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BY 2040, ARCTIC SUMMERS MAY TURN ICE-FREE

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

The Arctic Ocean could experience ice-free summers within the next 20 years — much earlier than previously predicted — unless human greenhouse gas emissions are greatly reduced, a study warns.

Computer models predict climate change will cause the Arctic to be nearly free of sea ice during the summer by the middle of this century.

However, a closer examination of long-term temperature cycles in the tropical Pacific points towards an ice-free Arctic in September, the month with the least sea ice, on the earlier side of forecasts, according to the research published in *Geophysical Research Letters*.

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A living member of species of tortoise not seen in more than 110 years and feared to be extinct has been found in a remote part of the Galapagos

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INDIA CAN'T AFFORD TO HAVE BANDIPUR-TYPE FOREST FIRES

Relevant for: Environment | Topic: Disaster and disaster management

On February 21, a major fire broke out in the Bandipur Tiger Reserve in Karnataka, which is home to not just tigers but also elephants, spotted deer, bisons and antelopes. The fire was so severe that it took five days for the Indian Air Force and the forest officials, to douse the flames. Karnataka forest officials suspect that vandals are behind the fire. Other factors helped too: the current phase of hot and dry weather in Karnataka and Tamil Nadu, leading to the crackling dry forest; and high speed winds. On February 25, the National Remote Sensing Centre estimated that about 4,419.54 hectares or 10,920 acres of the forest were affected.

In India, forest fires peak during the dry months of March or April before the arrival of the monsoon. To minimise the risk of such fires, the forest departments must improve their management protocols by addressing certain challenges, says a 2018 World Bank Report: The lack of an adequate number of forest personnel, a wide variation in how forest fires are treated in disaster planning, and how institutional mechanisms are set up for organising the response to large fires. The report also suggested that the removal of dead hardwood trees, which create the potential for intense fires, could help reduce the number of incidents. It is also important to maintain basic fire lines (a gap in vegetation or other combustible material in the forest), which can slow down or stop the progress of a wildfire.

India cannot afford to have more Bandipur-type devastations because our forests are already under stress, thanks to increasing development needs, land management practices, excessive demand on forest resources, negligence, and climate variations. Forest fires also pose a serious threat to India's ability to expand its forest and tree cover by 2030. This could create an additional carbon sink of 2.5 to 3 billion tonnes of CO₂ equivalent, in keeping with its Nationally Determined Contribution, which is at the heart of the Paris Climate Agreement and the achievement of its long-term goals.

First Published: Feb 28, 2019 20:01 IST

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WHY ARE FIRES FREQUENT AT THE BANDIPUR RESERVE?

Relevant for: Environment | Topic: Disaster and disaster management

What happened?

A five-day fire that raged through the Bandipur Tiger Reserve has reportedly burnt more than 15,400 acres of forests. Between February 21 and 25, the reserve saw 127 fire counts in various ranges of the 912 sq km forest. The largest of the fires was contained only on Monday.

While Karnataka Forest Department officials scrambled to put out the blaze, an Indian Air Force helicopter sprayed over 19,000 litres of water in seven sorties.

While fires are not uncommon at Bandipur, what has surprised officials is their intensity and frequency. The worry now is the long-term damage to the ecosystem, which is a part of the Nilgiri Biosphere that hosts the world's largest tiger population, at more than 575 (2014 census).

How did it start?

The 2018 monsoon was particularly strong, but the year-end northeast monsoon has failed. If the monsoon led to dense growth, the blistering heat since September has turned vegetation brittle and dry, with vast swathes becoming tinderboxes. As with most forest fires, it is assumed that Bandipur's ignition was man-made. Forest Department officials believe miscreants set fire in multiple locations.

The suspicion stems out of a growing animosity between the Department and forest-dwellers who accuse officials of harassment through the wildlife rules. Any investigation into the fires is unlikely to pinpoint a cause or culprits. Strong gusts ensured that the fires spread quickly. Compounding matters is the ubiquity of *Iantana camara*, an invasive weed species native to South America, that has spread through nearly two-thirds of the forest area.

Over 400 fire watchers were placed, but questions have arisen whether the precautions were enough, especially since Bandipur has had frequent fires.

How susceptible is it to fires?

Bandipur is a dry deciduous forest in the rain shadow region of the Western Ghats, and is no stranger to fires. Periods of drought invariably lead to fires. In 2017, a forest guard was killed while attempting to douse a fire in the region.

A study has shown that between 1974 and 2014, 67% of the Nilgiri Biosphere had seen some form of forest fire, with Bandipur having reported the most incidents. However, the number of forest fires had considerably come down over the decades as the Forest Department attempted to pre-empt them through fire control lines and fire watchers, notes the study.

What is the impact?

The country's forest policy encourages a zero forest fire approach for its protected landscapes — whether it is Bandipur or the rainforests of the upper Western Ghats. Scientific literature have shown this blanket approach may be doing harm to dry, deciduous forests where trees have

evolved to co-exist with fire.

Jayashree Ratnam from the National Conservation for Biological Sciences and fellow authors have noted in a recent study that the trees in this landscape were closer to those in a savanna than in rainforests 100 km away. Trees have dramatically thicker barks, implying that they had evolved to be fire-resistant.

"When fires are relatively frequent, adult tree mortality in these systems is very low. Many saplings sprout shortly after the fire from underground reserves, and the system returns to its original state in a few years," she told *The Hindu*.

Conversely, when fires are suppressed — including by curbing the tribal practices of controlled fire burning — a greater biomass builds up that can lead to high intensity fires which affect the ecosystem negatively. Moreover, there might be a correlation between fire suppression and growth of *Lantana camara*, which has replaced the grassy undergrowth in many areas.

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ODISHA SHELTER HOMES TO HAVE LIGHTNING PROTECTION SYSTEM

Relevant for: Environment | Topic: Disaster and disaster management

Rs. 17 crore will be invested in the project.

The Odisha government has decided to have lightning protection system in multipurpose shelters across 25 districts as lightning has emerged as the leading cause behind natural deaths across the State.

The governing body of the Odisha Disaster Management Authority (OSDMA) under the chairmanship of Chief Secretary A. P. Padhi has underlined the need for fixing lightning arresting systems in multipurpose shelters and strengthening the outdoor lightning alert system.

"Multipurpose shelters operating in 25 districts would be retrofitted with lightning protection system. In the first phase, 640 shelters would be taken up with funding support from the World Bank under the National Cyclone Risk Mitigation Project," said Bishnupada Sethi, OSDMA Managing Director.

He said about Rs. 17 crore would be invested in the project while the remaining 239 multipurpose shelters would be taken up at a later stage.

"The OSDMA in collaboration with the US-based Earth Networks has installed six lightning detection sensors in different parts of the State. The system gives prediction of lightning about 30 to 45 minutes in advance. Moreover, more map-based lightning alerts are being provided," said Mr. Sethi.

The government will install more alert systems in 14 most lighting-prone blocks of the State on a pilot basis.

"The system would specify the exact location of the lightning and storm and provide automatic warning through sirens. The siren would be audible at a one-kilometre radius," he said.

In Odisha, lightning claims an average of 400 lives every year. The total number of reported deaths due to lightning during the last three years from 2015-16 to 2017-18 is 1,256, which accounts for about 27% of total number of disaster deaths.

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A TALE OF SIX ELEPHANTS USING ONE CORRIDOR IN TWO COUNTRIES

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

Need safe passage: Elephants passing through the Putni Tea Garden in Patharia Hills Reserve Forest, Assam. Nazimur Rahman Talukdar

A herd of six female elephants surviving under severe anthropogenic stress may be helped by trans-boundary conservation, say scientists. For several years now, the beleaguered group has been negotiating the international border between India and Bangladesh, ranging from the western side of the Karimganj district of Assam to the eastern side to the Sylhet district of Bangladesh.

In a publication titled “The importance of trans-boundary conservation of the Asiatic Elephant *Elephas maximus* in Patharia Hills Reserve Forest, northeastern India”, scientists have called for “joint conservation activities” for the protection of the herd. The paper was published in the *Journal of Threatened Taxa*.

Researchers said that its last male elephant died almost five years ago, causing the population to stagnate. Electrocution caused the death of a female elephant in 2017.

Human settlement

“The elephants are now divided into two small herds with three in each group, and one herd always follows the other. They stay on both sides of the forest, that is, the sections in India as well as Bangladesh, and cross the border frequently. They have broken border fences to use their migratory corridor,” Parthankar Choudhury, one of the authors of the publication, said.

The researchers said a greater part of the elephants’ habitat lies in southern Assam’s Patharia Hills Reserve Forest, where a lot of illegal settlements have come up in the recent decades. The publication points out that “if conservation action is not taken up, the Reserve Forest (RF) will be a dense human settlement area without any trace of wildlife in the near future.”

“During the summer, from April to July, the elephants stay in Bangladesh, while in the winter, from November to December, they prefer to remain in the forest patches and tea estates of the Indian side,” Professor Chowdhury, Head of the Department of Ecology and Environmental Science, Assam University, told *The Hindu*.

The authors of the paper said that the elephants’ “shifting pattern of migration may be due to the food shortage on both sides as anthropogenic activities have increased.”

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AIR POLLUTION FROM STUBBLE BURNING COSTING INDIA USD 30BN ANNUALLY: STUDY

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

Air pollution due to crop residue burning in northern India is a leading risk factor of acute respiratory infections and causes an estimated economic loss of USD 30 billion annually, according to a study unveiled Monday.

Researchers from the US-based [International Food Policy Research Institute](#) (IFPRI) and partner institutes found that living in districts with air pollution from intense crop residue burning (CRB) is a leading risk factor for acute respiratory infection (ARI), especially among children less than five years.

The study that estimates -- for the first time -- the health and economic costs of CRB in northern India also found that CRB leads to an estimated economic loss of over USD 30 billion annually.

"Poor air quality is a recognised global public health epidemic, with levels of airborne particulate matter in Delhi spiking to 20 times the [World Health Organization](#)'s safety threshold during certain days," said Samuel Scott, IFPRI Research Fellow and co-author of the study.

"Among other factors, smoke from the burning of agricultural crop residue by farmers in Haryana and Punjab especially contributes to Delhi's poor air, increasing the risk of ARI three-fold for those living in districts with intense crop burning," Scott said in a statement.

The study also estimated the economic cost of exposure to air pollution from crop residue burning at USD 30 billion or nearly Rs 2 lakh crore annually for the three north Indian states of Punjab, Haryana and Delhi, researchers said.

To be published in the upcoming edition of the International Journal of Epidemiology, the study analysed health data from more than 250,000 individuals of all ages residing in rural and urban areas in India.

