University, U.S., and National Climate Center in Beijing, China, found the potential electricity production of windmills across India had decreased by about 13%. And this trend might continue.

However, researchers in India have raised doubts about the results of the study. "The data used by the team does not correlate with the live data we have. We have started additional studies to validate these results and will publish the findings soon," says Dr. K. Balaraman, Director General, National Institute of Wind Energy, Chennai, under the Government's Ministry of New and Renewable Energy.

In the paper published last December in *Science Advances*, the researchers showed a decline in electricity production in the States of Rajasthan, Maharashtra, Gujarat, and Karnataka. No significant decline was seen in Tamil Nadu, which is located on the east coast and, thus, had different wind conditions during summer.

"The government could concentrate on setting up more projects in this region [Tamil Nadu] as the lifetime of wind turbines is 20 to 30 years. We need to look at long-term goals," says Meng Gao, a postdoctoral fellow at the School of Engineering and Applied Sciences, Harvard University and the first author of the study. The researchers showed that 63% of the annual production of electricity from wind is contributed by winds in spring (March-May) and summer (June-August). Interestingly, they found a decrease in wind power during these months. This could be due to the weakening of the Indian summer monsoon during this period.

Summer winds in India are driven by the temperature contrast between the Indian subcontinent and the Indian Ocean, and the warming in the Indian Ocean reduced this contrast. Also, warming of the Equatorial Indian Ocean resulted in a decline in the wind speed.

The Indian government has set a target of 60 GW of cumulative wind power capacity by 2022. The researchers say that this goal can be beneficial only if planners in India take these historical reconstructions into account while setting up wind power installations in the future. "Our findings can provide suggestions on where to build more wind turbines to minimise the influences of climate change," said Prof. Michael B. McElroy, from the School of Engineering and Applied Sciences, Harvard University and senior author of the study in a release.

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For about 70km around Ariyalur is a wealth of natural history that few people know about

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A STOP SIGN: ON INDIA'S GROWING CARBON EMISSIONS

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

It is no surprise that the International Energy Agency found that [India's carbon emissions grew by 4.8%](#) during 2018, in spite of the national focus on climate change in energy policy. There is wide recognition of the fact that Indians are not historically responsible for the problem, and it is the rich nations led by the U.S. that have pumped in the stock of carbon dioxide linked to extreme climate impacts being witnessed around the globe. As the IEA points out, India's emissions have grown, but per capita they remain less than 40% of the global average. Equity among nations is therefore at the centre of the discussion on energy emissions, and the principle of common but differentiated responsibilities is central to the UN Framework Convention on Climate Change (UNFCCC). Reassuring as this may be, the universal challenge of climate change has grown to such proportions that urgent action to sharply cut carbon emissions is crucial, and all countries, including India, must act quickly. Intensive measures in key sectors — scaling up renewables to raise their share in the energy mix, greening transport, updating building codes and raising energy efficiency — will help meet the national pledge under the Paris Agreement to cut energy intensity of GDP by 33-35% by 2030, over 2005 levels.

'India third largest contributor to carbon emission'

At the global level, renewable sources of energy grew by 7% during 2018, but that pace is grossly insufficient, considering the rise in demand. Moreover, it was China and Europe that contributed the bulk of those savings, in large measure from solar and wind power, indicating that India needs to ramp up its capacity in this area. In fact, as the founder of the International Solar Alliance, India should lead the renewables effort. Yet, in spite of falling prices and rising efficiency, the potential of rooftop solar photovoltaics remains poorly utilised. It is time State power utilities are made responsible for defined rates of growth in the installation of rooftop systems. A second priority area is the cleaning up of coal power plants, some of which are young and have decades of use ahead. This process should be aided by the UNFCCC, which can help transfer the best technologies for carbon capture, use and storage, and provide financial linkage from the \$100 billion annual climate fund proposed for 2020. India's record in promoting green transport has been uninspiring, and emissions from fossil fuels and the resulting pollution are rising rapidly. The Centre's plan to expand electric mobility through financial incentives for buses, taxis and two-wheelers needs to be pursued vigorously, especially in the large cities. Inevitably, India will have to raise its ambition on emissions reduction, and participate in the global stocktaking of country-level action in 2023. It has the rare opportunity to choose green growth, shunning fossil fuels for future energy pathways and infrastructure.

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The Samjhauta blast case raises doubts about India's resolve to prosecute terror cases

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INDIA'S CARBON DIOXIDE EMISSIONS UP 5%

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

India emitted 2,299 million tonnes of carbon dioxide in 2018, a 4.8% rise from last year, according to a report by the International Energy Agency (IEA). India's emissions growth this year was higher than that of the United States and China — the two biggest emitters in the world — and this was primarily due to a rise in coal consumption. China, the United States, and India together accounted for nearly 70% of the rise in energy demand.

