



Environment (PRE-Cure)

June 2019 - March 2020

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1. World Environment Day (WED)

- World Environment Day (WED) is celebrated on 5th June every year.
- World Environment Day is the United Nations day for encouraging worldwide awareness and action to protect our environment.
- Since it began in 1974, the event has grown to become a global platform for public outreach that is widely celebrated in over 100 countries.
- Above all, World Environment Day is the "people's day" for doing something to take care of the Earth.
- That "something" can be local, national or global. It can be a solo action or involve a crowd. Everyone is free to choose.

Theme

- Each World Environment Day is organized around a theme that draws attention to a particularly pressing environmental concern.
- Theme is declared by UNEP.

The host

- Every World Environment Day has a different host country, where the official celebrations take place.
- The focus on the host country helps highlight the environmental challenges it faces and supports worldwide efforts to address them.

2. Asiatic Golden Cat

- The Asiatic golden cat (*Catopuma temminckii*) is listed as **near threatened** on the International Union for Conservation of Nature's Red List of threatened species. It is found across eastern Nepal through north-eastern India to Indonesia.
- Golden is no longer the only colour the elusive Asiatic golden cat can be associated with. Its coat comes in five other shades in Arunachal Pradesh, scientists have discovered.
- Bhutan and China were known to have two morphs of the golden cat — one the colour of cinnamon and the other with markings similar to the ocelot, a small wild cat found in the Americas.
- Indian scientists from the Zoological Society of London (ZSL), an international conservation charity, and University College London (UCL) have discovered **six colour morphs of the golden cat in Dibang Valley of Arunachal Pradesh** - cinnamon, golden, gray, melanistic, ocelot and tightly rosette.
- The findings have contributed to an evolutionary puzzle because **no other place on earth has so many colours of wild cats of the same species.**
- The **Idu Mishmis were aware of the different shades of the golden cat.** The community believes that the cat, particularly its melanistic (dark pigmentation as opposed to albinism) morph, possesses great powers and thus observe a strict taboo on hunting the cat.

- Within the six colour morphs recorded, an entirely new colour morph was also found in one of the community-owned forests. The “tightly-rosetted” morph named after the leopard-like rosettes on the coat, now sits alongside cinnamon, melanistic, gray, golden, and ocelot types.

Benefits

- ZSL scientists believe that the wide variation displayed in the cat’s coats provides them with several ecological benefits such as occupying different habitats at different elevations – from wet tropical lowland forests to alpine scrubs – and providing camouflage while preying on pheasants and rabbits.
- Colour morphs are thought to arise from random genetic mutations and take hold in the population through natural selection. In this region, scientists suspect that the phenomenon is driven by competition with other big cats such as tigers and clouded leopards. Being melanistic in the misty mountains during nocturnal hunts, for example, may mean they are better concealed from their prey; making them more efficient predators.

3. Spotted Owlet

- **IUCN Status – Least Concern**
- The Spotted Owlet is one of the most commonly sighted owls in our backyard. It is a **nocturnal raptor (a bird of prey) found in the Indian Subcontinent, except for Sri Lanka.**
- The owl is largely crepuscular (appearing as it does around twilight) and nocturnal, but is sometimes seen during the daytime. It normally comes out before dusk and retires by sunrise to its roost in a tree hole or branch, where pairs or small family groups huddle together.
- Its prey includes mostly beetles, moths, other insects and it also preys on earthworms, lizards, mice and small birds. At dusk, it perches on electrical wires or street lamp posts, fences or other such vantage points to look for prey, pouncing on an unwary insect, or occasionally launching an aerial attack to seize a flying insect attracted to the light from street lamps. **Owls as predators keep a balance in our ecosystem by keeping a check on rodent and insect population.**

