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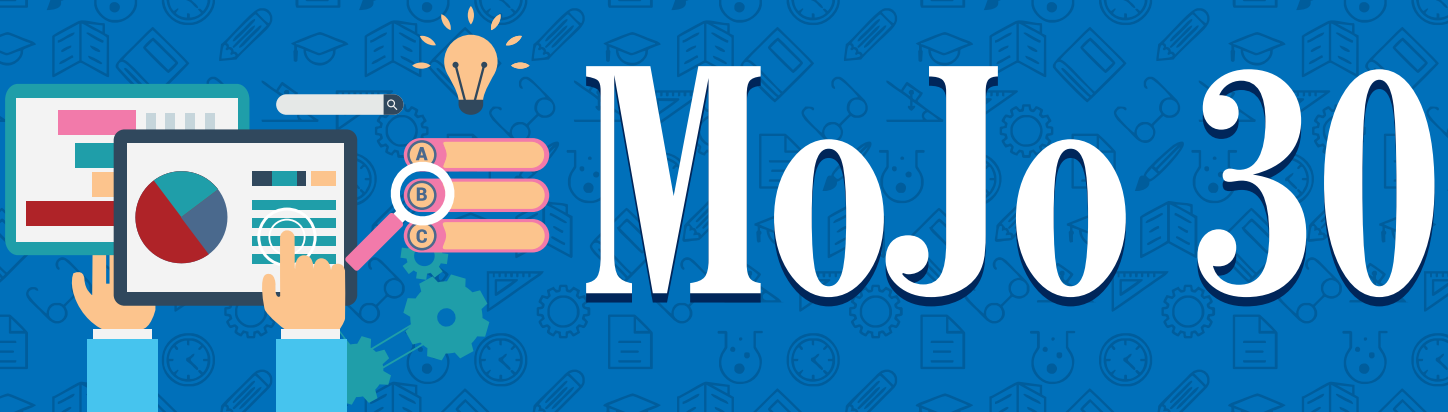
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# Index

Slipping on climate change.....	2
Lax on safety: On Neyveli and Visakhapatnam disasters.....	4
Developed countries must implement the financial and technological commitments under UNFCCC and Paris agreement: Shri Prakash Javadekar.....	7
India's GDP could fall 90% by 2100 due to climate change: Analysis.....	11
India's Tiger Census sets a New Guinness Record for being the world's largest camera trap wildlife survey.....	13
Delhi lost 6% of its GDP to bad air in 6 months: Study.....	17
Approval accorded to Zonal Master Plan of Bhagirathi Eco-Sensitive Zone.....	19
The latest census showed a rise in lion numbers — but it may be time to update the counting methods.....	23
What is EIA and why is India's new EIA draft problematic.....	27
Australia's koalas likely to become extinct by 2050.....	29
Locust attacks posing serious threat to food security in parts of East Africa, India: WMO.....	30
Climate change on track to wipe out polar bears by 2100.....	33
Asian elephant cubs show handedness in trunk behaviour earlier than adult usage of trunks.....	37
At 2,967 tigers, India's capacity at peak.....	41
Air pollution shortens average Indian life expectancy by over five years.....	43
In reverse gear: on draft EIA notification.....	45

## SLIPPING ON CLIMATE CHANGE

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

**Written by S N Tripathi**

The Ministry of Earth Sciences' new report — “Assessment of Climate Change over the Indian Region” — acknowledges that human activity is a major factor in climate change. The admission is significant because since the study of climate systems is not yet regarded as an exact science, governments are reluctant to attribute climate change to human-induced emissions. The gaps in knowledge have been amplified and misinterpreted to stall corrective action. So, for the ministry to finally acknowledge the linkages is a leap forward.

However, the report does well and at the same time falls short. As a purely scientific assessment, it invokes more concern over India's approach to combating climate change, and how much worse critical environmental systems would be under business-as-usual.

It projects that the average temperature over the country could rise by 4.4 degree celsius by 2100. To the uninitiated — some within the general populace and the policy machinery — it may not ring alarm bells, but it should. The temperatures for the hottest day and the coldest night of each year from 1986-2015 have already gone up by 0.63 degree celsius and 0.4 degree celsius respectively. So has the frequency of extreme weather events. Further rise in temperatures will cause damage worth billions of rupees and thousands may lose their lives.

Among other findings, the report goes on to show how a rise in the sea-level in the northern Indian Ocean (NIO) has accelerated from 1.6 – 1.75 mm per year during 1874-2004 to 3.3 mm a year from 1993-2017. Also, annual rainfall across the country has fallen by 6 per cent between 1951 and 2015. In the future we may have short but very heavy bursts of rainfall followed by long dry spells.

However, the report was not put together in wider consultation with the IITS, IISERs, the IISc, ISRO, CSIR or DST. Surprisingly, not even the Ministry of Environment, Forest and Climate Change, as the nodal ministry responsible for integrating climate action in policy making, was involved. And it sticks to the IPCC's formula of projecting future scenarios based on Regional Concentration Pathways (RCPs) under different trajectories of carbon emissions. This works on a macro scale by projecting the outcomes of broad economic policy, but is ineffective in assessing outcomes of specific regional interventions. Almost all Indian states have their own climate action plans for their unique conditions, so the RCP-based approach is not enough for our diversity of challenges.

The findings also stop short of prescribing policy action. That was perhaps outside the ministry's mandate, but at this point simply more clarity on climate science is of no use unless gelled into perfectly coordinated action. India has had a National Action Plan on climate change with eight distinct missions for 12 years, but the report doesn't take into account the progress made there.

As the country continues to face increasing climate impact in the form of more intense cyclones, heat waves, floods and droughts, the evidence of a changing climate must urgently be supplemented with solutions. Regional interpretation of the physical science and the potential implications for crucial sectors of our economy like energy planning, transportation, agriculture and air pollution management should have been in focus in such a report to allow for progress in interconnected decision-making on climate change.

Perhaps the report's greatest shortcoming is that it does not comment on the efficacy of India's climate action so far. How has it fared in mitigating climate impacts to date? How well is it prepared with disaster risk management for future extreme weather? How should existing programmes be stitched together to minimise vulnerability and losses? These are all important questions it had the perfect opportunity to answer.

At the moment, it's not more than a compendium of research data that was put together under the same isolated approach that plagues policy planning. It lacks the interconnectedness of similar reports by the developed world that use advanced modelling to chart very specific regional-level action. The ministry would do well to incorporate more expert inputs and re-release a document that truly addresses India's climate strategy.