India's per capita emissions were about 40% of the global average and contributed 7% to the global carbon dioxide burden. The United States, the largest emitter, was responsible for 14%.

As per its commitments to the United Nations Framework Convention on Climate Change, India has promised to reduce the emissions intensity of its economy by 2030, compared to 2005 levels. It has also committed to having 40% of its energy from renewable sources by 2030 and, as part of this, install 100 GW of solar power by 2022.

However the IEA report, made public on Tuesday, showed that India's energy intensity improvement declined 3% from last year even as its renewable energy installations increased 10.6% from last year.

Global energy consumption in 2018 increased at nearly twice the average rate of growth since 2010, driven by a robust global economy and higher heating and cooling needs in some parts of the world. Demand for all fuels increased, led by natural gas, even as solar and wind posted double digit growth. Higher electricity demand was responsible for over half of the growth in energy needs. Energy efficiency saw lacklustre improvement. As a result of higher energy consumption, carbon dioxide emissions rose 1.7% last year and hit a new record, the authors of the report said in a press statement.

The United States had the largest increase in oil and gas demand worldwide. Gas consumption jumped 10% from the previous year, the fastest increase since the beginning of IEA records in 1971.

India says it will cost at least \$2.5trillion (150 trillion approx.) to implement its climate pledge, around 71% of the combined required spending for all developing country pledges.

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THE HUMP-BACKED MAHSEER IS NOW 'CRITICALLY ENDANGERED'

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

This tiger does not have stripes. But the hump-backed mahseer—a large freshwater fish also called the tiger of the water and found only in the Cauvery river basin (including Kerala’s Pambar, Kabini and Bhavani rivers)—is now “Critically Endangered”: more threatened than the tiger is, as per the International Union for Conservation of Nature’s Red List of Threatened Species. The fish is one of the 229 species added to the Red List last November; this update also reveals that the threat status of 12 other Indian species, including great hornbills, has increased.

The inclusion of the mahseer in the Red List, an inventory of the conservation status of the world’s species, was possible only once the fish got its scientific name last June—*Tor remadevii*—thanks to detailed research by Rajeev Raghavan (Kerala University of Fisheries and Ocean Studies, Kochi) and his Indian and international collaborators.

When Adrian Pinder of Bournemouth University and Raghavan began studying the mahseer in 2011, “it quickly became apparent that there was still widespread confusion about their taxonomy and the distribution ranges of individual species which are fundamental to assessing population status and conservation needs,” according to Pinder.

The team set this right: their assessment now recognises 16 species of mahseer in India. Now, securing the future of the hump-backed mahseer would depend on the strong willingness and cooperation of a range of stakeholders in three states—Kerala, Tamil Nadu and Karnataka—in the Cauvery, one of India’s most contested rivers, says Raghavan.

Five other species have also made it to threatened categories: two wild orchids, the Arabian scad (a marine fish) and two wild coffee species found only in a few localities in the Western Ghats.

While 31 species that were already in the Red List have been down-listed (since threats are not as significant as earlier thought or due to conservation efforts), the threat status of 12 species has increased. The great hornbill (found in India and southeast Asia) was earlier categorised as “Near Threatened”. It is now “Vulnerable” due to high hunting pressure coupled with habitat loss and deforestation, while the wreathed hornbill has moved from “Least Concern” to “Vulnerable”.

A lot of published literature including information on the status of the birds; habitats across Asia were incorporated into this assessment, said Aparajita Datta, senior scientist at the Nature Conservation Foundation and co-chair for the IUCN-SSC Hornbill Specialist Group, who was part of the assessment team.

“An interview-based occupancy survey we conducted in five states in north-east India in 2013-14 showed a decline in great hornbills,” she said. Their earlier survey revealed that the birds have been locally extirpated from several sites in the north-east.

Conservation managers use information from the Red List to understand threats to specific species and plan effective conservation strategies to improve the conservation status of individual or groups of species, said Craig Hilton-Taylor, head of the IUCN Red List.

For instance, it is thanks to its new IUCN status that Shoal (an international organisation working to conserve freshwater species) initiated 'Project Mahseer' last month along with other stakeholders to enable conservation action for the hump-backed mahseer, said Raghavan. The Red List is indeed being used in many developing countries including India as a standard to understand the conservation status of species, said Datta.

"There is an increase in conservation action, funding and research when a species is included in the List. But uplisting or downlisting species is a continuous process. The latter is seen as a sign of success so that should be the ultimate aim."

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KERALA FORESTS HOME TO NEW SPIDER SPECIES

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

Habrocestum longispinum

A group of jumping spiders that mostly occur in Eurasia and Africa, has been spotted for the first time in Ernakulam's Illithodu forests by arachnologists from Kochi's Sacred Heart College, Thevara. The team also found that the spider belonging to the genus (a taxonomic classification above species) *Habrocestum* is a species new to science.