4. Tawang yields a new species of dung beetle

- A new species of dung beetle has been discovered in Tawang district of Arunachal Pradesh. The species, **Enoplotrupes tawangensis**, is shining dark blue in colour and, measuring up to 27 mm, is relatively bigger than most of the dung beetles.
- Dung beetles belong to the superfamily scarabaeoidea, having clubbed antennae and pro-tibiae (pro-legs) modified for burrowing dung inside the soil. **This group of insects are considered beneficial to the environment as they help in nutrient cycling of the soil.** Often referred to as little recyclers, these scavenger beetles require mammalian dung to survive.
- Other than the relatively large size and distinct blue colour, another important distinguishing characteristic of this species is the strong sexual dimorphism, with the fronto-clypeal horn shorter in females than males. **(Sexual dimorphism is the condition where the two sexes of the same species exhibit different characteristics beyond the differences in their sexual organs).**
- Insects comprise almost 65% of all animal species on the planet. From India, approximately 65,000 species of insects are known, of them, more than 22,000 species are beetles.

- Dung beetles are one of the fascinating group of insects because of their ability to bury dung deep in the soil and are **indicators of the ecological health of an ecosystem.**

5. Black-crested Bulbul sighted after several years in Dudhwa National Park

- The black-crested Bulbul was spotted after several years in Dudhwa as the counting of birds during the summer season was held.
- The black-crested Bulbul is a bird species with a black head and deep yellow body.
- Notably enough, during the winter bird-count, the experts had sighted five new species of birds in Dudhwa which included Maroon Oriole, Eurasian sparrow hawk and short-eared eagle owl.
- The summer bird count helped to discover the native bird species in Dudhwa as in winter migratory birds also join here.
- **Dudhwa Tiger Reserve, which is located on the India-Nepal border**, is home to over 450 bird species, tigers, leopards, wild elephants, swamp deer, one-horned rhinos besides hundreds of other wild animals and reptiles. Its rich wildlife, massive forest cover and fabulous flora and fauna attract tourists and wildlife research scholars every year.
- The Dudhwa Tiger Reserve is a protected area in **Uttar Pradesh** that stretches mainly across the Lakhimpur Kheri and Bahraich districts and comprises the Dudhwa National Park, Kishanpur Wildlife Sanctuary and Katarniaghat Wildlife Sanctuary.

6. Piped water coverage to increase from 18 to 100% by 2024

- The Central government has decided to increase coverage of piped water to households from the current 18 per cent to 100 per cent by 2024, according to Jal Shakti Minister.
- The formulation of a plan under '**Nal Se Jal**' (**water from the tap**) mission to provide tap water to 14 crore households was underway.
- An emphasis will also be made on water conservation, citing the widening gap between water supply and demand.
- But water is a state subject as per the Constitution and sought collective efforts and a public movement to achieve the target.
- Sikkim had 99 per cent coverage of piped water to households, while some states such as Uttar Pradesh, Bihar, Odisha, Chhattisgarh, and Jharkhand had below five per cent.
- According to Jal Shakti Ministry officials, the per capita water availability was over 5,000-litre cube in 1950 but it has now reduced to a 1,434-litre cube.
- **States like Punjab and Haryana consume water that is double the amount they actually store and harvest.**

7. International Centre for Automotive Technology (ICAT)

- International Centre for Automotive Technology (ICAT) has released India's first **Type Approval Certificate (TAC) for Bharat Stage – VI norms for the two-wheeler segment**
- This is India's first certification in the two-wheeler segment for the BS – VI norms that are the latest emission norms as notified by the Government of India.
- ICAT has taken many steps in providing assistance and support to the automotive industry for the development, optimization and calibration of engines and vehicles for complying with these upcoming emission norms.
- Bharat Stage norms are the automotive emission norms which the automotive manufacturers have to comply to sell their vehicles in India. These norms are applicable to all two wheelers, three wheelers, four wheelers and construction equipment vehicles.
- To curb the growing menace of air pollution through the vehicle's emission, the Government of India has decided to leapfrog from the exiting BS – IV norms to the BS- VI, thereby skipping the BS – V norms, and to implement the BS – VI norms with effect from 1st April 2020. Only those vehicles will be sold and registered in India from 1st April 2020 onwards, which comply with these norms. The norms are stringent and at par with global standards.
- Last year, ICAT issued the approval for BS –VI norms to M/s Volvo Eicher Commercial Vehicles for the Heavy Commercial Vehicle segment which was also the first in its segment in India.
- ICAT is the premier testing and certification agency authorized by the Ministry of Road Transport and Highways for providing testing and certification services to the vehicle and component manufacturers in India and abroad. It has the latest equipment, facilities and capabilities to develop, validate, test and certify the engines and vehicles for the latest norms in the field of emission and many other facilities like crash lab, NVH lab, EMC lab and test tracks.