*The writer is head, Department of Civil Engineering, Centre for Environmental Science and Engineering, IIT Kanpur. Views expressed are personal*

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# LAX ON SAFETY: ON NEYVELI AND VISAKHAPATNAM DISASTERS

Relevant for: Environment | Topic: Disaster and disaster management

Two deadly industrial disasters, in Tamil Nadu and Andhra Pradesh, leading to the loss of at least eight lives and causing serious injuries to many, once again underscore the value of safety protocols. In a boiler blast at the Neyveli thermal power station, [six people were killed](#) and a dozen workers suffered severe burns, while a toxic [chemical leak at a pharmaceutical plant in Visakhapatnam](#) led to two deaths immediately. These and two other recent disasters, also at a Neyveli power plant and the LG Polymers factory in the Visakhapatnam area, have come at a stressful time when India is trying to find its feet in the midst of the pandemic. What happened in Neyveli on Wednesday is inexplicable, since the power producer had encountered a boiler furnace blowout only on May 7, and had ordered a review of its infrastructure and processes. Without meticulous care, boilers are dangerous pieces of equipment. High-pressure and superheated steam make for a lethal combination, if their release mechanism is not kept in good order, and there is an explosion. For this very reason, they are regulated strictly under the Indian Boilers Act, at least on paper. The terrible consequences of lax boiler safety were evident three years ago in Rae Bareilly, when a blast at an NTPC power plant killed a few dozen people. But States have clearly not internalised a culture of zero tolerance to boiler accidents.

The gas leak in Visakhapatnam apparently involving benzimidazole, a chemical used in pharmaceuticals, raises questions on maintenance and operational procedures. The probe into how vapours of a stable but acutely toxic chemical escaped should lead to an upgrade to safety protocols. In the Neyveli incident, there is a suggestion that the boiler was not in operation as it had tripped and was in the process of being revived. Since the major operations of this equipment involve a furnace and production of steam, what led to an unexpected blowout? NLC India, a key power producer, has an obligation to present a transparent report on why its facilities are beset by mishaps. Occupational safety demands that boilers are operated by trained personnel, but some of those on the ground have been described as contract employees. It will take an independent probe to determine whether cost calculations guided staffing decisions in such a hazardous sector. The response of the Centre and States to industrial accidents is usually to stem public outrage by announcing compensation for victims. A transparent inquiry that leads to a fixing of responsibility and reform is a low priority. This culture must change. Such accidents are mostly preventable, and occur rarely in the industrialised world, because of impeccable attention to safety. India's aspirations to industrialise should be founded on safety.

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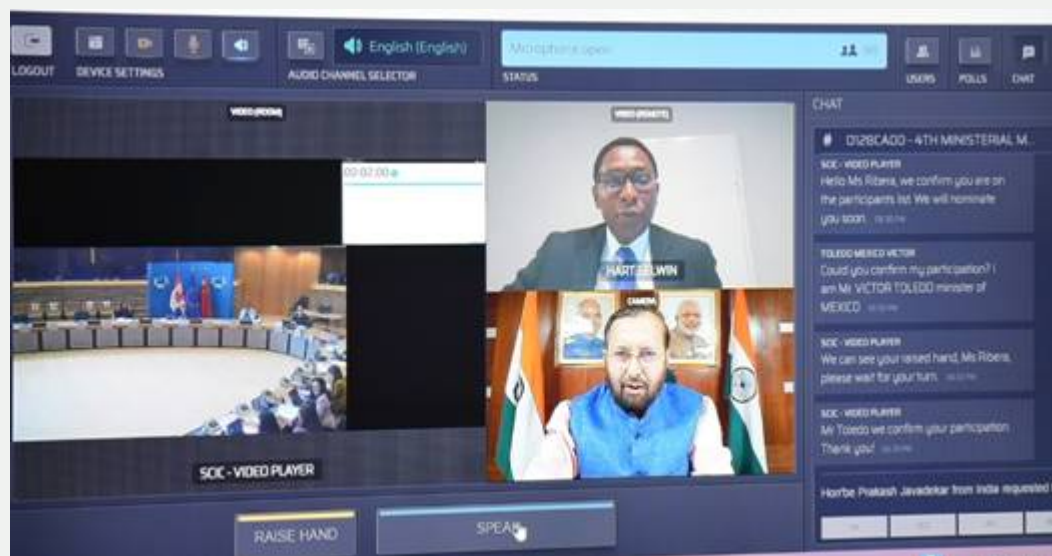
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## DEVELOPED COUNTRIES MUST IMPLEMENT THE FINANCIAL AND TECHNOLOGICAL COMMITMENTS UNDER UNFCCC AND PARIS AGREEMENT: SHRI PRAKASH JAVADEKAR

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

The fourth edition of the virtual Ministerial on Climate Action witnessed countries exchanging views on how countries are aligning economic recovery plans with the Paris Agreement and the critical enabling conditions to ensure continued climate action. The meeting was co-chaired by European Union, China and Canada to advance discussions on the full implementation of the Paris Agreement under the United Nations Framework Convention on Climate Change (UNFCCC) and to demonstrate continued political commitment to global climate action.

Union Environment Minister, Shri Prakash Javadekar, representing India said that our country has taken very significant steps for combating climate change and will continue its efforts in the future also. Shri Javadekar called upon developed country parties, once again, to do their part as envisaged under UNFCCC and its Paris Agreement, for extending financial and technological support to developing countries. "The promise of USD 1 trillion by 2020 has not been fulfilled so far, and I hope that in the remaining 5 months of 2020, the promised amount is mobilized and delivered, for further strengthening climate actions in developing countries.", stressed the Environment Minister.



Highlighting India's efforts, the Environment Minister said that India has achieved reduction of 21% in emission intensity of its GDP between 2005 and 2014, thereby achieving its pre-2020 voluntary target. Further, India's renewable energy installed capacity has increased by 226% in last 5 years and stands more than 87 Gigawatt. "The share of non-fossil sources in installed capacity of electricity generation increased from 30.5% in March 2015 to 37.7% in May 2020 and our Prime Minister has further announced the aspirational target of increasing our renewable energy capacity to 450 GW.", pointed Shri Javadekar.





The minister further said that we have provided 80 million LPG connections in rural areas, providing them with clean cooking fuel and healthy environment. “India’s total forest and tree cover is 8,07,276 sq. km. which is 24.56% of the total geographical area of the country; More than 360 million LED bulbs have been distributed under UJALA scheme, which has led to energy saving of about 47 billion units of electricity per year and reduction of 38 million tonnes of CO<sub>2</sub> per year.”, said the Environment minister.

Highlighting India’s efforts towards cleaner fuel Shri Javadekar said that India has also leapfrogged from Bharat Stage-IV (BS-IV) to Bharat Stage-VI (BS-VI) emission norms by April 1, 2020 which was earlier to be adopted by 2024. The minister also highlighted how India had levied a coal cess of INR 400/- as, part of one of the most explicit green initiatives & this is now subsumed under Goods and Services Tax (GST). “Under Smart Cities Mission, first-of-its-kind initiative – Climate Smart Cities Assessment Framework 2019 has been launched which intends to provide clear roadmap for cities and urban India towards combating climate change through adoption of both mitigation and adaptation measures.” told the Minister at the meeting.

The fourth edition of the meeting was attended by Ministers and representatives of about 30 countries and was held virtually for the first time in view of the ongoing pandemic. The purpose was to ensure that progress is made on climate action.