The team came across the different-looking spiders — six of them, predominantly brownish-black in colour with white and creamy-yellow patches — while conducting a routine survey (funded by the Department of Science and Technology-Science and Engineering Research Board) for ground-dwelling spiders in the Illithodu reserve forests of the Malayattoor forest division, barely 60 km from here. Back in their laboratory, they examined the physical features of males and females. They also compared these to similar-looking spider specimens collected earlier from the Thattekkad Bird Sanctuary.

A detailed examination of the spiders' physical features revealed that they belong to the genus *Habrocestum* that has been recorded mostly in Eurasia and Africa and never in India, till now. Comparisons with studies of European *Habrocestum* spiders revealed that the spiders from Illithode are a new species altogether, for they had distinctly different reproductive organs.

The spider also has a single long spine on the underside of both its first legs, and this gave it its scientific name *Habrocestum longispinum* (after Latin '*longe*' meaning long and '*spinae*' for spine). "It measures just around 2 mm and seems to prefer dry habitats, dwelling in forest litter," said Mathew M. Joseph, assistant professor at Sacred Heart College and a co-author of the study published in the *Journal of Natural History* last month.

While more detailed ecological studies are required, threats could include unregulated tourism activities and even climate change (which could affect the small insects by altering the specific micro-climates that they prefer), he said.

The study extends the range of these spiders to India. The discovery also lends support to the continental drift theory that suggests that the world's continents were one large, contiguous landmass where these creatures thrived many millions of years ago, added Dr. Joseph.

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A GENETIC METHOD TO EMPOWER CONSERVATION

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

Scientists have been using genetics to study wild animals for several years now. However, a new genetic method developed by a team, including scientists from Bengaluru's National Centre for Biological Sciences (NCBS), hopes to make studying as well as conserving wild species quicker, easier and cost-effective by deriving information from animal sources containing extremely low-quality DNA — including faeces and cooked meat.

Their method, described in the study published in the international journal *Methods in Ecology and Evolution*, relies on identifying multiple, short portions of DNA segments in a single experiment (a 'multiplex PCR'), followed by 'next-generation sequencing', in which multiple fragments of DNA can be decoded simultaneously, and several times, in an automated process.

The team tested their method on Caribbean queen conches and tigers, two "extremely different species that had strong conservation needs," to "show how this approach could be used generally," said co-author Dr. Stephen Palumbi (Stanford University) in a press release.

The team obtained DNA from the faeces, hair and saliva of 75 wild and captive tigers to identify individuals and close relatives, and RNA from 279 queen conch samples. They then decoded between 60 to 100 single nucleotide polymorphisms or SNPs, one of the most common types of change seen in genetic material, in these samples. The team was also able to identify the geographic regions these individuals belonged to. Apart from using this for animal monitoring, it could also potentially be used to obtain intelligence on wildlife trade, co-author Dr. Uma Ramakrishnan (NCBS) said.

Testing several hundred samples simultaneously and decoding up to 1000 SNPs per sample would cost as low as \$5 (less than 350). The biggest advantage is that this would take just five days while older methods take at least a month, she added.

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EARTH'S GLACIERS ARE MELTING MUCH FASTER THAN SCIENTISTS THOUGHT

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

A new study finds Earth's glaciers are melting much faster than scientists thought. They are losing 369 billion tons of snow and ice each year, more than half of that in North America.

Michael Zemp, director of the World Glacier Monitoring Service at the University of Zurich, says the most comprehensive study of glaciers worldwide found that those giant masses of snow and ice have lost about 18 percent more mass than an international panel of scientists calculated in 2013.

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WHAT DRIVES TIGER DISPERSAL

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

Tigers in India traverse long distances to find mates and new territories. But this movement depends on the roughness of the terrain and human disturbance in the area. | Photo Credit: [Kalyan Varma](#)

Tigers in India traverse long distances to find mates and new territories. But the movement depends on roughness of the terrain and human disturbance in the area. The terrain affects tiger dispersal differently in the Western Ghats and central India, two strongholds of wild tiger populations in the country, finds a new study.

The central Indian landscape is highly fragmented with high densities of people, while the Western Ghats has lesser human disturbance and is home to the world's largest contiguous tiger population. A study in 2017 by a team including Anuradha Reddy (of Hyderabad's CSIR-Centre for Cellular and Molecular Biology) revealed that roughness of terrain and human footprint drove tiger gene flow in central India: tigers moved across ridges and rough topography to avoid the presence of people. Do similar landscape features drive tiger gene flow in the Ghats?

Another team including Dr. Reddy studied this across 30,000 sq km in the Western Ghats in Kerala, Karnataka and Tamil Nadu. They collected tiger faeces in forests including Bhadra Tiger Reserve and Nilgiri Biosphere Reserve, and used forensic samples that came to CSIR-CCMB between 2011 and 2015 to obtain genetic data of 115 individual tigers. They complemented this with overlays of land cover and land use categories, using maps showing terrain, road networks, developed areas (reflecting human disturbance) and historical maps (from the 1960s, to see how vegetation cover changed over the decades).