8. El Salvador recognises forests as living entities

- El Salvador has, in a historic move, recognised forests as living entities. Its **citizens will now be required to preserve forests**.
- El Salvador has lost about 85 per cent of its native forests since the 1960s, while Earth has lost about 80 per cent of its native forests.
- The pronouncement was made on World Environment Day, which is celebrated on June 5 every year, by the Legislative Assembly of El Salvador.
- It states that each person must commit to caring for, preserving, and respecting forests. People should also promote concrete actions that expand forests in the country, it added.

9. Indian cities are simmering in their own waste heat

- The joint 2017 analysis by India Meteorological Department and Indian Institute of Technology-Madras found Delhi's heat index to have registered a higher growth rate compared to the national average.

- Delhi's heat index has increased by 0.6 degrees Celsius per decade in summers and 0.55°Celsius per decade during monsoons. **(The Heat Index, sometimes referred to as the apparent temperature, is a measure of how hot it really feels when relative humidity is factored with the actual air temperature)**
- Delhi's summers and monsoons are hotter by 3.6°C and 3.3°C on the heat index compared to the 1950s. An analysis by the Centre for Science and Environment, a New Delhi-based non-profit, of weather data for 2010-2017 reveals that **average heat index of both the seasons has witnessed a steady upward trend.**
- The heat index is said to be in the danger band when in the range 41-54°C. During such periods, it causes cramps and exhaustion, and there is a possibility of heat strokes with continued physical activity. Heat
- Index of Delhi has consistently been in the danger band during the summer (March-June) and monsoon (July-September) seasons since 2016
- A dramatic increase in the number of days on which the heat index of Delhi crossed into the extreme danger band – conditions when heat strokes are imminent—has been noted. The most severe heat wave ever recorded in India was in 2016 and it is reflected in the Delhi data as well with the heat index of the city shooting above 54°C mark on 51 days in that year.
- Overall, it has been noted that Delhi is not only getting hotter in general but the intensity of the heat conditions is also becoming more severe.
- At present, ACs are the most effective (and resource-intensive) means to cool indoor spaces to survive the urban hearth. However, rampant use of ACs is problematic as it adds fuel to the outdoor fire, making cities hotter.
- The release of waste heat from ACs into the ambient environment exacerbates urban heat island effect in the immediate surroundings. A study in Tokyo found that waste heat from air conditioners alone caused a temperature rise of 1-2°C or more on weekdays in the office areas in Tokyo.
- The magnitude of urban heat island effect on weekends and holidays was found to be lesser due to abatement in the use of ACs. (An urban heat island is an urban area or metropolitan area that is significantly warmer than its surrounding rural areas due to human activities)
- Air conditioning is a key parameter of health problems due to heat waves because, on the one hand, it reduces mortality but, on the other hand, depending on the heat management, it can increase street temperature, thereby increasing the heat stress on people who don't have access to an AC.
- Further, traditional building design and urban form of Delhi (and most Indian cities) are of a low, close and dense network with shaded alleyways where people could keep cool during summers. The introduction of ACs in such an urban form ends up heating the entire neighbourhood.
- On the other hand, the rapid constructions of high-rises and decreasing green spaces that embody new India are even worse off as they don't have any passive means to keep cool and are, therefore, captive users of ACs, shooting out millions of mini-heat jets into the urban air shed, creating undue physical and economic stress in the city and reducing the overall quality of life.