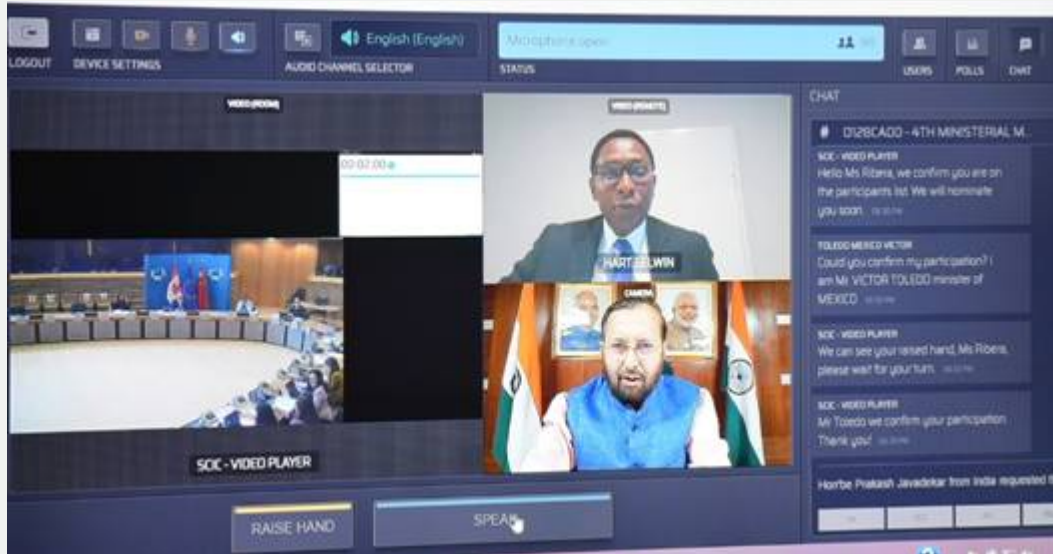
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# INDIA'S GDP COULD FALL 90% BY 2100 DUE TO CLIMATE CHANGE: ANALYSIS

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

Hotter temperatures by 2100 could slash global GDP by more than 20%, according to new research, and the way the economic impact will be distributed threatens to turn climate change into an enormous driver of worldwide inequality.

A new analysis of the relationship between heat and economic performance released this week by Oxford Economics, a global forecasting firm, identified a divide between nations on either side of 15° Celsius (59° Fahrenheit), the “global sweet spot” for economic activity. A country whose average annual temperatures today are cooler than 15° C, including those in North America and Europe, stand to benefit slightly in the short term from rising temperatures. Tropical and subtropical countries whose average temperatures are already warmer than 15° C today, including the entire global South, face catastrophic economic degradation.

India is singled out by Oxford Economics as following a particularly ruinous trajectory, with GDP falling 90% by 2100 if countries don't improve current policies. The grim forecast relies on capturing the historical relationship between GDP and temperature. Once established, researchers use climate projections for the rest of the century to produce GDP estimates. The paper assumes an emissions trajectory that could raise global average temperatures by 3°C before 2100 without more aggressive efforts to stop it.

The new analysis is an independent update to a landmark 2015 study in the journal *Nature* that introduced the technique for projecting the economic impacts of a hotter world. The top-line result—a 21% global GDP hit by 2100—is in line with the original work. The updated research includes an additional decade of data and 40 more countries, bringing the total under analysis to 203. The original study has become influential tool, now that mainstream economists are building scientific projections of global warming into models of growth. The original 2015 study has gone on to inform the International Monetary Fund's climate work and many others'.

Economists had long dismissed climate change as a future problem that remained decades away, said James Nixon, chief European economist at Oxford Economics and the author the new white paper. “Obviously, when you get into the literature, you realize that's not quite the case,” he said. “Because we're producing long-term forecasts for countries like India who are likely to be adversely affected by climate change, we need to find a way of quantifying and thinking about how much we should be writing down their forecast.”

Nixon produces estimates of “counterfactual” per-capita GDP—or what would have happened if the world hadn't warmed 1.1°C above pre-industrial averages. In India, GDP might have been about 25% higher without warming that's happened up to 2019; Nigeria's economy would have seen GDP boosted by 35% without warming.

Climate economists have an unenviable job: Nixon describes his work as “trying to put a number on things that haven't happened yet.” That draws a lot of criticism, with the complexity and uncertainty leaving projections open to dispute. Or, as the new Oxford Economics paper dryly puts it, “putting a number on the economic impact of global warming is extremely difficult.”

Nixon wanted to put it differently in his new paper: “The first sentence I had, before my editor took it out, was something like, ‘Putting a number on climate change is one of the most heroic

things that economists can do.”

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## INDIA'S TIGER CENSUS SETS A NEW GUINNESS RECORD FOR BEING THE WORLD'S LARGEST CAMERA TRAP WILDLIFE SURVEY.

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

The fourth cycle of the All India Tiger Estimation 2018, results of which were declared to the nation on Global Tiger Day last year by Prime Minister, Shri Narendra Modi has entered the Guinness World Record for being the **world's largest camera trap wildlife survey**.

Termining this achievement a great moment, Union Environment Minister, Shri Prakash Javadekar in a tweet message said that this is a shining example of *Atma nirbhar* Bharat which in the Prime Minister's own words, was attained through *sankalp se siddhi*.

Under the leadership of PM [@narendramodi](#), India fulfilled its resolve to double tiger numbers 4 years before the target through [#SankalpSeSiddhi](#). [@GWR](#) [@PMOIndia](#) [pic.twitter.com/ChnPkCEzUG](https://pic.twitter.com/ChnPkCEzUG)

Further, the Environment Minister said that under the leadership of Prime Minister, Shri Narendra Modi, India has fulfilled its resolve to double the tiger numbers four years before the target. The country now has an estimated 2967 tigers as per the latest census. With this number, India is home to nearly 75% of the global tiger population and has already fulfilled its resolve of doubling tiger numbers, made at St. Petersburg in 2010, much before the target year of 2022.

The citation at the Guinness World Record website reads- "The fourth iteration of the survey – conducted in 2018-19 - was the most comprehensive to date, in terms of both resource and data amassed. Camera traps (outdoor photographic devices fitted with motion sensors that start recording when an animal passes by) were placed in 26,838 locations across 141 different sites and surveyed an effective area of 121,337 square kilometres (46,848 square miles). In total, the camera traps captured 34,858,623 photographs of wildlife (76,651 of which were tigers and 51,777 were leopards; the remainder were other native fauna). From these photographs, 2,461 individual tigers (excluding cubs) were identified using stripe-pattern-recognition software.



As well as unprecedented camera trap usage, the 2018 “Status of Tigers in India” assessment also conducted extensive foot surveys that covered 522,996 km (324,975 mi) of trails and sampled 317,958 habitat plots for vegetation and prey dung. It’s estimated that the total area of forest studied was 381,200 km<sup>2</sup> (147,181 sq mi) and cumulatively the collection and review of data equated to some 620,795 labour-days.”

The All India Tiger Estimation done quadrennially is steered by the National Tiger Conservation Authority with technical backstopping from the Wildlife Institute of India and implemented by State Forest Departments and partners. The latest results of 2018 had shown that India now has an estimated 2967 tigers out of which 2461 individual tigers have been photo captured, a whopping 83 % of the tiger population, highlighting the comprehensive nature of the survey.

There is hardly any parallel of such a focused species oriented program like Project Tiger across the world, which started with 9 Tiger Reserves, with 50 tiger reserves currently. India has now firmly established a leadership role in tiger conservation, with its bench marking practices being looked at as a gold standard across the world.