Though the team did not find strong correlations between current genetic structure and historical landscape in the Ghats, comparing the data with the team's earlier study in central India (after standardising the methods for comparisons) revealed an interesting pattern — the relationship between terrain and gene flow is “inverted” in both regions. While gene flow correlated with rough terrain in central India, it was linked with smooth forest terrain containing minimal human disturbance in the Ghats, finds the team's study published in *Animal Conservation*.

This pattern is mainly due to differing levels of human disturbance, Dr. Reddy said in an email. While Central India has more fragmented forests and higher human disturbance, the Ghats have relatively larger, connected forest patches and lesser human disturbance, facilitating tiger movement across lower and smoother areas, she added.

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Even as we discover drugs and molecules to fight them, bacteria quickly mutate, resist

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INDIA'S INDIGENOUS COMMUNITIES ARE THE BEST PROTECTORS OF FORESTLANDS

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

Soul connection: Women hug trees in Odisha's Jhinkargadi as part of a mass movement to save the forest, in November 2018. | Photo Credit: [Biswaranjan Rout](#)

On a fine morning in the spring of 1974, a small girl ran to Gaura Devi, raising an alarm that loggers had come to cut down trees in the mountain forest. On that day (March 25), there were no men present in the remote village of Reni in Chamoli district of Uttarakhand. Gaura Devi gathered the women in the village and rushed to confront the contractor.

An argument ensued. The men with axes refused to budge. But the women of Reni were not to be cowed down. In a flash of inspiration, they decided to hug the trees and the loggers had no option but to leave. It was a high point in an epochal environmental movement that resonates even today, at a time when new moves are afoot to separate India's forests from her people.

Best custodians

The Chipko Andolan was a watershed for more reasons than one. The tree-hugging incident had happened the previous year in Mandal, another village in Uttarakhand, under the leadership of environmental activist Chandi Prasad Bhatt, but it was in Reni for the first time that women alone showed that they have the grit to halt loggers from harming the forest they called their mother.

The grassroots movement to conserve forests that nurtured the people living around them led to the government imposing a 15-year ban in 1980 on cutting trees in Himalayan forests. Many other communities across India were inspired by the Chipko movement to start campaigns on their own to stop deforestation. The primary learning from the Chipko Andolan was that local communities were the best custodians of forests. That lesson needs to be relearned today.

The people living in and around India's forests are the most marginalised in our society. They are often the first to be dispossessed from their habitats, often in the name of development and conservation. To right the historical wrongs of our country's forest dwellers, the government in 2006 enacted a law, popularly known as the Forest Rights Act, which for the first time vested the rights and powers to manage forest resources in local communities.

The Act provides for recognising some forestland as community forest resources to be governed and managed by communities. Local communities now manage more than 1.1 million hectares of forestland and there's potential to bring another 30 million hectares of forests under the purview of the law.

A decade earlier in 1996, the government enacted the Provisions of the Panchayats (Extension to Scheduled Areas) Act, also known as PESA. It empowered tribal communities, a large proportion of whom lived in and around forest, to be governed by traditional village councils. Together with the Forest Rights Act, it tried to ensure that tribal and other forest-dwelling people are no longer easily evicted from places they have been living in for long.

Fighting back

These gains made in the past few decades to reconnect people with forests are now in danger

of being reversed. The Supreme Court has ordered the forced eviction of more than one million forest-dwelling households in 16 States, based on the authorities (mostly forest officials) rejecting traditional claims to forestlands. The apex court has since stayed its order, but the fate of at least 5 million people still hangs in balance. On top of this, the environment ministry has proposed amending the Indian Forest Act of 1927 with rules that are even more draconian than colonial-era laws. It provides unprecedented powers and immunity to forest officials. The proposed modifications allow foresters to cancel or restrain the rights of forest dwellers and forcibly relocate them.

These retrograde developments come at the time when resource-rich forestlands are already under siege from the demands of so-called development that could see irreparable harm done to ancient forests such as Saranda, Hasdeo Arand, Dandakaranya and Mahan.

The British considered India's forests as merely resources to be exploited and, therefore, guarded from the people. Our present administrators seem to have inherited that mindset and seem hell-bent on expelling people from our forests. This must not be allowed to happen.

It has been proven time and again that India's indigenous communities are the best protectors of forests. The only way we can save our forests is to let local communities manage them because they are the ones who have a stake in preserving them. We have seen this happen across India, from Odisha and Chhattisgarh to Kerala and Uttarakhand.

Or, we might just want to let our forests die. Separating the people from the woods would be the way to guarantee that.