It used [NASA](#) satellite data on fire activity to estimate the health impact of living in areas with intense crop burning by comparing them with areas not affected by CRB.

The researchers observed that as crop burning increased in the northern Indian state of Haryana, respiratory health worsened. Health was measured by the frequency of reported hospital visits for ARI symptoms.

They also examined other factors that could contribute to poor respiratory health such as firecracker burning during Diwali (it usually coincides with time of CRB) and motor vehicle density.

Economic losses owing to exposure to air pollution from firecracker burning are estimated to be around USD 7 billion or nearly Rs 50 thousand crore a year, researchers said.

In five years, the economic loss due to burning of crop residue and firecrackers is estimated to be USD 190 billion, or nearly 1.7 per cent of India's GDP, they said.

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GET USED TO A THOUSAND MINI CLIMATE CUTS

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

The northern part of India is experiencing an unusually long winter this year. On Sunday, the India Meteorological Department (IMD) said two more western disturbances (WDs), the 16th and 17th of this season, may bring rainfall and chilly winds to the northern plains and snowfall in western Himalayas on March 6 and 11. Delhi experienced its second coldest March day in 27 years on March 2, almost breaching yet another decades-old record after March 1 saw the coldest overall March temperature since 1979. In 2018, Delhi had witnessed the third coldest December in 50 years. The IMD said the frequency of WDs this season was high because of the weakening of the polar vortex and it is more intense this time because of the higher temperature gradient, which is a result of the weakening of the polar vortex. The WD system develops due to a temperature difference between northern and southern latitudes.

The number and intensity of the weather phenomena have surprised scientists, and many believe that such freak weather is the new normal in an age of climate change. In a report released on January 21, the IMD said that such freak weather is going to rise in the coming two decades and there will be a cataclysmic fallout by 2040 if emissions are not contained. The report linked this trend to climate change because India's warming trends are very similar to the pattern of global warming. These findings are also in sync with last year's critical Intergovernmental Panel on Climate Change's (IPCC) "Global Warming of 1.5 degrees" report, whose co-author, Joyashree Roy, told Hindustan Times: "India may face serious consequences including severe heat stress in big cities, high air pollution levels, salt-water intrusion in coastal areas triggered by rise in sea levels, and increased vulnerability to disasters in high mountain ecosystems."

While the threat of a "cataclysmic fallout" looms large, expect a thousand more mini climate cuts along the way. The policy prescription to avoid such recurring damages has been clear for a long time: lower emission, a push for sustainability in whatever we do and climate-proof cities and agriculture. Every time a freak weather phenomenon hits us, we need to go through this policy prescription and ask ourselves: Are we doing enough to save ourselves from the effects of climate change? For the moment, however, the answer will be a resounding no.

First Published: Mar 05, 2019 17:36 IST

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FIFTEEN OF THE 20 MOST POLLUTED CITIES IN THE WORLD ARE IN INDIA

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

Fifteen of the top 20 most polluted cities in the world are located in India, according to an analysis of air quality in several cities around the world.

Gurugram, in Haryana, topped the list with an average annual particulate matter (PM 2.5) quality of 135 micrograms/cubic metre, in 2018. Delhi — a frequent fixture on global pollution hotspots — was only the 11th most noxious city behind Lahore, Pakistan (10th) and Hotan, China (8th). The other cities in India that made the list of 20 were Ghaziabad, Faridabad, Bhiwadi, Noida, Patna, Lucknow, Jodhpur, Muzaffarpur, Varanasi, Moradabad, Agra, Gaya and Jind.

When ranked by country, Bangladesh emerged as the most polluted followed by Pakistan and India respectively.

Of the cities analysed, 64% exceeded the WHO's annual exposure guideline (10 micrograms/cubic metre) for fine particulate matter, also known as PM2.5. India's annual guidelines range from 40-60 g/m³, depending on whether they are residential or industrial areas.

Every single one of measured cities with data in the Middle East and Africa exceeded the WHO guideline, while 99% of cities in South Asia, 95% of cities in Southeast Asia and 89% of cities in East Asia breached this level.

The ranking — a one of its kind study that relies on ground-based sensors located in 3,000 cities from 73 countries — was compiled by IQAir Group, a manufacturer of air-monitoring sensors as well as purifiers and environmentalist group Greenpeace.

Pollution hubs

Jakarta and Hanoi emerged as Southeast Asia's two most polluted cities and average concentrations in the cities in China fell by 12% from 2017 to 2018. Beijing ranks now as the 122nd most polluted city in the world in 2018 and China, the 12th most polluted country in the world. Of the countries analysed, Iceland emerged as the one with the cleanest air.

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ENVIRONMENT MINISTRY PLUGS LOOPHOLE THAT ALLOWED PLASTIC WASTE IMPORT

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

Plastic pollution | Photo Credit: [Shiv Kumar Pushpakar](#)

The government has plugged a loophole that allowed the import of plastic waste into India for processing.

“...Solid plastic waste has been prohibited from import into the country including in Special Economic Zones (SEZ) and by Export Oriented Units (EOU),” the Ministry of Environment, Forest and Climate Change (MoEFCC) said in an order made public on Wednesday. The change in law was part of the Hazardous and Other Wastes (Management & Transboundary Movement) Amendment Rules, 2019.

The Hindu had [reported on January 21](#) that India, in spite of having a significant plastic pollution load of its own, and a ban on plastic waste imports, imported PET bottles from abroad for processing in Special Economic Zones (SEZ).

The influx of PET bottles has quadrupled from 2017 to 2018, the Delhi-based environmentalist organisation, Pandit Deendayal Upadhyay Smriti Manch (PDUSM) had pointed out in January.

“Indian firms are importing plastic scraps from China, Italy, Japan and Malawi for recycling and the imports of PET bottle scrap & flakes has increased from 12,000 tonnes in FY 16-17 to 48,000 tonnes in FY 17-18 growing @ 290%. India has already imported 25,000 MT in the first 3 months of FY 18-19,” a note by the organisation revealed.

India consumes about 13 million tonnes of plastic and recycles only about 4 million tonnes. To incentivise domestic plastic recycling units, the government had banned the import of plastic waste, particularly PET bottles, in 2015. In 2016, an amendment allowed such imports as long as they were carried out by agencies situated in SEZs.

A senior MoEFCC official, who declined to be identified, had then told *The Hindu* that while the Ministry couldn’t vouch for whether such plastic imports had quadrupled, it was true that the imports had “substantially increased” and action was being contemplated.

The lack of an efficient waste collection and segregation system is the root cause for much of the plastic not making its way to recycling centres.

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Continuing drought will further burden the already depleting groundwater resources of the country, according to associate professor Vimal Mishra

A living member of species of tortoise not seen in more than 110 years and feared to be extinct has been found in a remote part of the Galapagos

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AN INITIATIVE TO SAVE THE STRIPED HYENAS OF INDIA

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

They whoop, rumble, low, and laugh, when they are excited or on sensing danger. But not so much in the last few years when hyenas are rarely heard. Hyenas have almost vanished in to thin air. Not much loved, the striped hyenas or *Hyaena hyaena* of India are staring at an uncertain future. The International Union for Conservation of Nature (IUCN) has categorised it as 'Near Threatened' species on a global scale. After a gap of five years, the largest-ever range mapping and assessment of the hyenas is being done by IUCN involving several regional partners.

To create the latest range maps on the species distribution in the Eastern Ghats region, the Eastern Ghats Wildlife Society (EGWS) is assisting IUCN Hyaena Specialist Group as a local collaborator. The process of range mapping is unique as people from across Eastern Ghats belt can report sightings of the species.

A mammal of the Carnivora order and Hyaenidae family, hyenas, like wild dogs, are top predators that compete with other species in the unforgiving landscapes of India, Central Asia, North and East Africa and West Asia. Till about two decades ago, the striped hyenas were a common sight in the wild and semi-arid lands. Today, its numbers are likely to be around 5,000 globally, a drop from about 14,000 not too long ago.

"Their population has taken a severe beating. Apart from habitat destruction, retaliatory killings due to popular beliefs and conflicts with other aggressive species like the jackal are some the reasons behind their current status," says Murthy Kantimahanti of EGWS. Often misunderstood and viewed as dangerous or destructive, hyenas are poisoned or captured for preying on livestock. "With the populations of other large carnivores declining, so does the food they leave behind that striped hyenas scavenge," explains Murthy.

During the range mapping of the species, EGWS will be gathering direct as well as indirect (faeces, conflict reports) evidences across the region. While it is still too early to provide any analysis or insights, the project has a lot of potential. "We are using an app called iNaturalist to get information on hyena-ecology, conservation and human-interactions from several locations," says Murthy.

IUCN assessments are important as they determine the status of species, ascertain risks and identify priority locations for conservation. "The ongoing assessment will be one of the major ones involving people and we implore all nature lovers, wildlife enthusiasts and citizens to report the occurrence of striped hyaenas (direct sightings, historical records, mortalities, spoor, scat or conflict incidents)," says Murthy.

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INDIA SIGNS LOAN AGREEMENT WITH THE WORLD BANK FOR USD 96 MILLION FOR ADDITIONAL FINANCING FOR UTTARAKHAND DISASTER RECOVERY PROJECT

Relevant for: Environment | Topic: Disaster and disaster management

Ministry of Finance

India signs Loan Agreement with the World Bank for USD 96 Million for Additional Financing for Uttarakhand Disaster Recovery Project

Posted On: 05 MAR 2019 6:03PM by PIB Delhi

The World Bank, Government of India and Government of Uttarakhand (GoUK) signed here today a \$96 Million Loan Agreement to provide additional funds to the State of Uttarakhand in its post-disaster recovery plans, ongoing since the floods of 2013, as well as strengthen its capacity for Disaster Risk Management.

The World Bank, through the Uttarakhand Disaster Recovery Project, has been supporting the State Government since 2014 to restore housing and rural connectivity, and to build resilience of communities. So far, the Project has completed more than 2,000 permanent houses and 23 public buildings and restored over 1,300 kilometers of roads and 16 bridges. The additional financing of \$96 million will further help in the reconstruction of bridges, road and river bank protection works, and in the construction of a training facility for the State Disaster Response Force (SDRF). The Project will also help to increase the technical capacity of the State Entities to respond promptly and more effectively to such crises in the future.

Speaking on the occasion, Mr. Sameer Kumar Khare, Additional Secretary, Department of Economic Affairs, Ministry of Finance, Govt. of India said that India is vulnerable, in varying degrees, to many natural as well as man-made disasters. The Government of India is committed to develop a holistic, proactive, multi-disaster-oriented strategy, using technology effectively to build a safe and disaster resilient India. He further said that the Uttarakhand Disaster Recovery Project has been delivering on these objectives and the additional finance will help expand its impact.