10. Water reserves in 71 of India's 91 reservoirs have dipped: CWC

- There is a downward trend in water levels in at least 71 of 91 reservoirs across India according to data released by the Central Water Commission (CWC) on June 13.
- The situation is particularly grim in the north-western region — in Gujarat and Maharashtra — and in the southern states of Kerala and Tamil Nadu.
- Maharashtra's situation is especially grim with a deficiency in water reserves in its reservoirs at 68 per cent while Gujarat faced a shortage of 22 per cent.
- Water stored in Kerala's reservoirs depleted sharply in just one week — to 24 per cent on June 13 from 12 per cent on June 6.
- In fact, water storage in important western and southern rivers like the Sabarmati, Godavari, Krishna, and Cauvery is deficient whereas it is 'highly deficient' in Tapti, an 80 per cent departure with respect to the average of the last 10 years.
- Suggesting a worsening water crisis in these states, the CWC data highlights that water storage in reservoirs there has dipped to less than the average of the last 10 years.
- Out of 91 reservoirs, 39 reservoirs reported more than 80 per cent of normal storage while there is a deficiency in at least 20 reservoirs.
- However, according to CWC, the total live water storage is better than live storage of the corresponding period of last year and more than the average of the last ten years than the corresponding period.
- A delay in the arrival of the monsoon, especially in western India, will worsen the water woes even further. According to the India Meteorological Department (IMD), the delay has already pushed the country's rainfall deficiency in the first nine days of June to 45 per cent.

11. India to host UN meet on land degradation in September

- **India for the first time will host the 14th session of the Conference of Parties (COP-14) of the United Nations Convention to Combat Desertification (UNCCD) in September.** India will take over the COP presidency from China for two years until the next COP in 2021. It will see participation from at least 5,000 delegates from nearly 197 countries and will be held between September 2 and 14 in Delhi. One of the primary functions of the COP is to review reports submitted by the Country Parties, detailing how they are carrying out their commitments. It was announced on 17th June, World Day to combat desertification and drought.
- It was the 25th anniversary of the Convention on 17 June 2019 in Ankara, hosted by the government of Turkey. The anniversary campaign was celebrated under the slogan "Let's grow the future together"
- **The United Nations has three major Conventions: the United Nations Framework Convention on Climate Change (UNFCCC), the Convention on Biological Diversity (CBD) and the United Nations Convention to Combat Desertification (UNCCD).** Established in 1994, the UNCCD is the only legally binding international agreement linking environment and development issues to the land agenda.

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12. Forest Landscape Restoration (FLR)

- Ahead of the COP-14, Environment minister launched a flagship project, part of a larger international initiative called the **Bonn Challenge, to enhance India's capacity for forest landscape restoration (FLR).**
- Forest landscape restoration (FLR) is the ongoing process of regaining ecological functionality and enhancing human well-being across deforested or degraded forest landscapes.
- FLR is more than just planting trees – it is **restoring a whole landscape to meet present and future needs and to offer multiple benefits and land uses over time.**
- It will be implemented during a pilot phase of three-and-a-half years in Haryana, Madhya Pradesh, Maharashtra, Nagaland and Karnataka. The project will aim to develop and adapt the best practices and monitoring protocols for the country, and build capacity within the five pilot States.
 - ✓ This will eventually be scaled up across the country. It will be in partnership with The International Union for Conservation of Nature (IUCN).
- India faces a severe problem of land degradation, or soil becoming unfit for cultivation. A 2016 report by the **Indian Space Research Organisation found that about 29% of India's land (in 2011-13) was degraded, this being a 0.57% increase from 2003-05.**
- At the previous edition of the COP, India had committed to restore 13 million hectares of degraded and deforested land by the year 2020, and an additional 8 million hectares by 2030.
- **The Bonn Challenge is a global effort to bring 150 million hectares of the world's deforested and degraded land under restoration by 2020, and 350 million hectares by 2030.**

13. The United Kingdom (UK) is on track to become the first G7 country to legislate for net zero emissions by 2050.

- The Climate Change Act passed in 2008 will be amended in the British Parliament in order to reach the target of net zero emissions by 2050.
 - ✓ The Climate Change Act 2008 is an Act of the Parliament of the United Kingdom. The Act makes it the duty of the Secretary of State to ensure that the net UK carbon account for all six Kyoto greenhouse gases for the year 2050 is at least 80% lower than the 1990 baseline, toward avoiding dangerous climate change.
- This new target is based on advice from experts of the Committee on Climate Change, commissioned by the government in October 2018.
- In 2008, the UK's original target was an 80 per cent reduction in emissions by 2050. Since then, the projected whole economy cost of reaching the target has reduced dramatically because of advances in green technology.
- The Committee on Climate Change believes that net zero emissions can be achieved within the estimates set out in the 2008 Climate Change Act.