Soumya Sarkar is Managing Editor of IndiaClimateDialogue.net. Follow him on Twitter @scurve

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Most places in India's southern States – Kerala, Tamil Nadu, Karnataka, Andhra Pradesh and Telangana experienced a hotter February and March this year

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ON CLIMATE CHANGE, A SHIFT TOWARDS CIVIL DISOBEDIENCE

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

Movements such as India's struggle for independence inspire protests

Playing the role of a riot cop dispersing a peaceful but illegal sit-in on the steps of France's National Assembly, Axel struggled to dislodge a woman. It was like trying to pull a limpet off a rock — he couldn't get a grip.

Welcome to Non-Violent Civil Disobedience 101, a one-day basic training for people who have decided they may need to break the law to further a good cause.

For most of the 55 people attending a course in Paris on Saturdays, the driving concern was climate change and the gathering pace at which the earth's species are disappearing.

On Monday, a group called Extinction Rebellion launched a campaign in major cities worldwide.

XR, as the group is known, looked to historic examples of civil disobedience — such as the push for Indian independence — for inspiration.

Back in class, instructor Remi Filliau gave Axel a tip on how to pry loose his quarry.

Reaching from behind, Mr. Axel placed an index finger under the young woman's nose and pulled up sharply, dragging her across.

"Police are allowed to use that technique. But they are not allowed to tickle — that is considered sexual harassment," he said.

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GIANT BARRIERS TO KEEP WASTE OUT OF THE OCEANS

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

The barriers are made of recycled plastic, rigid and resistant enough to survive floods or the impact of large objects carried by currents, such as trees. | Photo Credit: [Fabio Dalmonte](#)

Plastics that invade the sea poison fish and birds, entering the food chain and even the food we eat. That's why Boyan Slat, the young Dutch inventor who founded The Ocean Cleanup, wants to clean up the oceans. But why not try to capture plastic waste before it reaches the sea? This would avoid the degrading effect of salt water, which crumbles it into micro-plastics.

It's a race against time. The more than eight million tonnes of plastic that end up in the sea every year become more and more dangerous for marine fauna as they break up and are mistaken for food. Almost all Pacific albatrosses now have plastic fragments in their stomachs, which kill more than a million seabirds every year, according to UNEP. It's not widely known that nearly 90 per cent of the plastic that ends up in the ocean has been transported there by one of 10 great rivers, the most polluted in the world: Yangtze, Nile, Ganges, Indus, Yellow River, Hai he, the Pearl River, Amur, Niger and Mekong.

Fabio Dalmonte, a 36-year-old born in the Romagna region of Italy and now living in London, discovered this while participating in a joint research project on waste management conducted by his alma mater, the University of the West of Scotland, and the Universitas Indonesia in Jakarta. Dalmonte graduated in management engineering in Bologna before obtaining a master's degree in Scotland and now works as a consultant in London for a company specializing in environmental issues. He was impressed by the huge amount of debris that floated on the Jakarta River, the Ciliwung. "In some parts of Asia, rivers are treated like a dumpster, and the consequences are there for all to see in the world's seas," he says.

He came up with the idea of stopping the flow of plastic before it reaches the sea, with a system of barriers that can catch garbage to send to recyclers – and that don't prevent the passage of boats and fish. To make his dream come true, he partnered with Mauro Nardocci, a 38-year-old business manager from Rome and former marketing director in Central Europe for the pasta brand Barilla, now working as an executive coach in New York. Together they founded a startup called SEADS, an acronym for Sea Defence Solutions. The company gave birth to the Blue Barriers, a system that can be replicated and adapted to fit any river from the Nile to the Ganges.

"There are two floating barriers, positioned diagonally on the river and slightly offset, so as to create a current that transports waste to the bank, where a collection basin is built to accumulate, collect and then send the waste to be sorted," explains Dalmonte. The two barriers are made of recycled plastic, rigid and resistant enough to survive floods or the impact of large objects carried by currents, such as trees. A demonstration test will be conducted this month in Italy, on the Lamone river, and negotiations with the municipality of Jakarta to test the system on the Ciliwung are also well underway.

"The mountain of waste that ends up in the Ciliwung and then in the sea, accumulating on the islands in front of the Gulf of Jakarta, ruins the beaches, damages tourism and causes serious problems to local communities," notes Dalmonte, "not to mention environmental damage such as a reduction of the fish population in the sea and the rivers."

Ideally, the barriers should be installed as close as possible to the mouth of the river, but the municipality of Jakarta would like to place several of them at different heights, to establish greater control over the river. Next to each couple of barriers, sorting centers will be created, which could also receive waste from nearby urban and industrial areas, so as to generate profits for local communities. The project is expected to bring social benefits as well.

"In Jakarta and developing countries in general, many poor people collect their own waste to recycle and sell it," says Dalmonte, "One of our parallel goals is to involve them in the activities that will be created around the barriers. We would like to make it possible for the municipality to include rag pickers in the waste collection system, providing them with adequate working conditions." In this way, everyone will benefit.