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# DELHI LOST 6% OF ITS GDP TO BAD AIR IN 6 MONTHS: STUDY

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



(This story originally appeared in [TOI](#) on Jul 11, 2020)

**NEW DELHI:** Of the 28 [metropolitan cities](#) around the world, Delhi has borne the highest economic cost - 5.8% of the GDP due to air pollution in the first six months of the year despite the lockdown, a new online analysis by IQAir AirVisual and Greenpeace Southeast Asia has found.

The study estimated that Delhi lost around 24,000 lives in the first half of 2020 due to high PM2.5 and nitrogen dioxide (NO<sub>2</sub>) levels, while the economic cost was around Rs 26,230 crore (US\$3.5 billion). It analysed 28 major metropolitan cities and found that air pollution impacted 1-5.8% of the city's GDP, depending on the varying levels of pollution.

These costs included absences at workplaces due to sick leave, number of people suffering from asthma and asthma-related trips to hospital, years of life lost and years lived with the disability and preterm births. "Despite cleaner air because of the lockdown, pollution continues to be a serious public health crisis and a threat to our economy," said Avinash Chanchal, climate campaigner, Greenpeace India. Chanchal added that as the governments looked towards rebuilding economies, it was more important than ever that investments were directed toward green, just and sustainable sectors. "Rather than providing a last lifeline to the fossil fuel industry, we must invest in more economically viable solutions like [renewable energy](#) and clean-powered public transport systems, which also help the less privileged," he said.

In Mumbai, air pollution from PM2.5 and NO<sub>2</sub> was responsible for the loss of an estimated 14,000 lives and a cost of Rs 15,750 crore (US\$2.1 billion) since January 1. These figures were expected to grow further in winter. The study was built on a similar tool developed by Centre for Research on Energy and Clean Air (CREA), which pegged Delhi on top of the list of metros that were most impacted by air pollution, followed by Beijing, Mumbai, Shanghai, Jakarta, Guangzhou, Bangkok, Moscow, [Hong Kong](#) and Seoul. The other causes for consideration included prevalence of risk factors for chronic diseases and level of healthcare services available.

"In Delhi, non-communicable diseases and lower respiratory infections have been intensified by PM2.5 and NO<sub>2</sub>, resulting in deaths, years of life lost and years spent living with the disability. Lower respiratory infections in children have resulted in deaths and years of life lost. Over 4,000 new cases of asthma in children have been attributed to high levels of NO<sub>2</sub>," said the CREA analysis. Subsequently, the number of children suffering from asthma increased by 16,000. Exposure to PM2.5 led to over 15,000 asthma-related emergency room visits for children. The costs of children's lives lost due to PM2.5 reach \$310 million, said CREA.

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PM2.5 and nitrogen dioxide (NO<sub>2</sub>) levels, while the economic cost was around Rs 26,230 crore (US\$3.5 billion). It analysed 28 major metropolitan cities and found that air pollution impacted 1-5.8% of the city's GDP, depending on the varying levels of pollution.

These costs included absences at workplaces due to sick leave, number of people suffering from asthma and asthma-related trips to hospital, years of life lost and years lived with the disability and preterm births. "Despite cleaner air because of the lockdown, pollution continues to be a serious public health crisis and a threat to our economy," said Avinash Chanchal, climate campaigner, Greenpeace India. Chanchal added that as the governments looked towards rebuilding economies, it was more important than ever that investments were directed toward green, just and sustainable sectors. "Rather than providing a last lifeline to the fossil fuel industry, we must invest in more economically viable solutions like [renewable energy](#) and clean-powered public transport systems, which also help the less privileged," he said.

In Mumbai, air pollution from PM2.5 and NO<sub>2</sub> was responsible for the loss of an estimated 14,000 lives and a cost of Rs 15,750 crore (US\$2.1 billion) since January 1. These figures were expected to grow further in winter. The study was built on a similar tool developed by Centre for Research on Energy and Clean Air (CREA), which pegged Delhi on top of the list of metros that were most impacted by air pollution, followed by Beijing, Mumbai, Shanghai, Jakarta, Guangzhou, Bangkok, Moscow, [Hong Kong](#) and Seoul. The other causes for consideration included prevalence of risk factors for chronic diseases and level of healthcare services available.

"In Delhi, non-communicable diseases and lower respiratory infections have been intensified by PM2.5 and NO<sub>2</sub>, resulting in deaths, years of life lost and years spent living with the disability. Lower respiratory infections in children have resulted in deaths and years of life lost. Over 4,000 new cases of asthma in children have been attributed to high levels of NO<sub>2</sub>," said the CREA analysis. Subsequently, the number of children suffering from asthma increased by 16,000. Exposure to PM2.5 led to over 15,000 asthma-related emergency room visits for children. The costs of children's lives lost due to PM2.5 reach \$310 million, said CREA.

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## APPROVAL ACCORDED TO ZONAL MASTER PLAN OF BHAGIRATHI ECO-SENSITIVE ZONE

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

In a review meeting of the CHAARDHAAM ROAD PROJECT in the State of Uttarakhand via Video Conferencing, Union Environment Minister, Shri Prakash Javadekar informed that the Zonal Master Plan(ZMP), prepared by the Government of Uttarakhand and appraised by the Ministry of Jal Shakti, has been accorded approval by the Ministry of Environment, Forest and Climate Change(MoEF&CC) on 16th July,2020.



The Bhagirathi Eco-Sensitive Zone notification from Gaumukh to Uttarakashi covering an area of 4179.59 sq. kilometer was issued by the Ministry of Environment, Forest and Climate Change(MoEF&CC) on 18th December 2012 keeping in view the requirements of the local people without affecting their rights and privileges and also ensuring eco-friendly development for their livelihood security. The notification was subsequently amended on 16th April, 2018 in consultation with the Ministry of Road, Transport and Highways, GOI; Government of Uttarakhand and Indian Road Congress.

The Bhagirathi Eco-Sensitive Zone notification mandated the State Government of Uttarakhand to prepare ZMP to be implemented under the supervision of the Monitoring Committee.

The ZMP is based on watershed approach and includes governance in the area of forest and wildlife, watershed management, irrigation, energy, tourism, public health and sanitation, road infrastructure, etc.

The approval of ZMP will give a boost to conservation and ecology of the area and also to undertake developmental activities as permitted under ZMP.

The review meeting of the CHAARDHAAM ROAD PROJECT in the State of Uttarakhand was

chaired by Union Minister for Road Transport & Highways and MSMEs Shri Nitin Gadkari. Chief Minister of Uttarakhand Shri Trivendra Singh Rawat, Union Minister of State for Road Transport & Highways Gen (Retd) V K Singh and the State Ministers of Environment & Forest, PWD among others participated in the meeting. Union Secretaries of Road Transport & Highways, Environment and Forests, DG Roads(MoRTH), DG(BRO) and senior officers of the two Ministries and State Government also attended.

The approval of ZMP will give a boost to conservation and ecology of the area and also to undertake developmental activities as permitted under ZMP. The approval will also pave way for faster execution of the Chaardhaam Project.