The Loan Agreement was signed by Mr. Sameer Kumar Khare, Additional Secretary, Department of Economic Affairs, Ministry of Finance, on behalf of the Government of India; Mr. Amit Negi, Secretary, Finance and Disaster Management, Government of Uttarakhand and Program Director, Uttarakhand Disaster Recovery Project on behalf of the Govt. of Uttarakhand; and Mr. Hisham Abdo, Acting Country Director, World Bank India, on behalf of the World Bank

In June 2013, a heavy deluge caused devastating floods and landslides in the Himalayan State of Uttarakhand. The disaster, the worst of its kind since the 2003 tsunami, hit more than 4,200 villages, damaged 2,500 houses, and killed 4,000 people.

After the signing ceremony, Mr. Hisham Abdo, Acting Country Director, World Bank said that Natural disasters cost the country an average of \$9.8 billion annually. The Government of India has made great strides in moving from reactive emergency response to proactively implement disaster preparedness and risk reduction initiatives. He said that we are committed to supporting Uttarakhand in its efforts towards a resilient recovery and rehabilitation. The Project has helped in strengthening the State's Disaster Risk Management Capacity which has led to enhanced investment in long-term resilience through policies and institutions. The capacity of the SDRF, meant to be at the forefront during emergency situations of the State, has also been significantly strengthened and it has so far conducted over 250 operations rescuing over 3,500 people, during the high pilgrimage season.

The extent and pace of recovery since 2013 has been significant, however, connectivity remains a challenge. Landslides and river bank erosion are common and continue to disrupt movement and cause accidents, affecting the livelihood and access to services of the local community. In the aftermath of the floods, the number of tourists visiting the State dropped from over 2.5 million in 2012 to less than 350,000 in 2014.

After signing of Agreement, Mr. Ignacio Urrutia, Task Team Leader for the Project said that while the impacts of climate change in future disasters remain uncertain, efforts to ensure that the State has additional capabilities and resilient infrastructure to reduce the potential damages and recover more quickly from disasters will translate into important beneficial ripple effects on the State's economy and livelihoods in the long term.

The \$96 Million Loan from the International Bank for Reconstruction and Development (IBRD), has a 5-year grace period, and a final maturity of 15 years.

DSM/RM/KA

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BREATHING CLEAN

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

An [assessment of the quality of air across countries and in cities](#) has come as a fresh warning to India on the levels of deadly pollutants its citizens are breathing. The IQ AirVisual 2018 World Air Quality Report published in collaboration with Greenpeace underscores that Delhi remains an extremely hazardous city to live in. The national capital exposes people to air containing annual average fine particulate matter (PM2.5) of 113.5 micrograms per cubic metre, when it should be no more than 10 micrograms as per WHO guidelines. In fact, Gurugram, which borders Delhi, fares even worse with a PM2.5 level of 135.8 micrograms, while 15 of the 20 cities worldwide ranked the worst on air pollution metrics are in India. Delhi's air quality has been making headlines for years now. Yet, measures to mitigate emissions have not moved into crisis mode: the launch this year of the National Clean Air Programme for 102 cities and towns, including the capital, talks only of long-term benefits of mitigation programmes beyond 2024, and not a dramatic reduction in near-term pollution. This has to change, and an annual target for reduction be set to make governments accountable. Achieving a reduction within a short window is not impossible if there is the political will to reform key sectors: transport, biomass and construction.

Death in the air: on tackling air pollution

The monitoring of air quality in real time across cities and towns in India is far from adequate or uniform. The evidence from Delhi, which is relatively more robust, has clear pointers to what needs to be done. The Ministry of Heavy Industries and Public Enterprises learnt from a commissioned study last year that dusty sources such as roads, construction sites and bare soil added about 42% of the coarse particulate matter (PM10) in summer, while in winter it was a significant 31%. Similarly, PM10 from transport varied between 15% and 18% across seasons. Yet, it is the even more unhealthy PM2.5 penetrating the lungs that causes greater worry. Vehicles contributed 18-23% of these particulates, while biomass burning was estimated to make up 15-22%, and dusty sources 34% during summer. These insights provide a road map for action. The Delhi government, which has done well to decide on inducting 1,000 electric buses, should speed up the plan and turn its entire fleet green. A transition to electric vehicles for all commercial applications, with funding from the Centre's programme for adoption of EVs, should be a priority in cities. Cutting nitrogen and sulphur emissions from industrial processes needs a time-bound programme supervised by the Environment Ministry. These are priority measures to get urban India out of the red zone.

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A viable financial mechanism must be evolved to remove pollutants in power plants

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AMENDMENT IN HAZARDOUS WASTE (MANAGEMENT& TRANSBOUNDARY MOVEMENT) RULES, 2016

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

Ministry of Environment, Forest and Climate Change

Amendment in Hazardous Waste (Management& Transboundary Movement) Rules, 2016

Posted On: 06 MAR 2019 6:50PM by PIB Delhi

In order to strengthen the implementation of environmentally sound management of hazardous waste in the country, the Ministry of Environment, Forest and Climate Change has amended the Hazardous and Other Wastes (Management & Transboundary Movement) Rules, 2016 vide notification G.S.R. G.S.R. XX (E), dated 01 March 2019.

The amendment has been done keeping into consideration the “Ease of Doing Business” and boosting “Make in India” initiative by simplifying the procedures under the Rules, while at the same time upholding the principles of sustainable development and ensuring minimal impact on the environment.

Some of the salient features of the Hazardous and Other Wastes (Management& Transboundary Movement) Amendment Rules, 2019 are as follows:

1. Solid plastic waste has been prohibited from import into the country including in Special Economic Zones (SEZ) and by Export Oriented Units (EOU).
2. Exporters of silk waste have now been given exemption from requiring permission from the Ministry of Environment, Forest and Climate Change.
3. Electrical and electronic assemblies and components manufactured in and exported from India, if found defective can now be imported back into the country, within a year of export, without obtaining permission from the Ministry of Environment, Forest and Climate Change.
4. Industries which do not require consent under Water (Prevention and Control of Pollution) Act 1974 and Air (Prevention and Control of Pollution) Act 1981, are now exempted from requiring authorization also under the Hazardous and Other Wastes (Management & Transboundary Movement) Rules, 2016, provided that hazardous and other wastes generated by such industries are handed over to the authorized actual users, waste collectors or disposal facilities.

GK

Read this release in: [Urdu](#)

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'DO FOREST SURVEYS SEPARATELY'

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

A high-power committee constituted by the Ministry of Environment, Forest and Climate Change (MoEFCC) has recommended that forest surveys — the biennial exercise by the government to estimate forest cover — explicitly demarcate trees grown in forests from those grown outside, that is, in plantations and private lands.

Currently, the government counts both towards estimating the portion of India's geographical area covered by forest.

Independent critics have for long pointed out that including both isn't an ecologically sound principle but this is a first instance of government-constituted committee recommending so.

India posted a marginal 0.21% rise in the area under forest between 2015 and 2017, according to the India State of Forest Report (SFR) 2017, which was made public in February 2018.

The document says that India has about 7,08,273 sq. km. of forest, which is 21.53% of the geographic area of the country (32,87,569 sq. km.).

Getting India to have at least 33% of its area under forest has been a long-standing goal of the government since 1988.

Various editions of the SFR have over the years reported the area under forests as hovering around 21%. So the government also includes substantial patches of trees outside areas designated as forests, such as plantations or greenlands, in its assessment.

Tree cover

The total tree cover, according to this assessment, was 93,815 sq. km. or a 2% rise from the approximately 92,500 sq. km. in 2015.

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BREEDING ‘NEMO’, SAVING MANGROVES

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

A pair of clownfish at the Coastal and Marine Biodiversity Research Centre at Airoli in Navi Mumbai. | Photo Credit: [The Hindu](#)

Thanks to the blockbuster animated film *Finding Nemo*, clownfish are a perennial favourite among aquarium enthusiasts. Now a collaborative effort by the Maharashtra Mangrove Cell and Lucknow’s National Bureau of Fish Genetic Resources (NBFGR) will help villagers in Maharashtra’s mangrove belt make a living by cashing in on the fish’s popularity.

A team from the NBFGR is at Mumbai’s Coastal and Marine Biodiversity Centre in Airoli, nursing hundreds of eggs laid by seven pairs of clownfish, also known as ‘anemonefish’. This clownfish hatchery, the first of its kind to be set up in Mumbai, will help the villagers set up a clownfish trade business. In return, the locals would help in mangrove conservation.

A pair of clownfish costs over 2,000. “Marine aquarium trade is a booming business. Our aim is to involve the local communities and offer them livelihood-generating options. In return, we will involve them in mangrove protection,” said N. Vasudevan, Additional Principal Chief Conservator of Forests, Maharashtra Mangrove Cell.

While over 60 villages from the coastal belt have been short-listed, the ones in Thane, Palghar and Raigad will receive the first batch of fish. The Mangrove Cell has helped them build storage tanks and is training them in installing low-cost filtration units, checking water quality, understanding the behaviour of the fish, and in the tricks of aquarium trade. The villagers will be charged 25 per fish.

Around 200 clownfish were brought from Tamil Nadu, Andaman Islands, and Lakshadweep. They were paired, and 57 pairs survived. “There are 30 clownfish species in the world, of which 16 are found in India. We have 10 different species in the hatchery,” said Ajith Kumar, a scientist from the NBFGR.

While the space and funds for the project are coming through the mangrove cell, the NBFGR is providing technical expertise. The NBFGR team is excited that the fish have laid several hundred eggs this week. “The eggs hatch in six to eight days. After the larva is born, it takes 20 to 25 days for metamorphosis, when they become miniature adults measuring less than a centimetre,” Mr. Kumar explained.

The baby fish will be reared in the hatchery for 30 days, after which they will be handed over to the villagers. The budding entrepreneurs will take care of them for two months, until they grow into the marketable size of 3 cm.

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Ancient Asian bamboos could be east Gondwanan in origin, claim scientists

When many members are affected, genetic risk may be easier to detect

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PROTECTING THE SUNDARBAN WETLANDS

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

On January 30, the Indian Sundarban was accorded the status of 'Wetland of International Importance' under the Ramsar Convention. The Sundarbans comprises hundreds of islands and a network of rivers, tributaries and creeks in the delta of the Ganga and the Brahmaputra at the mouth of the Bay of Bengal in India and Bangladesh. Located on the southwestern part of the delta, the Indian Sundarban constitutes over 60% of the country's total mangrove forest area. It is the 27th Ramsar Site in India, and with an area of 4,23,000 hectares is now the largest protected wetland in the country.