This article is being published as part of Earth Beats, an international and collaborative initiative gathering 18 news media outlets from around the world to focus on solutions to waste and pollution.

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INDOOR EMISSIONS AFFECT AIR-QUALITY STANDARDS

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

Adding up: At national level, mitigating household emissions is also expected to bring large health benefits. | Photo Credit: [Hand-out](#)

India can achieve its air quality goals if it completely eliminates emissions from household sources. A recent study has pointed out that the use of firewood, kerosene and coal in the households contributed to about 40% of the PM 2.5 pollution in the Gangetic basin districts. This number varied across the country but household emissions remained one of the major culprits behind air pollution.

The analysis was carried out by researchers from the Indian Institute of Technology (IIT), Delhi in collaboration with University of California in Berkeley, Urban Emissions, Delhi and the University of Illinois, Urbana-Champaign.

The results showed that by eliminating household emissions the average outdoor air pollution levels could be reduced and brought within the national ambient air quality standards. The paper published in the *Proceedings of the National Academy of Science* also notes that “if all households transitioned to clean fuels, about 13% of premature mortality in India could be averted.” At the national scale, mitigating household emissions is also expected to bring large health benefits.

“You can’t have a clean environment when about half the houses are burning dirty fuel every day. We have realised that pollution may start in the kitchen, but it doesn’t stay there... it becomes part of the general outdoor air pollution,” said Kirk R. Smith from UC Berkeley in a release. He is one of the corresponding authors of the paper.

Using satellite data and chemical transport model simulations, the researchers pointed out that complete mitigation would bring down the country's average annual PM 2.5 air pollution to 38 microgram/cubic metre. Surprisingly, this is below India's national ambient air quality standard of 40 microgram/cubic metre and slightly above the World Health Organization (interim target 1) standards of 35 microgram/cubic metre.

“In many villages, they still use firewood for room heating and water heating. People prefer cheap wood fuel despite LPG being provided to many households,” says Sourangsu Chowdhury, a Ph.D. scholar at IIT Delhi and the first author of the paper.

Sagnik Dey from the Centre for Atmospheric Sciences, IIT Delhi, and one of the corresponding authors, warns: “In Delhi NCR, stubble burning, industrial and power plant emission, brick kilns and vehicular emissions are the major contributors. Even after mitigating household emissions, Delhi NCR would remain out of attainment. It needs more serious and stringent measures.”

“But India’s pollution problem is much bigger than often perceived. Our study has demonstrated that mitigating at a household level is the easiest and more practical way out for the government to reduce not only the household pollution but also outdoor air pollution at the national scale,” says Prof. Dey.

“We definitely need a multi-pronged approach to control emission from other major sectors like

industries, transportation, and power plants to effectively address the air pollution issue.”

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The data generated will help scientists understand how the jets of luminosity that enabled us to see the black holes actually work and behave.

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2018 TIGER CENSUS REPORT GETS DELAYED DUE TO 'NEW METHODS'

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

Beating the heat:A white tiger cools off in a pond at the Alipore Zoo in Kolkata on Tuesday.PTISwapan Mahapatra

The much awaited 2018 tiger census report is likely to be delayed and will be released only after the formation of a new government at the Centre, an official said citing "huge data" which is to be analysed.

The four-yearly report, which gives out the number of big cats living in the country, was to be released this month, but officials say it is not expected before June due to addition of states in the survey, intense methods and delay by states in submitting the data.

However, an official had said in February the report would be released in March as the tiger count was almost completed and only data analysis was pending.

According to Dehradun-based Wildlife Institute of India (WII), an autonomous institution of the Ministry of Environment, the process of estimating tigers commenced late and it has been an elaborate exercise with minute details being taken care of so the report is likely to come out in May end.

"We are analysing the huge data. It will take time. It's definitely not coming out before a new government gets elected. The process of estimation began six months late this time. So the report is likely to come out by May end," Y.V. Jhala, a senior scientist in WII, said.

A wildlife official from the National Tiger Conservation Authority (NTCA), a statutory body of the environment ministry, said the delay was on the part of state governments in submitting their data to the Centre and due to the increase in the number of states from where the data is being collected.

"Number of states have increased this time. Nagaland, Manipur and Gujarat have been included this time besides the 18 tiger reign states. We started the process of tiger estimation from our side but submission of data from different state forest departments took time," DIG of NTCA Nishant Verma said.

This is the fourth cycle of the tiger census. The first was conducted in 2006, second in 2010 and third in 2014. A team of over 44,000 officials is working on the census along with 55 biologists, the WII scientist said.

According to the last survey conducted in 2014, the tiger count was 2,226.

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INDIAN TIGERS ARE HIGHLY STRESSED DUE TO HUMAN DISTURBANCES

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

Sariska tiger | Photo Credit: [Special Arrangement](#)

Compared with 200-odd Amur tigers in Russian Far East, the Bengal tigers in three tiger reserves in India — Bandhavgarh, Kanha, Sariska — are about 20% more stressed, a study found. The Indo-Russian team measured the stress level by studying the glucocorticoids metabolites present in the faeces of tigers.