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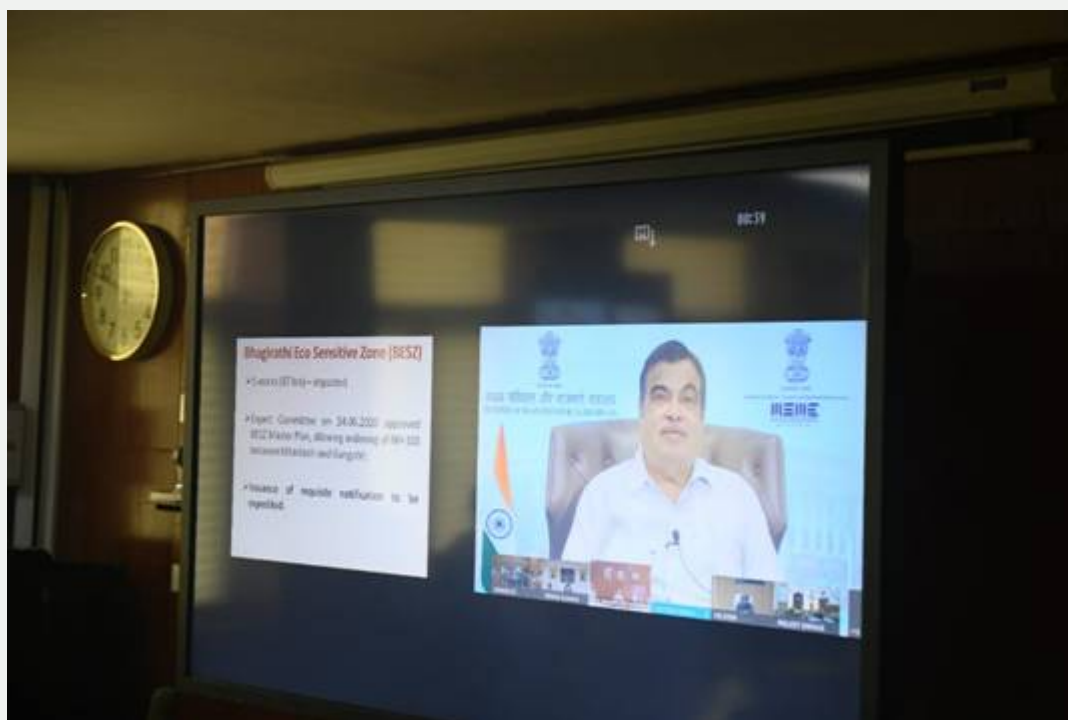
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# THE LATEST CENSUS SHOWED A RISE IN LION NUMBERS — BUT IT MAY BE TIME TO UPDATE THE COUNTING METHODS

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

The scientific way of doing a census is to be transparent and open to peer review, say scientists | Photo Credit: [REUTERS](#)

Starting 2 p.m. on June 5, some 1,400 forest personnel, armed with binoculars, cameras and spreadsheets fanned out across dry deciduous and thorny scrub forests, fields and villages in and around Gujarat's Gir National Park to count the world's only remaining Asiatic lion population. The survey was over in 24 hours. And within the next few days the tally was announced.

The lion population, said the State forest department, had increased significantly by 29%, from 523 five years ago to 674. The department also said that the big cat's distribution had increased to 30,000 sq.km. from 22,000 sq.km., covering nine districts in Saurashtra. All this despite the scourge of the canine distemper virus (CDV) outbreak in 2018 that killed 36 lions.

This heartening news about the Asiatic lion — an animal that was once close to extinction — was celebrated widely; 'Kudos to the people of Gujarat and all those whose efforts have led to this excellent feat,' the Prime Minister tweeted. But very soon, scientists raised questions: how do you count lions across thousands of square kilometres in 24 hours? How do you analyse and arrive at a figure in a matter of days? Is it not time that the census method — the block count method — used for decades, was upgraded to test newer techniques?

## COVID impact

This year, the COVID-19 lockdown changed a few things. For instance, the wildlife experts who usually take part in this exercise could not do so, and it was carried out exclusively by the forest department; and second, the number of survey days was cut down from three to one. These, however, are not the only reasons why wildlife biologist Ravi Chellam, CEO, Metastring Foundation, who has spent decades studying Gir's lions, believes the census numbers are unreliable.

He cites several other reasons too. "The scientific way of doing a census is to be transparent and open to peer review. Here, the method was not described in detail, the raw data not shared, the approach to analysis is not known and no independent individual is involved."

Moreover, the survey lasted just 24 hours, "and just days later, like magic, a number was produced. The actual number could be less or more — at best it is a guesstimate," he says.

The fact that 1,400 people participated in this exercise could create 'observer bias,' says Chellam. "One person's ability to observe will differ from the next person's. One person's training and competence is going to differ from the next. It is best to have a small and dedicated set of people who devise a scientific way of doing the count." Counting lions is no mean feat. Unlike tigers and leopards, lions do not have distinct coat patterns that camera traps can easily capture to help identify individuals.

In the case of lions, trackers must study their faces closely — especially the unique whisker spot



pattern or 'vibrissae pattern', which is as good a distinguisher as stripe patterns for tigers and rosette patterns for leopards. Scratch marks or other scars are good markers too.

### **New method needed**

For over two decades, wildlife experts have been proposing newer methods to arrive at lion population sizes. In several papers since 1999, Y.V. Jhala, senior scientist at the Wildlife Institute of India, has argued that a way to avoid double counts would be to differentiate individual animals through whisker spots and permanent body markings. When clubbed with a method called 'spatially explicit density capture and recapture,' where the density of lions in an area can be evaluated based on the presence of prey, the population can be better estimated.

The current method used by the Gujarat forest department monitors lions that visit watering holes. Experts say this could grossly under-count or over-count the animals; possibly counting the same lion multiple times.

A better method, experts say, would be to photograph lions, survey habitats, and calculate the probability of finding lions at distances from designated spots: for instance, watering holes, the site of a carcass, or areas where deer and other prey abound.

While the Gujarat forest department's methodology is one that has been used consistently over decades, "one should always be open to testing new techniques, such as mark and recapture based on camera traps, even if it means more human resources and money," says Meena Venkataraman, a wildlife biologist who researches the Asiatic lion. "What is amazing is that we have achieved this for tigers, who span such a diverse set of habitats across the country. For lions too, it could well be possible. We want the best way to look at how our lions are doing; a powerful alternate monitoring protocol."

### **Dozens of deaths**

Another matter of concern for scientists are the recent lion deaths in Gir. As many as 92 lions reportedly died of unnatural causes this year. A team of representatives from the government, the Wildlife Institute of India, the National Tiger Conservation Authority and the Indian Veterinary Institute visited Gir in the last week of May but could not ascertain the exact cause of death. The State government vehemently denied the presence of CDV.

A former IFS officer termed the State forest department's failure to get the samples of dead lions investigated as "criminal negligence," but Shyamal Tikadar, principal chief conservator of forests (wildlife) and chief wildlife warden of Gujarat, said that samples could not be sent to the National Institute of Virology in Pune due to the lockdown. "We need to know where these lions died, if they are part of the same pride, we need to rule out CDV," says Chellam.