The Convention on Wetlands of International Importance, better known as the Ramsar Convention, is an international agreement promoting the conservation and wise use of wetlands. It is the only global treaty to focus on a single ecosystem. The convention was adopted in the Iranian city of Ramsar in 1971 and came into force in 1975. Traditionally viewed as a wasteland or breeding ground of disease, wetlands actually provide freshwater and food, and serve as nature's shock absorber. Wetlands, critical for biodiversity, are disappearing rapidly, with recent estimates showing that 64% or more of the world's wetlands have vanished since 1900. Major changes in land use for agriculture and grazing, water diversion for dams and canals and infrastructure development are considered to be some of the main causes of loss and degradation of wetlands.

The Indian Sundarban met four of the nine criteria required for the status of 'Wetland of International Importance' — presence of rare species and threatened ecological communities, biological diversity, significant and representative fish and fish spawning ground and migration path. The Indian Sundarban, also a UNESCO world heritage site, is home to the Royal Bengal Tiger. The Ramsar website points out that the Indian Sundarban is also home to a large number of "rare and globally threatened species, such as the critically endangered northern river terrapin (*Batagur baska*), the endangered Irrawaddy dolphin (*Orcaella brevirostris*), and the vulnerable fishing cat (*Prionailurus viverrinus*)."
Two of the world's four horseshoe crab species, and eight of India's 12 species of kingfisher are also found here. Recent studies claim that the Indian Sundarban is home to 2,626 faunal species and 90% of the country's mangrove varieties.

Environmentalists and forest officials say the Ramsar status will help to highlight conservation issues of the Sundarbans at the international level. The part of the Sundarban delta, which lies in Bangladesh, was accorded the status of a Ramsar site in 1992, and with Indian Sundarban getting it too, international cooperation between the two countries for the protection of this unique ecosystem will increase. This could lead to a better conservation strategy for flagship species such as the tiger and the northern river terrapin.

While the Indian Sundarban is a biodiverse preserve, over four million people live on its northern and northwestern periphery, putting pressure on the ecosystem. Concerns have been raised about natural ecosystems being changed for cultivation of shrimp, crab, molluscs and fish.

The Ramsar Information Sheet lists fishing and harvesting of aquatic resources as a "high impact" actual threat to the wetland. The other threats are from dredging, oil and gas drilling, logging and wood harvesting, hunting and collecting terrestrial animals. Salinity has been categorised as a medium and tourism as a low impact actual threat in the region. Experts believe that while the Ramsar status may bring in international recognition to the Indian Sundarban, the wetland, which along with anthropogenic pressures, is also vulnerable to climate change and requires better management and conservation practices.

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Continuing drought will further burden the already depleting groundwater resources of the country, according to associate professor Vimal Mishra

A living member of species of tortoise not seen in more than 110 years and feared to be extinct has been found in a remote part of the Galapagos

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OLIVE RIDLEY TURTLES COME BACK TO NEST ON ODISHA'S BEACHES

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

Only one in a thousand hatchlings survives to reach adulthood. | Photo Credit: [Biswaranjan Rout](#)

It is almost midnight and we are standing behind a long makeshift fence in Rushikulya beach south of Odisha. We are waiting for the arrival of an annual marine visitor. The 'arribada' is about to begin: this is when thousands of olive ridley turtles will emerge from the sea, clamber up the beach, dig nesting holes in the sand, lay eggs en masse, and then vanish into the waters as suddenly as they appeared. Some 45-60 days later, the hatchlings will emerge and make their way uncannily towards the sea, hazarding predators and poachers.

Security is tight. We are cautioned not to use any kind of light, even the light on our mobile phone screens could be a disturbance. The 5-km-long fence is to protect the ridleys and eggs from predators like dogs and jackals.

As we watch, unmistakable saucer-shaped silhouettes appear on the moonlit sand. Forest officials tell us to be silent. The shadowy figures grow in number. There must be 250 of them. Their heads stooping so low their nostrils are almost touching the sands, the pregnant ridleys are making their way up the beach looking for a suitable spot to lay eggs. We can hear their collective, laboured breathing from metres away, as they dig nest holes with their flippers and lower their bodies into them. They could lay 70 to 190 eggs each.

Once done, they begin their arduous journey back to the sea. This time they are moving much slower than they did when they arrived, but their heads are raised. As they drag their bodies across the sand, they leave distinct track marks. And just like that they are gone, back into the dark waters. The eggs will incubate in the heat of the sand. Only one in a thousand hatchlings will survive to reach adulthood.

Another nest-egg

But the real arribada is taking place at Gahirmatha Marine Sanctuary in northern Odisha, where more than 4 lakh turtles have arrived since February 27. This is the world's biggest nesting beach for ridleys. Much has been done to protect these Schedule 1 animals during nesting season, but they are still up against several odds.

Some 50 years ago, ridleys nested en masse on the Odisha coast in winter, between November and December. This has gradually shifted to February and March and no one is quite sure why. There have been speculations about climate change impacting their breeding and nesting, but no studies have been done yet to confirm this theory.

One nesting site, at the Devi river mouth, has been all but abandoned by the ridleys because mechanised fishing poses a huge threat to them. But at the Rushikulya rookery coast, their numbers have dramatically increased: last year, this rookery witnessed the rare phenomenon of 'double mass nesting' in February and April.

Unplanned coastal development along the coastline has taken a toll on the turtles, with sea erosion also reducing the nesting beach stretch at Gahirmatha from 3.2 km in 1993-94 to less

than a kilometre today, says Bivash Pandav, a scientist at the Wildlife Institute of India. Light pollution also impacts the animals, disorienting the hatchlings as they make their way to the sea at night.

"The government needs to regularly assess nesting beaches. A proper illumination policy is needed to keep a check on light pollution, and we need trawlers fitted with turtle excluder devices," says Pandav. A deep-water sea port and a township near Dhamra, and a missile testing centre are not far from Gahirmatha, he says. The scientist is also critical of casuarina plantations planted along the beach since nesting beaches need to be kept open.

Selfie menace

Then, there is a distinctly 21st century problem: selfies. Phone-toting tourists who throng the Rushikulya beach to watch the breeding are a big disturbance.

But some important measures have been taken. The government has been trying to keep the beach pollution-free, and mechanised fishing has been banned from November to May. There's regular patrolling as well against predators who destroy eggs or hunt the hatchlings. This year, the forest department is preparing to protect a 3-km stretch near the Bahuda river, south of the Rushikulya rookery, as an alternative nesting site. As for tourists, anyone taking selfies with ridleys or trying to touch them may now face legal action.

A special weather station has been set up at Gokharkuda in the Rushikulya rookery to study the impact of weather on mass nesting. And on the anvil is a sea turtle research centre.

Happily, the turtle population in Odisha is "stable or increasing," says Kartik Shanker, an Associate Professor at the Centre for Ecological Sciences, Indian Institute of Science. "We still need to be concerned about unplanned coastal development. Ports can have a long-term impact on turtle populations."

Meanwhile, in Gahirmatha, the forest department is hoping for a second nesting by the end of next month. Vast stretches of beach were lost to erosion here. Then last year, Nasi-II Island's nesting beach, which had become less than a kilometre long, grew by 500 metres due to accretion. And this year, it's become 2,600 metres long.

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INDIA'S BIODIVERSITY-RICH ZONES ALSO 'HOTSPOTS' OF HUMAN IMPACTS

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

A view of paddyfield in the Western Ghats inside the Kudremukh National Park. | Photo Credit: [PHOTO :](#)

Human impacts on species occur across 84% of the earth's surface, finds a study published on March 13 in *PLOS Biology*, an international journal dedicated to biological science. Southeast Asian tropical forests — including India's biodiversity-rich Western Ghats, Himalaya and the north-east — also fall in this category; India ranks 16th in such human impacts, with 35 species impacted on average.

A team of scientists led by James Allan (University of Queensland) found this when they mapped the distribution of eight human activities — including hunting and conversion of natural habitats for agriculture — in areas occupied by 5,457 threatened birds, mammals and amphibians worldwide.

Using sources, including the recently-updated Human Footprint data, they found that a staggering 1,237 species are impacted by threats in more than 90% of their habitat; 395 species are affected by threats across their entire range. While the impact of roads is highest (affecting 72% of terrestrial areas), crop lands affect the highest number of threatened species: 3,834.

Malaysia ranks first among the countries with the highest number of impacted species (125). India ranks 16th (35 threatened species affected on average). Southeast Asian tropical forests — including those in India's Western Ghats, Himalaya and north-east — are among the 'hotspots' of threatened species. For instance, the average number of species impacted in the South Western Ghats montane rainforests is 60 and in the Himalayan subtropical broadleaf forests, 53. The maps show that roads and croplands are extensive in India and conversion of habitat for such activities could be a main threat, wrote Dr. Allan in an email to *The Hindu*.

However, these very areas are also 'cool-spots' (the world's last refuges where high numbers of threatened species still persist). Cool-spots could be the result of protection or because of intact habitat that has not been cleared yet, said Dr. Allan, adding that India still has crucial refuges that need protecting. Identifying such areas could aid conservation and development planning for countries. However, these refugia do not necessarily have to be off-limits to human development, just free of the actions that directly threaten species there, add the scientists.

With India having the world's second largest road network, we really need to plan for development that keeps wildlife conservation as a primary goal in biodiversity-rich areas, agreed wildlife biologist Sanjay Gubbi. Similarly, if wildlife-friendly cropping patterns lead to conservation of wildlife, that would be a victory too, he said. For instance, agricultural crops such as pulses have supported the conservation of the critically endangered great Indian bustard.

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INDIA COULD SAVE TRILLIONS IN HEALTHCARE COSTS IF PARIS CLIMATE GOALS ARE MET: GLOBAL ENVIRONMENTAL OUTLOOK

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

The Paris Agreement aims to keep global temperature rise to below 2 degrees Celsius above pre-industrial levels. | Photo Credit: [Branden Camp](#)

India could save at least \$3 trillion (210 trillion approx.) in healthcare costs if it implemented policy initiatives consistent with ensuring that the globe didn't heat up beyond 1.5 degrees Celsius by the turn of the century, says the sixth edition of the Global Environmental Outlook (GEO), prepared by the United Nations Environment Programme.

"Damage to the planet is so dire that people's health will be increasingly threatened unless urgent action is taken....Unless environmental protections were drastically scaled up, cities and regions in Asia, the Middle East and Africa could see millions of premature deaths by mid-century," a press statement accompanying the report noted.

India's stated commitment is to lower emissions intensity of its GDP by 33-35% compared to 2005 levels by 2030; increase total cumulative electricity generation from fossil free energy sources to 40% by 2030, and create additional carbon sink of 2.5 to 3 billion tons through additional forest and tree cover.