“Increased stress level for prolonged periods will affect the immunity and fitness of tigers. Most importantly, elevated stress negatively impacts reproductive hormones which can lead to reduced fertility and reproductive failure. We have earlier found captive elephants showing compromised reproductive cycle due to stress,” said Dr. Govindhaswamy Umapathy from the Laboratory for the Conservation of Endangered Species (LaCONES) at the Centre for Cellular and Molecular Biology (CSIR-CCMB), co-author of a [paper published](#) in the journal *PLOS ONE*.

Tigers in the Kanha reserve had the highest faecal glucocorticoids metabolites level (markers for stress) while tigers in the Bandhavgarh reserve had the lowest level and comparable with the Amur tigers of Russia.

“Though there is a variation in the concentration of glucocorticoids metabolites in tigers in the three reserves, there is no significant difference in the stress levels. The elevated stress in Bengal tigers might be due to anthropogenic disturbance,” says Vinod Kumar, Technical Officer at CCMB and a co-author of the paper.

While the tiger reserves in India are smaller than in Russia, the anthropogenic disturbances are very high in Indian reserves.

Besides high anthropogenic stress, tigers in the three reserves experience higher population density compared with Amur tigers in Russia. At 11.33 tigers per 100 sq km, the density of tigers is many times higher in India compared with Ussuriisky reserve in Russia (0.15 tigers per 100 sq. km). “Anthropogenic disturbances and higher population density could be causing higher stress in Indian tigers,” Dr. Umapathy says.

“A 2015 study by our team found that tigers reintroduced in Sariska reserve experienced high stress due to anthropogenic disturbances,” Dr. Umapathy says. Besides high vehicular traffic, tigers in the Sariska reserve encounter herders, villagers who visit the forest for collecting wood and livestock grazing. As a result, the reproducing ability of Sariska tigers reduced.

Unlike Sariska, the Panna tiger reserve faces less anthropogenic disturbances. As a result, three of the five reintroduced tigresses in Panna reserve produced multiple litters successfully in four years, while in Sariska a tigress could successfully breed only once after four years.

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The data generated will help scientists understand how the jets of luminosity that enabled us to see the black holes actually work and behave.

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EVEN REMOTE PEAKS ARE NOT FREE OF MICROPLASTICS: STUDY

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

This photo taken on January 30, 2018 shows a view of the Pyrenees mountains from the Observatory of the Pic du Midi, one of France's tallest mountains, in Bagnères-de-Bigorre. | Photo Credit: [AFP](#)

A secluded mountain region thought to be free of plastic pollution is in fact blanketed by airborne microplastics on a scale comparable to a major city such as Paris, alarmed researchers reported on April 15.

Over a five-month period in 2017-2018, an average of 365 tiny bits of plastic settled every day on each square metre of an uninhabited, high-altitude area in the Pyrenees straddling France and Spain, they reported in the journal *Nature Geoscience*.

“It is astounding and worrying that so many particles were found in the Pyrenees field site,” said lead author Steve Allen, a doctoral student at the University of Strathclyde in Scotland.

The study focused on microplastics mostly between 10 and 150 micrometres across, including fragments, fibres and sheet-like pieces of film.

By comparison, a human hair is, on average, about 70 micrometres in width.

“We would never have anticipated that this study would reveal such high levels of microplastic deposits,” added co-author Gael Le Roux, a researcher at EcoLab in Toulouse, in southwestern France.

Plastic litter has emerged in the last few years as a major environmental problem. Up to 12 million tonnes of plastics are thought to enter the world's oceans every year, and millions more clog inland waterways and landfills.

Plastic takes decades to break down, and even then continues to persist in the environment. Scientists are only now beginning to measure the damage to wildlife and potential impacts on human health.

A study earlier this year uncovered plastic fragments in the guts of animals living more than 10 kilometres below the ocean surface. Two whales found beached since the start of the year — one in the Philippines, the other in Sardinia, Italy — had 40 and 20 kilos, respectively, of plastic in their stomachs.

Microplastics have also been found in tap water around the world, and even the furthest reaches of Antarctica.

“Our most significant finding is that microplastics are transported through the atmosphere and deposited in a remote, high-altitude mountain location far from any major city,” co-author Deonie Allen, also from EcoLab, told *AFP*. “This means that microplastics are an atmospheric pollutant.”

Researchers used two monitoring devices to independently measure particle concentration in an area long considered to be among the most pristine in western Europe.

The nearest village is seven kilometres away, and the nearest city, Toulouse, is more than 100 kilometres.

While the scientists were able to identify the types of plastic, they could not say with certainty where they came from or how far they had drifted.