Venkataraman believes that the focus on numbers distracts from the real picture. "The census just gives a number and a number is nothing. Scientists need to address new conservation challenges such as disease ecology and issues outside the protected area. We also need an understanding of lion ecology to devise conservation management strategies, and to get clues into their health, behaviour, prey-base and movement in human-dominated landscapes."

Chellam agrees: "The census should ideally be part of a long-term population monitoring programme conducted over years — not just to get numbers, but to get a much deeper understanding of the animal. After all, we are talking about the only lions in all of Asia."

*With inputs from Jacob Koshy.*

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# WHAT IS EIA AND WHY IS INDIA'S NEW EIA DRAFT PROBLEMATIC

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

Environmental Impact Assessment or EIA is the process or study which predicts the effect of a proposed industrial/infrastructural project on the environment. It prevents the proposed activity/project from being approved without proper oversight or taking adverse consequences into account

India's new EIA draft has been widely criticised for its [problematic changes in rules](#). Experts say most of the provisions in the new draft of EIA proves to be a regressive departure from the earlier version.

Also read | [Draft EIA Notification 2020 could spell disaster for Western Ghats, say experts](#)

The public feedback window for the new EIA draft has been now extended till August 11th by the Delhi High Court.

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# AUSTRALIA'S KOALAS LIKELY TO BECOME EXTINCT BY 2050

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

Koalas in Australia's New South Wales are in grave danger. They are [likely to become extinct by 2050](#) if the government does not intervene. This was determined by a parliamentary committee after a year-long inquiry. Several factors have resulted in the fragmentation of the koalas.

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## LOCUST ATTACKS POSING SERIOUS THREAT TO FOOD SECURITY IN PARTS OF EAST AFRICA, INDIA: WMO

Relevant for: Environment | Topic: Disaster and disaster management

Locust attacks are posing a serious threat to food security in parts of East Africa, India and Pakistan as a result of changing climate conditions that can be linked to human activity, the World Meteorological Organisation (WMO) has said.

The specialised agency of the United Nations said extreme weather events and climatic changes such as increases in temperature and rainfall over desert areas, and the strong winds associated with tropical cyclones, provide a new environment for pest breeding, development and migration.

Large and aggressive swarms of these crop-devouring short-horned insects recently invaded over two dozen districts of desert areas in Rajasthan, Madhya Pradesh and Gujarat.

In Pakistan, authorities declared an emergency in February, saying locust numbers were the worst in more than two decades.

WMO cited an article in Nature Climate Change and said while desert locusts have been here since biblical times, recent intense outbreaks can be linked to anthropogenic climate change and the increased frequency of extreme weather events.

Attribution of a single event to climate change is difficult. However, climatic changes such as increases in temperature and rainfall over desert areas, and the strong winds associated with tropical cyclones, provide a new environment for pest breeding, development and migration.

This suggests that global warming played a role in creating the conditions required for the development, outbreak and survival of the locusts, scientists from the Intergovernmental Authority on Climate Prediction and Applications Centre said (ICPAC).

The article cited the role of Indian Ocean warming, intense and unusual tropical cyclones in the region and heavy rainfall and flooding as playing an important role.

The recent locust outbreaks and the role of Indian Ocean warming show that the impact of climate change is not merely the consequences of changes in mean temperature, but also of increases in extreme and unprecedented events.

WMO said the first-wave of infestations at the end of 2019 destroyed 70,000 ha of farmland in Somalia and Ethiopia, and 2,400 km of pasture land in Kenya.

A recent assessment in Ethiopia estimated that between December 2019 and March 2020, locusts damaged 114,000, 41,000 and 36,000 ha of Sorghum, maize and wheat, respectively, according to ICPAC.

ICPAC, which is a WMO regional climate centre, said that locust swarms have been reported in the last 14 days in northern Kenya, eastern and north-eastern Ethiopia.

Adult locusts are also in large numbers in the areas where hoppers and bands were spotted in June which is in the trajectories of migrating swarms.

This means a continued increase in locust numbers even with the control efforts. Parts of Sudan have had adult locust reported in more locations, it said.

Climatic conditions suitable for desert locust development are forecast to be highly suitable in Uganda, southern to east of Sudan, eastern Ethiopia, northern Somalia and northern Kenya.

The Food and Agricultural Organisation said that new reports of Desert Locust swarms in northern Somalia suggest that migration across the Indian Ocean to the summer breeding areas along both sides of the India-Pakistan border could be imminent.

It added that summer breeding has commenced along both sides of the India-Pakistan border where numerous swarms are present mainly in Rajasthan.

FAO is the lead agency in Desert Locust monitoring and control and runs the Desert Locust Information Service (DLIS). It uses the WMO Global Observing System as input.

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## CLIMATE CHANGE ON TRACK TO WIPE OUT POLAR BEARS BY 2100

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

There are approximately 25,000 polar bears left in the wild today. | Photo Credit: [AFP](#)

Climate change is starving polar bears into extinction, according to research published on July 20 that predicts the apex carnivores could all but disappear within the span of a human lifetime.

In some regions they are already caught in a vicious downward spiral, with shrinking sea-ice cutting short the time bears have for hunting seals, scientists reported in Nature Climate Change.

Their dwindling body weight undermines their chances of surviving Arctic winters without food, the scientists added.

“The bears face an ever longer fasting period before the ice refreezes and they can head back out to feed,” Steven Amstrup, who conceived the study and is chief scientist of Polar Bears International, told *AFP*.

On current trends, the study concluded, polar bears in 12 of 13 subpopulations analysed will have been decimated within 80 years by the galloping pace of change in the Arctic, which is warming twice as fast as the planet as a whole.

There is not enough data for six others to make a determination as to their fate.

“By 2100, recruitment” — new births — “will be severely compromised or impossible everywhere except perhaps in the Queen Elizabeth Island subpopulation,” in Canada’s Arctic Archipelago, said Amstrup.

That scenario foresees Earth’s average surface temperature rising 3.3 degrees Celsius above the preindustrial benchmark.

One degree of warming so far has triggered a crescendo of heatwaves, droughts and superstorms made more destructive by rising seas.

But even if humanity were able to cap global warming at 2.4C — about half-a-degree above Paris Agreement targets, but hugely ambitious all the same — it would probably only delay the polar bears’ collapse.

“That is still way above anything polar bears have faced during one million years of evolutionary history,” said Amstrup.

The threat is not rising temperatures per se but the top-of-the-food-chain predators’ inability to adapt to a rapidly shifting environment.

“If somehow, by magic, sea ice could be maintained even as temperatures increase, polar bears might be fine,” Amstrup said by email.

“The problem is that their habitat is literally melting.”

Half of Earth's land-based megafauna are classified as threatened with extinction, but only polar bears are endangered primarily by climate change.

But that status may not be unique for long, and should be seen as a harbinger of how climate will impact other animals in the coming decades, the authors warned.

There are approximately 25,000 *Urus maritimus* (polar bear) left in the wild today.

The challenge to their survival has long been understood, but the new study — building on pioneering work by Amstrup a decade ago — is the first to put a timeline on their likely demise.

The new approach overlays two sets of data. One is the expanding fasting period, which varies across regions and can last for half-a-year or more. The other is a pair of climate change projections tracking the decline of sea ice until the end of the century, based on scenarios from the UN's IPCC climate science advisory panel.