India is on track to achieve two of these goals — of emissions intensity and electricity generation — according to independent climate-watch site Climate Tracker.

However these actions are only enough — and provided other countries too live up to their commitments — to limit temperature rise to 2 degrees.

For India to leapfrog onto a 1.5-degree pathway it would have to "abandon plans to build new coal-fired power plants," said Climate Tracker's most updated analysis as of Dec 2018.

The landmark Paris Agreement of 2015 aims to keeping a global temperature rise this century well to "...below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius."

However there has been limited progress by countries since then in committing to greenhouse gas emissions cut since then.

Currently environmental ministers and delegates from around the world are participating in a UN conference in Nairobi to discuss issues such as stopping food waste, promoting the spread of electric mobility, and tackling the crisis of plastic pollution.

The GEO report, made public Wednesday, for its assessment on health benefits to India relied on a modelling study by group of scientists and published by *Lancet Planetary Health* in March 2018.

The report advises adopting less-meat intensive diets, and reducing food waste in both developed and developing countries, would reduce the need to increase food production by 50% to feed the projected 9-10 billion people on the planet in 2050. At present, 33% of global edible

food is wasted, and 56% of waste happens in industrialised countries.

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ENVIRONMENT DAMAGE BEHIND A QUARTER OF PREMATURE DEATHS, DISEASES: UN REPORT

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

FILE - In this Monday, Sept. 4, 2017 file photo, pyres of ivory are set on fire in Nairobi National Park, Kenya. Kenya's president Saturday set fire to 105 tons of elephant ivory and more than 1 ton of rhino horn, believed to be the largest stockpile ever destroyed, in a dramatic statement against the trade in ivory and products from endangered species. According to a scientific report from the United Nations released on Wednesday, March 13, 2019, climate change, a global major extinction of animals and plants, a human population soaring toward 10 billion, degraded land, polluted air, and plastics, pesticides and hormone-changing chemicals in the water are making the planet an increasing unhealthy place for people. (AP Photo/Ben Curtis) | Photo Credit: [Ben Curtis](#)

A quarter of all premature deaths and diseases worldwide are due to manmade pollution and environmental damage, the United Nations said on Wednesday in a landmark report on the planet's parlous state.

Deadly emissions, chemicals polluting drinking water, and the accelerating destruction of ecosystems crucial to the livelihoods of billions of people are driving a worldwide epidemic that hampers the global economy, it warned.

The Global Environment Outlook (GEO) — a report six years in the making compiled by 250 scientists from 70 nations — depicts a growing chasm between rich and poor countries as rampant overconsumption, pollution and food waste in the developed world leads to hunger, poverty and disease elsewhere.

As greenhouse gas emissions continue to rise amid a preponderance of droughts, floods and superstorms made worse by climbing sea levels, there is a growing political consensus that climate change poses a future risk to billions.

But the health impacts of pollution, deforestation and the mechanised food-chain are less well understood.

Nor is there any international agreement for the environment close to covering what the 2015 Paris accord does for climate.

The GEO compiles a litany of pollution-related health emergencies.

It said that poor environmental conditions "cause approximately 25% of global disease and mortality" -- around 9 million deaths in 2015 alone.

Lacking access to clean drinking supplies, 1.4 million people die each year from preventable diseases such as diarrhoea and parasites linked to pathogen-riddled water and poor sanitation.

Chemicals pumped into the seas cause "potentially multi-generational" adverse health effects, and land degradation through mega-farming and deforestation occurs in areas of Earth home to 3.2 billion people.

The report says air pollution causes 6-7 million early deaths annually.

The report called for a root-and-branch detoxifying of human behaviour while insisting that the situation is not unassailable.

Food waste for instance, which accounts for 9% of global greenhouse gas emissions, could be slashed. The world currently throws away a third of all food produced. In richer nations, 56% goes to waste.

It also called for a rapid drawdown in greenhouse gas emissions and pesticide use to improve air and water quality.

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A CLIMATE VULNERABILITY INDEX FOR INDIA ON THE ANVIL

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

The Department of Science and Technology (DST) will be commissioning a study to assess the climate risks faced by States in India. This follows an assessment of the global warming risks faced by 12 Himalayan States — and discussed at last year's U.N. climate change conference in Poland — that found States such as Assam, Arunachal Pradesh and Uttarakhand vulnerable to climate change.

"We eventually hope to have a climate portal, whereby users can zoom in on any district in the country and get a sense of what kind of risks — climate, socio-economic — are present," said Ashutosh Sharma, Secretary, DST.

Common methodology

Last year the Indian Institutes of Technology (IIT) at Mandi and Guwahati, and the Indian Institute of Science (IISc), Bengaluru, coordinated with State authorities in Assam, Manipur, Meghalaya, Mizoram, Nagaland, Tripura, Arunachal Pradesh, Sikkim, the hill districts of West Bengal, Himachal Pradesh, Uttarakhand and Jammu and Kashmir, to evolve a common methodology, and determine how districts there are equipped to deal with the vagaries of climate change.

The researchers prepared a 'vulnerability index' of each of these States based on district-level data. Vulnerability would be a measure of the inherent risks a district faces, primarily by virtue of its geography and socio-economic situation.

The scientists conducted workshops with the States and culled eight key parameters on the basis of which a vulnerability score could be generated. They included: percentage of area in districts under forests, yield variability of food grain, population density, female literacy rate, infant mortality rate, percentage of population below poverty line (BPL), average man-days under MGNREGA (Mahatma Gandhi National Rural Employment Guarantee Act), and the area under slope > 30%.

On a scale ranging 0-1, 1 indicating the highest possible level of vulnerability, at the top of the scale were Assam with a score of 0.72 and Mizoram at 0.71, whereas Sikkim, with an index score of 0.42 was relatively less vulnerable. "This doesn't mean that States with a lower score are safe in an absolute sense. In fact, some districts in Uttarakhand [at 0.45 and at the lower end of the scale] are more vulnerable than those in Assam," said Shyamasree Dasgupta, Assistant Professor, IIT-Mandi, one of the key authors of the report.

Different factors

Different factors contributed to a State's vulnerability. In Arunachal Pradesh, the key factors are low female literacy and high percentage of population above BPL whereas in Nagaland the key issues are loss of forest cover, steep slope and high yield variability.

Akhilesh Gupta, a senior coordinator of the initiative at the DST said that the over-arching aim of the analysis was to give actionable inputs to States.

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On a scale ranging 0-1, 1 indicating the highest possible level of vulnerability, at the top of the scale were Assam with a score of 0.72 and Mizoram at 0.71, whereas Sikkim, with an index score of 0.42 was relatively less vulnerable. "This doesn't mean that States with a lower score are safe in an absolute sense. In fact, some districts in Uttarakhand [at 0.45 and at the lower end of the scale] are more vulnerable than those in Assam," said Shyamasree Dasgupta, Assistant Professor, IIT-Mandi, one of the key authors of the report.

Different factors contributed to a State's vulnerability. In Arunachal Pradesh, the key factors are low female literacy and high percentage of population above BPL whereas in Nagaland the key issues are loss of forest cover, steep slope and high yield variability.

Akhilesh Gupta, a senior coordinator of the initiative at the DST said that the over-arching aim of the analysis was to give actionable inputs to States.

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Continuing drought will further burden the already depleting groundwater resources of the country, according to associate professor Vimal Mishra

A living member of species of tortoise not seen in more than 110 years and feared to be extinct

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STATES, UTS TOLD TO FURNISH REPORTS ON BIO-MEDICAL WASTE MANAGEMENT

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

National Green Tribunal office in New Delhi. File | Photo Credit: [Shanker Chakravarty](#)

The National Green Tribunal has directed all States and Union Territories to furnish reports pertaining to the management of bio-medical waste (BMW) to the Central Pollution Control Board (CPCB) by April 30.

Noting that non-compliance of bio-medical waste management rules is “widespread,” a Bench headed by NGT chairperson Justice Adarsh Kumar Goel warned of heavy fines on authorities if they fail to furnish reports.

“We direct all States and Union Territories to ensure that reports [in terms of relevant rules] are furnished to the CPCB within one month or on or before April 30, for the period the reports are due as per rules. The CPCB may furnish a status report of compliance of BMW rules after proper analysis to NGT within one month,” the Bench said.

It added, “It is made clear that any failure will result in the defaulting States being required to pay compensation to be deposited with the CPCB at the rate of 1 crore per month after May 1.”

The States have also been directed to prepare respective action plans for compliance of rules pertaining to BMW within one month. “The CPCB may give its comments on the action plan to NGT within one month, thereafter,” the Bench said.

Further, the green panel directed the apex pollution monitoring body to undertake a study and prepare a scale of compensation to be recovered from “violators of BMW rules” within one month. “This will not debar the State pollution control boards from performing their duty of recovering compensation from the polluters,” the Bench said.

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DOLPHIN NUMBERS DROP IN GANDAK

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

A count of the Ganges River Dolphin (*Platanista gangetica gangetica*) in two Bihar rivers, Gandak and Ghaghara (both originate from Nepal and eventually join the Ganga), has revealed the presence of 280 dolphins.

The number of dolphins recorded in a 324-km stretch of Gandak river was 155, a drop from the last estimation. The last survey carried out in 2009-10 had recorded the presence of 257 dolphins in the same stretch. However, in a 99-km stretch of Ghaghara river in Bihar — where no study was conducted before — researchers were enthused to find the presence of 125 dolphins.

"Gandak is a regulated river due construction of river barrage on the Indo-Nepal border and thus the river depth is low, while the Ghaghara has deeper stretches. Ganges river dolphin usually prefer a depth of more than 2 metres and diversity in the river channels," Samir Kumar Sinha, Deputy Director and Division Head (Species Recovery) of the Wildlife Trust of India told *The Hindu*. Mr. Sinha coordinated the estimation exercise.

The estimation was done following the direct count method recommended by the Cetacean Specialist Group of the International Union for Conservation of Nature. A team of seven completed the survey in a period of about 12 days in late 2018. Experts have pointed out that upcoming activities, such as the construction of National Waterway 37, are likely to pose a major threat to the population of Ganges river dolphin and can change the geo-morphology of the Gandak in the coming years.

Other threats affecting Dolphin habitat in the river at this juncture include regulated discharge from Gandak Barrage, electrofishing (discharging electric current to kill fish) and mosquito-net fishing. In the Ghaghara river, threats posed on the national aquatic animal are from sand mining and the use of chemicals in intensive bank cultivation.