Analysing the pattern of air flows, they surmised that some particles had travelled at least 100 kilometres. "But due to the lack of significant local plastic pollution sources, they probably travelled farther," Deonie Allen said.

Samples — transported by wind, snow and rain — were collected at the meteorological station of Bernadouze at an altitude of more than 1,500 metres.

The researchers were stunned to find that the concentrations of microplastic pollution were on a par with those found in major cities, including Paris and the southern Chinese industrial city of Dongguan.

"Our findings are within the range of those reported for greater Paris, and can thus be considered comparable," Deonie Allen told *AFP*. "We did not expect the number of particles to be so high."

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The theme of this year's Earth Day was 'Protect Our Species' and intended to draw attention to the rapid global destruction and reduction of the world's plant and wildlife populations.

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ONE MILLION SPECIES RISK EXTINCTION DUE TO HUMANS: DRAFT U.N. REPORT

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

A handout photo by the Mauritian Wildlife Foundation shows the Rodrigues Fruit Bat on Rodrigues in the Western Indian Ocean on April 23, 2018. Animal and plant species are vanishing — sometimes before we know they exist — at an accelerating pace, but conservationists are pushing back against the juggernaut of mass extinction. | Photo Credit: [AFP](#)

Up to one million species face extinction due to human influence, according to a draft U.N. report obtained by AFP that painstakingly catalogues how humanity has undermined the natural resources upon which its very survival depends.

The accelerating loss of clean air, drinkable water, CO₂-absorbing forests, pollinating insects, protein-rich fish and storm-blocking mangroves — to name but a few of the dwindling services rendered by nature — poses no less of a threat than climate change, says the report, set to be unveiled May 6.

Indeed, biodiversity loss and global warming are closely linked, according to the 44-page Summary for Policy Makers, which distils a 1,800-page U.N. assessment of scientific literature on the state of nature.

Delegates from 130 nations meeting in Paris from April 29 will vet the executive summary line-by-line. Wording may change, but figures lifted from the underlying report cannot be altered.

“We need to recognise that climate change and loss of nature are equally important, not just for the environment, but as development and economic issues as well,” Robert Watson, chair of the U.N.-mandated body that compiled the report, told AFP, without divulging its findings.

“The way we produce our food and energy is undermining the regulating services that we get from nature,” he said, adding that only “transformative change” can stem the damage.

Deforestation and agriculture, including livestock production, account for about a quarter of greenhouse gas emissions, and have wreaked havoc on natural ecosystems as well.

The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) report warns of “an imminent rapid acceleration in the global rate of species extinction”.

Explained: What we know about mass extinctions

The pace of loss “is already tens to hundreds of times higher than it has been, on average, over the last 10 million years,” it notes. “Half-a-million to a million species are projected to be threatened with extinction, many within decades.”

Many experts think a so-called “mass extinction event” — only the sixth in the last half-billion years — is already under way. The most recent saw the end of the Cretaceous period some 66 million years ago, when a 10-km-wide asteroid strike wiped out most lifeforms.

Scientists estimate that Earth is today home to some eight million distinct species, a majority of

them insects. A quarter of catalogued animal and plant species are already being crowded, eaten or poisoned out of existence.

The drop in sheer numbers is even more dramatic, with wild mammal biomass — their collective weight — down by 82%. Humans and livestock account for more than 95% of mammal biomass.

“If we’re going to have a sustainable planet that provides services to communities around the world, we need to change this trajectory in the next ten years, just as we need to do that with climate,” noted WWF chief scientist Rebecca Shaw, formerly a member of the U.N. scientific bodies for both climate and biodiversity.

The direct causes of species loss, in order of importance, are shrinking habitat and land-use change, hunting for food or illicit trade in body parts, climate change, pollution, and alien species such as rats, mosquitoes and snakes that hitch rides on ships or planes, the report finds.

“There are also two big indirect drivers of biodiversity loss and climate change — the number of people in the world and their growing ability to consume,” said Mr. Watson.

Once seen as primarily a future threat to animal and plant life, the disruptive impact of global warming has accelerated.

Shifts in the distribution of species, for example, will likely double if average temperature go up a notch from 1.5°C to 2°C. So far, the global thermometer has risen 1°C compared with mid-19th century levels.

The [2015 Paris Agreement](#) enjoins nations to cap the rise to “well below” 2°C. But a landmark [U.N. climate report in October 2018](#) said that would still be enough to boost the intensity and frequency of deadly heatwaves, droughts, floods and storms.

Other findings in the report include:

The report cautioned against climate change solutions that may inadvertently harm nature. The use, for example, of biofuels combined with “carbon capture and storage” — the sequestration of CO₂ released when biofuels are burned — is widely seen as key in the transition to green energy on a global scale. But the land needed to grow all those biofuel crops may wind up cutting into food production, the expansion of protected areas or reforestation efforts.

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More than a dozen wild bee species critical to pollinating everything from blueberries to apples in New England are on the decline, according to a new

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