“By estimating how thin and how fat polar bears can be, and modelling their energy use, we were able to calculate the threshold number of days that polar bears can fast before cub and adult survival rates begin to decline,” said lead author Peter Molnar, a professor at the University of Toronto.

A male bear, for example, in the West Hudson Bay population that is 20% below its normal body weight when fasting begins will only have enough stored energy to survive about 125 days rather than 200 days.

New-born cubs are even more exposed, according to the study, especially when mothers have not fattened up enough to provide nourishing milk.

Females without offspring, however, have the greatest capacity to withstand long periods without food.

The polar bear's ‘vulnerable’ status on the IUCN Red List of endangered species — less severe than ‘endangered’ or ‘critically endangered’ — does not accurately reflect their plight, the authors argue.

Categories established by the International Union for the Conservation of Nature are based mainly on threats such as poaching and habitat encroachment that can be addressed with local action on the ground.

“But we cannot build a fence to protect sea ice from rising temperatures,” said Amstrup.

“Think of it this way: If I were to push you off of the roof of a 100-story building, would your risk level be ‘vulnerable’ until you pass by the 10th floor?” he told *AFP*. “Or would you be ‘endangered’ all the way down?”

Dire predictions for polar bears has led to the mulling of alternative solutions, such as captive breeding programmes or air lifts to Antarctica, but there is no ‘Plan B’. “The only way to save them is to protect their habitat by halting global warming,” said Amstrup.

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## ASIAN ELEPHANT CUBS SHOW HANDEDNESS IN TRUNK BEHAVIOUR EARLIER THAN ADULT USAGE OF TRUNKS

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

Asian elephant calves offer an interesting system to study the development of behaviour. They are born with a well-developed sensory system technically called precocial and are capable of locomotion hours after birth. However, they are dependent on their mothers for nutrition, physical protection, and social support for a prolonged period, allowing them ample time and opportunity to learn and perfect the skills necessary for independent survival. The calves can walk soon after birth but are incapable of using their trunk to pick up objects and pull grass.

Trying to probe the peculiarity of behaviour of elephants which stands out against many precocial species, researchers from Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR) an autonomous institute of the Department of Science & Technology, Government of India found that though their trunks take time to develop adult-like usage, they develop handedness (right or left-side bias) in trunk usage quite early. The study was published recently in the 'International Journal of Developmental Biology'.

The team of researchers observed 30 unique calves from 11 distinct clans (female social groups) in Kabini Elephant Project in Nagarahole and Bandipur National Parks from December 2015 to December 2017 to look at the development of trunk motor control, laterality — or side preference/handedness — in trunk usage, and various social and non-social behaviours. They found that whereas calves took about 6 months to achieve fine motor control of the trunk to pluck grass in an adult-like manner, even young calves — those below 3 months of age — showed handedness (right or left-side bias) in trunk usage. It suggests that such handedness might be innate in Asian elephants. This would be analogous to human infants showing right-handedness or left-handedness soon after birth.

In humans, the early expression of hand-preference and consistency in handedness have been linked to advanced language skills. The researchers plan to study if there is any advantage to having an early emergence of trunk laterality.

The JNCASR team also identified 81 unique calf behaviours and classified them based on their level of adeptness in expression. It was observed that as calves grew, they spent less time resting and more time feeding. Resting-related behaviours and certain grooming behaviours and, many social and exploration related behaviours were expressed by calves in adult-like adeptness from a young age, whereas behaviours that required trunk usage, such as feeding, developed gradually and were elaborately expressed when trunk motor control was sufficiently achieved (6-9 months). The researchers described the ontogeny of behaviour in Asian elephant calves for the first time in the wild.

The team also looked at mother-calf synchrony in behaviours. Since adults spend most of their waking hours in feeding but not the calves, mother-calf behavioural synchrony during the initial few months of a calf was low; however, as calves began to develop trunk motor trunk and reduced the time spent in resting, mother-calf behavioural synchrony steadily increased. Behavioural synchrony is necessary for two individuals to maintain cohesiveness, and, by extension, it is necessary for a set of individuals to remain as a group. This, along with a calf's need for physical protection, leads to instances when mother and/ or calves take an active effort to synchronise their behaviours. As the physiological needs of a young calf that is growing up are starkly different from that of its mother, often their behavioural categories do not match; nevertheless, they almost always maintain close physical distance, the study pointed out.



**[Publication details:**

**<http://www.ijdb.ehu.es/web/paper/190274tv/development-of-motor-control-and-behaviour-in-asian-elephants-in-the-kabini-elephant-population-southern-india>**

**For more details, Prof. T. N. C. Vidya (94498 28069, [tncvidya@jncasr.ac.in](mailto:tncvidya@jncasr.ac.in) ) can be contacted.]**

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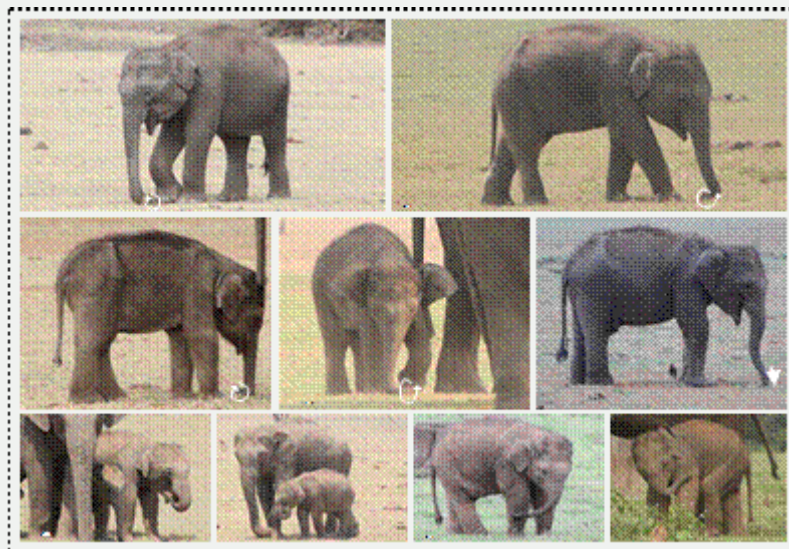
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## AT 2,967 TIGERS, INDIA'S CAPACITY AT PEAK

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

When releasing the report, Union Minister Prakash Javadekar said and other wildlife were a kind of “soft power” India had to show on the international front. “The Ministry is working on a programme in which efforts would be made to provide water and fodder to animals in the forest itself to deal with the challenge of human-animal conflict which is causing deaths of animals”.

In the tiger reserves in Uttar Pradesh, there were several more tigers that depended on the source but lived outside it. In Corbett, there were 231 tigers within the reserves, but 266 were ‘utilising it.’ Kanha in Madhya Pradesh had 88 inside and 108 dependent on it. The Pench reserve in Maharashtra had 53 inside but 82 utilising them.

These estimates were based on tigers photographed via camera traps .

“In the tall grass Terai and Shivalik hills habitat, highest tiger densities have been achieved. In these habitats, tiger densities at carrying capacity can be between 10 to 16 tigers per 100 sq km,” the authors note.