Both the rivers are home to large number of aquatic species including the critically-endangered gharial (*Gavialis gangeticus*). The estimation also revealed the presence of 32 bird species in Gandak and 17 in Ghaghara. The river system of Bihar, which includes Ganga and its other tributaries, are estimated to contain half of the population of Ganges river dolphin in the country.

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EXPLAINER: WHAT IS SCHOOLS STRIKE FOR CLIMATE?

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

16-year-old Swedish environmental activist Greta Thunberg and Anuna De Wever, a Belgian climate student activist take part in a protest claiming for urgent measures to combat climate, in central Brussels, Belgium February 21, 2019. The placard reads: "School strike for climate" | Photo Credit: [Reuters](#)

The Schools Strike for Climate is a global, growing movement of students demanding more action from authorities regarding global warming and climate change. The movement began last year as a solo protest by a 15-year-old Swedish girl Greta Thunberg outside the Swedish Parliament building. It has since grown, and on March 15, thousands of students from across continents are expected to skip school and take part in protests. It is said to be the largest such protest.

Ninth-grade student Greta Thunberg, on August 20, 2018, decided to skip school that day and sat outside the Riksdag (Swedish Parliament) with the sign *Skolstrejk för klimatet* (school strike for the climate). Spurred by the recent heatwave and wildfires in Sweden, Ms. Thunberg skipped school for the next three weeks and continued her protest outside Parliament, demanding that the Swedish government reduce carbon emissions per the Paris Agreement. On September 8, Ms. Thunberg decided to continue striking every Friday, leading to the hashtag #FridaysForFuture and #Climatestrike. She posted her protests on social media, which went viral and the movement spread as students started protesting outside their respective parliaments and town halls. In November 2018, Ms. Thunberg spoke at TEDxStockholm, the following month she addressed the United Nations Climate Change Conference. In January this year, she spoke at the World Economic Forum in Davos. On Thursday, she was nominated for a Nobel Peace Prize.

The students reason that it is pointless to go to school and study for a future that may not even be there, given the worsening climate standards. The 2015 Paris Agreement's central aim was to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels. But the fear is that even 2 degree Celsius can cause starvation, drought and fires.

Most strikers want their governments to aggressively cut their greenhouse gas emissions. Some youngsters are even demanding a lower voting age, so they can have a bigger say in political process. They want a safe future, powered by the wind and the sun, not dirty and dangerous coal and gas. For instance in Australia, students are urging politicians to move beyond fossil fuel projects, with the hashtag #StopAdani trending. The fear is that the coal mine project will damage water and the reefs.

The protests so far have largely been restricted to the European countries, with Germany, Belgium and Switzerland figuring prominently. Now, nearly 30 States in the USA alone are expected to participate. According to FridaysForFuture.org, 75 countries are set to take part.

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A FRESH WARNING: WHAT GEO-6 MEANS FOR INDIA

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

The [**sixth edition of the Global Environment Outlook from the UN Environment Programme**](#)

has come as another stark warning: the world is unsustainably extracting resources and producing unmanageable quantities of waste. The linear model of economic growth depends on the extraction of ever-higher quantities of materials, leading to chemicals flowing into air, water and land. This causes ill-health and premature mortality, and affects the quality of life, particularly for those unable to insulate themselves from these effects. The UN report, GEO-6, on the theme "Healthy Planet, Healthy People," has some sharp pointers for India. It notes that East and South Asia have the highest number of deaths due to air pollution; by one estimate, it killed about 1.24 million in India in 2017. As India's population grows, it must worry that agricultural yields are coming under stress due to increase in average temperature and erratic monsoons. The implications of these forecasts for food security and health are all too evident, more so for the 148 million people living in severe weather 'hotspots'. Evidently, the task before India is to recognise the human cost of poorly enforced environment laws and demonstrate the political will necessary to end business-as-usual policies. That would mean curbing the use of fossil fuels and toxic chemicals across the spectrum of economic activity.

Environment damage behind a quarter of premature deaths, diseases: UN report

There are some targeted interventions that only require the resolve to reduce air and water pollution, and which in turn promise early population-level benefits. Aggressive monitoring of air quality in cities through scaled-up facilities would bring about a consensus on cutting emissions of greenhouse gases, and provide the impetus to shift to cleaner sources of energy. It is significant that GEO-6 estimates that the top 10% of populations globally, in terms of wealth, are responsible for 45% of GHG emissions, and the bottom 50% for only 13%. Pollution impacts are, however, borne more by the poorer citizens. Combating air pollution would, therefore, require all older coal-based power plants in India to conform to emission norms at the earliest, or to be shut down in favour of renewable energy sources. Transport emissions are a growing source of urban pollution, and a quick transition to green mobility is needed. In the case of water, the imperative is to stop the contamination of surface supplies by chemicals, sewage and municipal waste. As the leading extractor of groundwater, India needs to make water part of a circular economy in which it is treated as a resource that is recovered, treated and reused. But water protection gets low priority, and State governments show no urgency in augmenting rainwater harvesting. New storage areas act as a supply source when monsoons fail, and help manage floods when there is excess rainfall.

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A viable financial mechanism must be evolved to remove pollutants in power plants

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STUDENTS WORLDWIDE SKIP CLASSES DEMANDING ACTION ON CLIMATE

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

Students participate in a climate protest, at Stortorget in Lund, Sweden on Friday, March 15, 2019. Students worldwide skipped classes on Friday to take to the streets to protest their governments' failure to take sufficient action against global warming. | Photo Credit: [AP](#)

They're angry at their elders, and they're not taking it sitting down.

Students worldwide are skipping classes on Friday to take to the streets to protest their governments' failure to take sufficient action against global warming.

The coordinated 'school strikes,' being held from the South Pacific to the edge of the Arctic Circle, were inspired by 16-year-old Swedish activist Greta Thunberg, who began holding solitary demonstrations outside the Swedish Parliament last year.

Since then, the weekly protests have snowballed from a handful of cities to hundreds, driven by social media-savvy students and dramatic headlines about the impact of climate change.

Ms. Thunberg, who was recently nominated for the Nobel Peace Prize, was cheered for her blunt message to leaders at the World Economic Forum in Switzerland this year when she told them: "I want you to panic. I want you to feel the fear I feel every day."

Friday's rallies are expected to be one of the biggest international actions yet. Protests were underway or planned in cities in more than 100 countries, including Hong Kong; New Delhi; Wellington, New Zealand; and Oulu, Finland.

In Berlin, some 10,000 protesters, most of them students, gathered in a downtown square, waving signs with slogans such as "There is no planet B" and "Climate Protection Report Card-F" before a march through the capital's government quarter. The march was to end with a demonstration outside Chancellor Angela Merkel's office.

Organiser Carla Reemtsma, a 20-year-old university student, said social media had been key in reaching people directly to coordinate the massive protests in so many different locations, noting that she was in 50 WhatsApp groups and fielding some 30,000 messages a day.

"It's really important that people are getting together all over the world, because it's affecting us all," she said.

Some politicians have criticized the students, suggesting they should be spending their time in school, not on the streets.

"One can't expect children and young people to see all of the global connections, what's technically reasonable and economically possible," said the head of Germany's pro-business Free Democratic Party, Christian Lindner. "That's a matter for professionals."

But scientists have backed the protests, with thousands signing petitions in support of the students in Britain, Finland and Germany.

"We are the professionals and we're saying the young generation is right," said Volker Quaschning, a professor of engineering at Berlin's University of Applied Sciences.

"We should be incredibly grateful and appreciative of their bravery," said Professor Quaschning, one of more than 23,000 German-speaking scientists to sign a letter of support this week. "Because in a sense, it's incredibly brave not to go to school for once."

Scientists have warned for decades that current levels of greenhouse gas emissions are unsustainable, so far with little effect. In 2015, world leaders agreed in Paris to a goal of keeping the Earth's global temperature rise by the end of the century well below 2 degrees Celsius (3.6 degrees Fahrenheit).

Yet, at present, the world is on track for an increase of 4 degrees Celsius, which experts say would have far-reaching consequences on life on the planet.

"As a doctor, I can say it makes a big difference whether you've got a fever of 41 degrees Celsius (105.8 Fahrenheit) or 43 C (109.4 F)," said Eckart von Hirschhausen, a German scientist who signed the call supporting striking students. "One of those is compatible with life, the other isn't."

Ms. Merkel and French President Emmanuel Macron have publicly welcomed the student protests, even as their policies have been criticised as too limited by environmental activists.

In France, activist groups launched legal action this week for failing to do enough to fight climate change, citing a similar successful effort in the Netherlands.

In Germany, environmental groups and experts have attacked government plans to continue using coal and natural gas for decades to come. Activists say that countries like Germany should fully "decarbonise" by 2040, giving less-advanced nations a bit more time to wean themselves off fossil fuels while still meeting the Paris goal globally.

Other changes needed to curb greenhouse gas emissions include ramping up renewable energy production, reining in over-consumption culture now spreading beyond the industrialized West and changing diets, experts say.

"The fight against climate change is going to be uncomfortable, in parts, and we need to have a society-wide discussion about this," said Professor Quaschning.

That conversation is likely to get louder, with several U.S. presidential hopefuls planning to campaign on climate change.

Luisa Neubauer, one of the Berlin group organising Fridays for Future, said politicians should take note of the young.

"For the European elections in May, we're urging everyone to think about whether they want to give their vote to a party that doesn't have a plan for the future and the climate," she said.

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UN MEET DILUTES INDIAN PLAN TO PHASE OUT SINGLE-USE PLASTICS

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

Wake-up call: Indian cities generate 15,000 tonnes of plastic waste daily. A file photo of a drain in New Delhi. PTI/PTI

An ambitious resolution piloted by India to phase out single-use plastics by 2025, was watered down at the United Nations Environment Assembly (UNEA) that concluded on Friday in Nairobi.

At the World Environment Day summit on June 5, 2018 here, Union Environment Minister Harsh Vardhan, in the presence of Prime Minister Narendra Modi, had pledged to eliminate single-use plastics from India by 2022. This was lauded by then UN Environment Chief, Erik Solheim.

This pushed several States — notably Maharashtra, Tamil Nadu and Himachal Pradesh — to enforce previous commitments to ban plastic bags and similar disposables.

Ahead of the UNEA, the UN secretariat had invited inputs from member states to forge a common declaration regarding addressing a host of environmental challenges. India's inputs on the February 16 read:

“...We will decisively address the damage to our ecosystems caused by the unsustainable use and disposal of single-use plastic products, including by phasing-out most problematic single-use plastic products as early as 2025, and we encourage the private sector to find affordable and eco-friendly alternatives...”

Deadline pushed back

However, the final declaration on March 15 removed the firm timelines and edited out the “decisively” and only committed to a “reduction by 2030.”

“...We will address the damage to our ecosystems caused by the unsustainable use and disposal of plastic products, including by significantly reducing single-use plastic products by 2030, and we will work with the private sector to find affordable and environment friendly alternatives...” says the document available on the UNEA website.

The UNEA, however, lauded India for playing a key role in advocating a time-bound ban on single use plastic. A person privy to negotiations told *The Hindu* that India didn't work enough to garner international support to carry it all the way through. “We didn't have enough subject experts at Nairobi,” he added.

Nitrogen pollution

Along with plastic, India also piloted a resolution on curbing nitrogen pollution.

“..The global nitrogen-use efficiency is low, resulting in pollution by reactive nitrogen which threatens human health, ecosystem services, contributes to climate change and stratospheric ozone depletion. Only a small proportion of the plastics produced globally are recycled, with most of it damaging the environment and aquatic bio-diversity. Both these are global challenges and the resolutions piloted by India at the UNEA are vital first steps towards addressing these

issues and attracting focus of the global community," said a press statement by the Union Environment Ministry.

A top official in the Ministry told *The Hindu* that India's commitment to phase out plastic would continue irrespective of the global resolution. "It's a significant step that such a resolution was accepted at the UN. Timelines per se are matters of further negotiation and debate," Secretary, Union Environment Ministry C.K. Mishra said. "However, our commitments and efforts to reduce plastic use will continue at our pace."

A Central Pollution Control Board estimate in 2015 says that Indian cities generate 15,000 tonnes of plastic waste daily and about 70% of the plastic produced in the country ends up as waste. Seventeen States have plastic bans, on paper. Experts have rued the inadequacy of collection and recycling systems to address the burgeoning plastic waste problem.

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POLLUTION: 6 STATES TOLD TO SUBMIT ACTION PLAN

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

The NGT has directed the States to submit action plans by April 30. Shanker Chakravarty

The National Green Tribunal (NGT) has directed six States to submit by April 30 action plans for bringing air quality standards within the prescribed norms, failing which they would be liable to pay environment compensation of Rs. 1 crore each.

A Bench headed by NGT Chairperson Justice Adarsh Kumar Goel ordered the Chief Secretaries of Assam, Jharkhand, Maharashtra, Punjab, Uttarakhand and Nagaland governments to submit their plan within the stipulated time.

"We direct Chief Secretaries of the States in respect of which action plans have not been filed to forthwith furnish such action plans," the Bench, also comprising Justices S.P. Wangdi and K. Ramakrishnan, said.

Rs. 25 lakh for deficiency

The States, where action plans are found to be deficient and deficiencies are not removed till April 30, will be liable to pay Rs. 25 lakh each and the timeline for execution of the action plans is six months from the date of their finalisation, the Bench said.

It said that budgetary provision must be made for execution of such plans.

The tribunal warned that if action plans are not executed within the specified timeline, the defaulting States will be liable to pay environmental compensation and may also be required to furnish performance guarantee for execution of plans in extended timeline as per recommendations received from the Central Pollution Control Board (CPCB).

"The CPCB is directed to update the number of cities. If on parameters applied, there are other cities, not included in list of 102, they may be also included," the NGT said.

The direction came after the CPCB informed the green panel that out of 102 cities, action plan has been received from 83 cities, while 19 have not submitted it.

The tribunal will take up the matter for further consideration on July 19.

'Carrying capacity'

Concerned over the threat posed to limited natural resources due to their overuse, the tribunal has directed assessment of carrying capacity of 102 cities, including Delhi, where the air quality does not meet the national ambient air quality standards.

The concept of "carrying capacity" addresses the question as to how many people can be permitted into any area without the risk of degrading the environment there.

The tribunal had said the Ministry of Urban Development in coordination with the CPCB, Ministry of Transport, authorities such as Planning Commission and States, may carry out such study

with the assistance of experts in the field.

It had said that it is undisputed that air pollution is a matter of serious concern and large number of deaths take place every year in the country on account of air pollution.

The NGT had said that Delhi is over-polluted and figures quite high in the ranking of most polluted cities and there is no study about the capacity of the city with respect to the extent of population which can be accommodated and number of vehicles which can be handled by its roads.

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A GREENER WAY

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

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In 2014, 193 countries asked the UN Environment Programme (UNEP) to analyse how environmental degradation affects the social and economic well-being of people. In response, the UN's environment body roped in 250 scientists and experts from 70 countries to evaluate the state of the world's air, freshwater, oceans, and biodiversity. Their endeavour has produced a chastening report card, the Global Environmental Outlook. It was released last week at the UN Environment Assembly in Nairobi.

The “grow now, clean up later approach” in most parts of the world “has not factored in climate change, pollution or degradation of natural systems. This approach has also contributed to increasing inequality within and between countries,” the report notes. It directs attention to the human costs of “poorly enforced environmental regulations”. Most countries, for example, have laws to curb air pollution. However, poor air is responsible for more than six million premature deaths and an estimated \$5 trillion in welfare losses each year. The number of people succumbing to ailments caused by exposure to dangerous levels of PM 2.5 has increased by more than 10 per cent since 2010 — India accounts for nearly a fifth of such preventable deaths. Water pollution is responsible for nearly 1.5 million premature deaths, the report points out. “Antimicrobial resistance could become a leading cause of early death from infectious diseases worldwide by 2050 if countermeasures are not taken. In addition, the use of pesticides and the dumping of industrial chemicals have introduced pollutants that can disrupt hormonal functions into freshwater systems on all continents,” it says.

It would be a mistake, however, to read the Global Environmental Outlook as just another dire picture of the planet. It encourages policy-makers to recognise that global or regional action is often essential due to the transboundary nature of many environmental problems. This is a significant intervention because the ramifications of pollution are rarely seen beyond their local contexts. As a result, there is scarcely any conversation between the agencies responsible for bringing down the levels of particulate matter in air and those involved in curbing greenhouse gas emissions — even though the mandate of both concerns is mitigating the effects of fossil fuel burning. But by emphasising on “synergies” between “the efforts to meet climate change targets and policies to reduce air pollution”, the report offers a new pathway to policy-makers. This is particularly significant for India, whose Paris Climate Treaty commitments rely heavily on a shift to renewable energy (RE). But this transition could take at least 20 years and would also be subject to market vagaries. Meanwhile, aligning the country’s pollution control imperatives with its climate change commitments could underscore the salience of far less risky measures like bolstering public transport. The Global Environment Outlook should be seen as a call for such creativity by breaking down the silos in environmental policy-making.

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GLOBAL ENVIRONMENTAL PROBLEMS HAVE NO NATIONAL SOLUTIONS

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

Last week, the United Nations released a landmark report, The Global Environment Outlook (GEO), which made two important points that all national governments need to take seriously: One, environment damage (deadly emissions, chemicals polluting drinking water, and the accelerating destruction of ecosystems) is responsible for a quarter of premature deaths and diseases across the world. Second, there is a growing chasm between rich and poor countries as rampant overconsumption, pollution and food waste in the developed world is leading to hunger, poverty and disease elsewhere.

While the report, which was six years in the making, and has been compiled by 250 scientists from 70 countries, does not paint a positive picture of the world, the heartening news is that scientists feel that, despite the challenges, the situation can be rectified. This is true. Food waste, for instance, which accounts for 9% of global greenhouse gas emissions, can be reduced. The world currently throws away a third of all food produced. In richer nations, 56% goes to waste. Then the report says 1.4 million people die each year from preventable diseases such as diarrhoea and parasites linked to pathogen-riddled water and poor sanitation. This can also be tackled by providing clean water and also investing in processes that can lead to a behavioural change in people.

In the past one year, there have been several reports that have warned national governments about the perils of ignoring such mounting environmental challenges. While each of these reports have appraised the scope and nature of different challenges — from air pollution to biodiversity — the most important takeaway from all these reports is that many of these are global problems. Many of these environmental problems (climate change being the big one), as Israeli academic and author of the bestseller, *Sapiens*, Yuval Noah Harari, says, have no national solutions. Global cooperation is the first and necessary step to successfully face these challenges. With many world leaders such as US President Donald Trump showing a lack of interest in combating climate change, the road ahead will not be easy. Unfortunately, the brunt of such irresponsible behaviour will be borne by developing countries such as India.

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FUTURE-PROOFING CITIES

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

The stark statistics jump out at anyone trying to understand why resilient infrastructure is so important in a world that is urbanising at an unprecedented pace, not least here in India. Already around 34% of India's population lives in cities and this demographic cohort is expected to grow in the years ahead. This growing rate of urbanisation and the subsequent increase in population density is bringing massive new investments in infrastructure. Bridges, roads, dams, power stations and electrical grids are just some of the services and facilities that need to be built to serve burgeoning urban populations. Half of the infrastructure needed in Asia by 2050 is yet to be built. It is estimated that, globally, \$6 trillion needs to be invested in infrastructure every year until 2030 to meet current demands.

This level of investment provides a window of opportunity to ensure that all new infrastructure is made resilient to withstand future shocks, including those brought by a changing climate. Disasters in heavily populated urban areas can lead to high numbers of human casualties. It is sobering to note that unsafe infrastructure which collapses in an earthquake or tsunami kills more people than any other type of natural hazard, such as a tornado or a storm. Economic losses from disasters that damage infrastructure can reach huge proportions. The World Bank estimates that annual disaster losses are already close to \$520 billion and that disasters push up to 24 million people a year into poverty.

Ensuring that all new investments in infrastructure are made in a risk-sensitive way can play a significant role in reducing economic losses from disasters. There is no excuse for infrastructure to continue to be damaged or destroyed by recurrent hazards when we know that a small investment — often just a small percentage of the total cost of investment — can make the infrastructure resistant to many shocks. The dividend is that money saved from relief and rebuilding costs can be invested in development objectives, such as education, health care or improved transportation, helping countries achieve the Sustainable Development Goals.

One of the objectives of the Second International Workshop on Disaster Resilient Infrastructure, being hosted on March 19-20 under the initiative of the Indian government and with support from the UN Office for Disaster Risk Reduction, is to pursue the creation of a global coalition for resilient infrastructure. The coalition will also ensure that new risks are not created, as enshrined in the Sendai Framework for Disaster Risk Reduction 2015-2030, the global plan for reducing disaster losses. Such international cooperation and shared commitment are needed to “future-proof” our cities and lock-in resilience for generations to come.