In the latest report, said Qamar Qureshi, wildlife biologist at the Wildlife Institute of India, Dehradun and co-author, scientists had plotted a relationship between how much prey was needed to sustain a certain population.

“Many places have reached their maximum... so wildlife managers can plan based on this equation whether their reserves are nearing capacity,” he told *The Hindu* .

A summary of the report “Tigers Co-predators and Prey” was announced by Prime Minister Narendra Modi last July. While a detailed report was to have been readied by last December, it has only been publicly released on Tuesday.

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# AIR POLLUTION SHORTENS AVERAGE INDIAN LIFE EXPECTANCY BY OVER FIVE YEARS

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

Latest findings from the global Air Quality Life Index show that nearly 250 million people in northern India could lose over eight years of their lives due to air pollution

Recent scientific research that discussed the possibility of the novel coronavirus being airborne sparked a nervous frenzy among many people. But what everyone forgot was that a much more potent silent killer actually still lurks in the air: particulate pollution.

Latest data from the annual update report of the Air Quality Life Index (AQLI), an innovative tool created by the The Energy Policy Institute at the University of Chicago (EPIC), reveals that air pollution posed the greatest risk to human health before the pandemic and will continue to remain so if regions around the world don't resort to stricter clean air policies.

At a global scale, the 2018 AQLI data finds that particulate pollution shortens life expectancy by nearly two years, relative to the World Health Organization's (WHO) guidelines on air quality standards. Globally, an average person is exposed to particulate pollution concentrations of 29 g/m<sup>3</sup> (microgram per cubic metre), which is nearly three times the WHO guideline of 10 g/m<sup>3</sup>.

The AQLI is a pollution index that quantifies the impact of particulate air pollution on life expectancy. Apart from using hyper-localized particulate measurements from around the world to see how pollution affects communities globally, the index also shows how air pollution policies can increase life expectancy when they meet WHO air quality guidelines, existing national air quality standards, or user-defined air quality levels. Michael Greenstone, the Milton Friedman Distinguished Service Professor in Economics and creator of the AQLI along with others at EPIC, says that while the threat posed by the pandemic is grave, "embracing the seriousness of air pollution with a similar vigour would allow billions of people around the world to lead longer and healthier lives."

The latest report, which takes into account data from 1998-2018, contains startling findings for South Asia. According to the findings, particulate pollution has been on the rise in this region, and shortens lives more than anywhere else in the world. India, Pakistan, Nepal and Bangladesh account for nearly a quarter of the world's population, but are also ranked among the top five most polluted countries in the world. In fact, a quarter of India's population is exposed to pollution levels not seen in any other country. Roughly 248 million residents in northern India are particularly at risk and stand to lose more than eight years of life expectancy if 2018 pollution levels persist. "The levels of air pollution we see in these regions through new satellite data is unprecedented," said Anant Sudharshan, executive director, South Asia at EPIC, during an online press conference on the report.

The report adds that since 1998, average annual particulate pollution in India has increased by 42%. Lucknow has the highest level of pollution in the country—11 times higher than the WHO prescribed guidelines. "Residents of Lucknow stand to lose 10.3 years of life expectancy if pollution (levels) persist," the report says. The national capital is not far behind, but the report adds that Delhi residents could see 9.4 years added to their lives if pollution levels were reduced to meet the WHO guideline and 6.5 years if the levels met India's own national standards. Poornima Prabhakaran, deputy director, Centre for Environmental Health (CEH) at Public Health Foundation of India (PHFI), says the impact of air pollution is not restricted to just respiratory

issues, as previously thought. "There's increasing evidence that air pollution is the new tobacco," she said during the conference.

With the country now slowly opening up and the threat of covid-19 still looming, Prabhakaran says it is all the more crucial to address air pollution. "I don't think we have a choice," she says. "Maybe because of the extended periods of lockdown and work from home schedules for many people, the vulnerabilities could be less this year. But some of the stopgap measures, like the odd-even scheme, cannot take a back seat," she added.

There are, however, some signs of encouragement, both globally and in India. Ever since hitting a peak in 2011, particulate air pollution concentrations have dropped significantly in China due to stringent policy changes. The report also took into account India's National Clean Air Programme, announced by the central government last year, which aims to reduce particulate pollution by 20-30% by 2024. India's decision earlier this year to switch to fuel emission standards on par with the European Union standards is also seen as a massive step towards tackling pollution more seriously.

The report illustrates how some lessons can be learnt from Europe, Japan and the United States as well. Places like London, Los Angeles and Osaka were once some of the most polluted cities in the world. But over many years, the offshoring of polluting industries combined with well-implemented policies have led to cleaner air in these regions. The US, for example, enacted the Clean Air Act in 1970, which established the National Ambient Air Quality Standards, setting maximum allowable concentrations of particulate matter, among other pollutants.

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## IN REVERSE GEAR: ON DRAFT EIA NOTIFICATION

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

The Union Ministry of Environment has been in the spotlight on more than one occasion during the pandemic, as it worked to push through retrograde environmental decisions in an atmosphere of general paralysis. In April, Environment Minister Prakash Javadekar used a virtual conference to ensure that the National Board for Wildlife's Standing Committee stamped its approval on several projects, with serious implications for conservation. He now wants to hurriedly make a fundamental change to the process of project approvals, by introducing a new Environment Impact Assessment (EIA) Notification. Now in draft, it seeks to replace the existing EIA notification of 2006. The proposed provisions show that the Ministry has gone to great lengths to reduce or even remove public participation, and by extension independent expert opinion, from the process of granting environmental clearances; public reporting of violations may also not be taken cognisance of. While there can be no argument about the importance of development projects, it has resorted to sophistry in classifying activity for exemptions. Section 26 provides a list of projects that would not attract environmental clearance or permission, including coal mining and seismic surveys for oil, methane and shale gas on some lands. Section 14 provides exemption for these and some other projects from public consultation, also limiting the scope of public involvement to the districts concerned, in the case of national parks and sanctuaries where pipeline infrastructure will pass. Roads and highways get liberal concessions. Further, it retains the clause that if a public agency or authority considers the local situation not conducive to participation by citizens, the public consultation need not include a public hearing.

**Also read:** [Draft Environment Impact Assessment \(EIA\) Notification ignores health and welfare aspect of the people: Jairam Ramesh](#) | [Ramesh's criticism of EIA notification unfounded, says Javadekar](#)

In spite of the far-reaching nature of its proposed actions, the Centre has displayed unseemly haste to get them in place and Mr. Javadekar has not aided credibility by trying to shut down public responses to the draft early. It took a Delhi High Court order to extend the deadline to August 11. The exercise has been further muddied by the mysterious blocking of some activist websites calling for the EIA proposal to be dropped, and demanding a new approach towards conserving natural resources for future generations. Clearly, the Centre's attempts at weakening checks and balances are not new. A study of coal mining clearances shows that 4,302 hectares of forest were diverted during 2014-18, favouring extraction over conservation. COVID-19 has powerfully demonstrated the value of nature for well-being: of lost forests and captured wildlife bringing virus reservoirs closer to humans and foul air destroying their health. While there might be a case for some changes, much of the proposed EIA system can only make things worse, and should not be pushed through.

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