The writer is the UN Special Representative of the Secretary-General for Disaster Risk Reduction

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The Supreme Court's attempt at mediation has its share of supporters and critics

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INTERNATIONAL WORKSHOP ON DISASTER RESILIENT INFRASTRUCTURE TO BEGIN TOMORROW

Relevant for: Environment | Topic: Disaster and disaster management

Ministry of Home Affairs

International Workshop on Disaster Resilient Infrastructure to begin tomorrow

Posted On: 18 MAR 2019 10:51AM by PIB Delhi

An International Workshop on Disaster Resilient Infrastructure (IWDRI) will be inaugurated here tomorrow. The two-day workshop is being organised by the National Disaster Management Authority (NDMA) in collaboration with United Nations Office for Disaster Risk Reduction (UNISDR), and in partnership with the Global Commission on Adaptation, United Nations Development Programme and the World Bank.

The workshop aims to i) identify good practices of disaster risk management in key infrastructure sectors, ii) identify specific areas and pathways for collaborative research on DRI (Transport, Energy, Telecom and Water), iii) discuss and co-create the broad contours of the Coalition for Disaster Resilient Infrastructure (CDRI) as well as a notional roll-out plan for the next three years, and iv) build a forum for members to work on areas of common interest and make specific commitments.

It will bring together countries from different parts of the world, multilateral development banks, UN agencies, academia and research institutions, the private sector, academics and policy think tanks to discuss and collaborate on promoting policies and practices towards achieving disaster resilience of large infrastructure systems (transport, telecom, energy, water). This will also be a great opportunity to learn from the unique experiences of different countries.

Various international agreements have also reiterated the importance and long-term benefits of investing in resilient infrastructure. The Sendai Framework for Disaster Risk Reduction (SFDRR), 2015-2030, which is the first major agreement of the post-2015 development agenda, identifies investing in Disaster Risk Reduction (DRR) for resilience and to build back better in reconstruction as priorities for action towards reducing disaster risk. Similarly, Goal 9 of the Sustainable Development Goals (SDGs) recognizes disaster resilient infrastructure as a crucial driver of economic growth and development.

Besides reducing infrastructure losses, disaster resilient infrastructure will also help achieve targets pertaining to reduction in mortality, number of affected people and economic losses due to disasters.

The first International Workshop on Disaster Resilient Infrastructure (IWDRI 2018) was held in January 2018. This workshop will further build upon some of the ideas generated at the IWDRI 2018 as a crucial milestone towards the establishment of the Coalition for Disaster Resilient Infrastructure (CDRI). The CDRI is envisaged as a knowledge exchange and capacity development partnership. India announced the creation of a CDRI soon after the Asian Ministerial Conference on Disaster Risk Reduction, which was held in New Delhi in 2016.

For details about the Workshop and the proposed Coalition, please visit the Workshop

website: <https://resilientinfra.org/iwdri/about.php>.

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3RD INDO-JAPAN WORKSHOP ON DISASTER RISK REDUCTION HELD IN NEW DELHI

Relevant for: Environment | Topic: Disaster and disaster management

Ministry of Home Affairs

3rd Indo-Japan Workshop on Disaster Risk Reduction held in New Delhi

Posted On: 18 MAR 2019 6:55PM by PIB Delhi

The 3rd Indo-Japan Workshop on Disaster Risk Reduction was held here today. The workshop was attended by about 140 delegates from Japan and India including experts from both the governments, top premium research institutes, city administrators, specialized Disaster Management agencies and private sector.

The Government of India and the Government of Japan had signed a Memorandum of Cooperation (MoC) in the field of Disaster Risk Reduction (DRR) in September 2017. The 3rd Indo-Japan workshop is the follow-up of the deliberations held during the 1st Indo-Japan Workshop on DRR held on March 18-19, 2018 in New Delhi as well as during the 2nd Indo-Japan workshop on DRR held on October 13-15, 2018 in Tokyo, Japan. The 3rd workshop was organized with an objective of enhancing collaboration between research institutes, cities and the private sector in the field of Disaster Risk Reduction.

Inaugurating the workshop, Dr. P. K. Mishra, Additional Principal Secretary to the Prime Minister, said that both India and Japan have world class research institutions and collaboration among them can lead to capacity building at all levels. He added that the collaboration between cities, research institutions and private sector will also result in mutual benefit and long-term Disaster Risk Reduction. Our world is changing very fast and evolving targets of Sendai Framework for Disaster Risk Reduction (SFDRR) need to be supported by solid research. He emphasised that the collaboration between India and Japan should be strengthened in the areas of Early Warning Systems, build-back-better, capacity development, Science & Technology application and institution strengthening.

The Japanese delegation included Vice-Minister for Policy Coordination, Cabinet Office, Mr. Akihiro Nakamura, Ambassador of Japan to India, Mr. Kenji Hiramatsu, along with Government officials, domain experts from leading research institutes and various private companies working in the fields of Disaster Risk Reduction had participated in this workshop.

Japanese Ambassador, in his address, appreciated that the workshop has been held once every six months and reiterated the significance of three themes set for this workshop as collaboration amongst research institutes, among cities and among private companies, from the point of view that Disaster Risk Reduction should involve various stakeholders, and expressed Japan's continuous support to India's challenges towards DRR in every possible way.

Ms Mami Mizutori, Assistant Secretary General and Special Representative of the Secretary General for Disaster Risk Reduction, United Nations Office for Disaster Risk Reduction (UNISDR), in her address, said that disasters are complex problems, and no country or organization has all the answers on how to best mitigate every type of disaster. India and Japan are two countries that have faced some of the biggest disasters in human history, but have also

taken concrete steps towards better Disaster Management in the future. There is a lot to share between the two countries and she strongly believed that their joint efforts will advance global resilience.

On the sidelines of the event, Dr. P. K. Mishra held bilateral talks with Mr. Akihiro Nakamura, Vice-Minister for Policy Coordination, Cabinet Office, Japan. During bilateral talks, the two countries reaffirmed their commitment for bilateral cooperation in the areas of Disaster Risk Reduction and Disaster Resilient Infrastructure.

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FOR A HEALTHY PLANET

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

Last week in Nairobi, governments welcomed the [**Global Environment Outlook 6**](#): Healthy Planet, Healthy People (GEO-6) report. GEO-6 argues that in a business-as-usual scenario, the world will exhaust its energy-related carbon budget in less than 20 years to keep the global temperature rise to well below 2°C; it will take even less time to exhaust the budget to keep the global temperature rise to below 1.5°C.

India could save \$3.3-8.4 trillion in a 1.5°C world. It is in [**India's interest to aim for 1.5-2°C**](#). This would mean investing in not new fossil fuels but in renewables and better batteries. Investing in inappropriate infrastructure has costs in terms of climate change and stranded assets — decommissioning oil and gas infrastructure in the Netherlands, a small country, is €6.7-10 billion. If India's universities develop tomorrow's technologies, it could provide cutting-edge and frugal technologies. This could change energy geopolitics and remove the excuse of rich countries of postponing carbon neutrality. Developing countries can change – Costa Rica, for instance, has pledged carbon neutrality by 2021.

GEO-6 shows that the interlocking environmental crises kill millions prematurely and affect and displace billions. Substituting for nature by buying air purifiers, building coastal defence systems to compensate for degrading mangroves, or just cleaning beaches is expensive. Ironically, such costs increase the GDP as currently calculated. As GDP grows at the cost of the environment and does not reflect an increase in everyone's well-being, India should reconsider how it calculates its GDP.

A healthy planet is a public good and governments should take responsibility for it. When they hand responsibility to the private sector, clean air is only available to those who can pay for an air purifier. Poor people cannot afford air purifiers. Investing in water and sanitation will bring returns — a \$1 investment in water and sanitation could bring \$4 in returns; a green investment of 2% of global GDP could lead to similar growth rates by 2050. We must mobilise think tanks to work out context-specific solutions for India.

Investing in education for sustainable development, vertical and compact cities, public transport with cheap parking facilities, renewable energy, removing single-use plastics, and reducing food waste are the way to go to reduce global warming.

Many Indians are vegetarians. Why not promote that lifestyle? Much of India was a circular economy, so why not cherish the re-users and recyclers? India had a judiciary that thought of long-term justice; why not protect that? We must debate where we want to be in 2050 and strive towards that.

The writer is a Professor of Environment and Development in the Global South Governance and Inclusive Development, Amsterdam Institute for Social Science Research, University of Amsterdam

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Today's policymakers fail to understand Nehru's eminently sensible approach

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PROTECTED AREAS MATTER TO BUMPHEAD PARROTFISH

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

The bumphead parrotfish of Nicobar islands. | Photo Credit: [Vardhan Patankar](#)

The survival of the threatened bumphead parrotfish in the Andaman and Nicobar Islands hinges on the persistence of coral reefs and presence of marine protected areas. Implementing fishing regulations could help its population bounce back, say researchers.

Bumpheads are the world's largest parrotfish. Ramming its enormous green head against corals to dislodge them, a single bumphead can nibble up to five tonnes of coral every year. Though seemingly destructive, this activity promotes coral growth and keeps reef ecosystems healthy. However, numbers of bumphead parrotfish have decreased worldwide. Overfishing is a concern, for the fish are highly prized catches. But how are India's bumpheads in the Andaman and Nicobar Islands doing?

In an effort to generate baseline data, a team comprising Vardhan Patankar (Wildlife Conservation Society-India) surveyed 75 coral reef sites off 51 islands to obtain information on the distribution of bumpheads. Diving underwater, they counted the numbers of bumpheads and quantified benthic cover (such as live coral, algae, sand and rubble) there. Their results, published in *Oryx*, reveal that the fish occurred only patchily in these waters at densities of just 0.0032 per hectare. The team spotted no juveniles, only 59 adults at merely nine islands.

"The low densities are shocking, very similar to those of bumphead populations in southeast Asia where they are legally protected," said Dr. Patankar.

Live coral cover and the presence of marine protected areas – where fishing is banned – emerged as crucial factors for bumphead presence. To supplement this information with local knowledge, the team also conducted 99 interviews with fishermen in the South and Middle Andaman islands and Central Nicobar. Most fishers were aware of the presence of bumpheads in their waters; and all fishermen in Central Nicobar and Middle Andaman had seen the fish feeding and aggregating (bumpheads tend to aggregate in numbers larger than 10). Most fishers had hunted the fish all their lives, using hand-held wooden spears or harpoons.

Currently, this hunting is only opportunistic. However, if this changes to targeted fishing it could endanger bumpheads which could be easily conserved as a 'flagship species', says Dr. Patankar. "Bumpheads are not legally protected in India though the IUCN categorises them as Vulnerable," he says. "Now would be a good time to protect them legally and implement some fishing restrictions so their numbers can improve. Natural catastrophes such as bleaching may have already affected these large fish."

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Ancient Asian bamboos could be east Gondwanan in origin, claim scientists

When many members are affected, genetic risk may be easier to detect

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