- The report by the Committee projects significant benefits to public health and savings under the National Health Service from better air quality and less noise pollution, as well as improved biodiversity.
 - Other members of the Group of seven industrially developed countries – Canada, France, Germany, Italy, Japan, and the United States – are also expected to follow the UK's move. The UK will conduct a further assessment within 5 years to confirm that other countries are taking similarly ambitious action.
 - The UK is already a centre for clean growth and innovation. Low carbon technology and clean energy contribute £44.5 billion to its economy every year.
- ✓ It would be ending the sale of new diesel and petrol cars and vans through the government's policy document, "Road to Zero Strategy", and protecting biodiversity and promoting sustainability through a 25-year Environment Plan.

14. Environment and energy ministers meet of the Group of 20 major economies

- Group of 20 environment ministers agreed to adopt a new implementation framework for actions to tackle the issue of marine plastic waste on a global scale, the Japanese government said after hosting the two-day ministerial meeting.
 - Environment and energy ministers of the Group of 20 major economies met in Karuizawa, northwest of Tokyo, ahead of the G20 summit in Osaka, western Japan, on June 28-29.
 - One of the top issues was ocean plastic waste as images of plastic debris-strewn beaches and dead animals with stomachs full of plastic have sparked outrage, with many countries banning plastic bags outright.
 - The new framework is aimed at facilitating further concrete action on marine waste, though on a voluntary basis, after the G20 Hamburg Summit in Germany adopted the "G20 action plan on marine litter" in 2017.
 - Under the new framework, G20 members will promote a comprehensive life-cycle approach to prevent and reduce plastic litter discharge to the oceans through various measures and international cooperation.
- ✓ They will also share best practices, promote innovation and boost scientific monitoring and analytical methodologies.

15. REN21's Renewable 2019 Global Status Report (GSR)

- Renewable energy's share in power consumption is increasing undoubtedly, but people would have consumed more had policy makers prioritised the sector, according to **REN21's Renewable 2019 Global Status Report (GSR)** released on June 18, 2019.
- **Erratic policy decisions kept the world from using the sector to its potential in meeting climate change targets**, added the report.

- In India, which ranked fourth globally for new investment in renewable energy in 2018, the investment decreased 16 per cent compared to 2017, read the report by the think tank that focuses on renewable energy policy.
- The report attributes this to factors like
 - ✓ Land and transmission constraints
 - ✓ 25 per cent safeguard duty on imports from China and Malaysia
 - ✓ Flaws in tender scheme
 - ✓ Tax uncertainties
- India's new power generation capacity from solar photovoltaic panels decreased compared to 2017, according to the report. However, India placed fifth, overtaking Italy, with 33 giga watts (GW) total installed capacity.
- The report confirmed that installed renewable power capacity was more than that of fossil fuel and nuclear power combined for the fourth consecutive year.
- Around 100 GW of solar PV were added in 2018 which is enough to meet more than 25 per cent of electricity demand in France, the report added.

Issues

- However, lack of ambitious and sustained policies to drive decarbonising in heating, cooling and transport sectors indicates that countries are not trying to maximise the benefit of energy transition to move to cleaner options, the REN21 report added.
- "Renewables now supply around 26 per cent of global electricity production but the transport, cooling and heating sectors lag far behind in renewable adoption," highlighted the report.
- Underlining the subsidy support being given to fossil fuel, the GSR read that lack of political will and fossil fuel subsidies are threatening to derail the crucial United Nations 2030 Climate and Development Goals.
- Only 40 countries have taken some measures in terms of fossil fuel subsidy reform since 2015, while 112 countries still continue with the subsidy, found the status report. Also, 73 countries provided subsidies of more than \$100 million each in 2017.
- Only 44 countries have implemented carbon pricing policies and most countries have continued supporting subsidies for fossil fuel industry, the report read. Estimated total global subsidies for fossil fuel consumption were \$300 billion in 2017, an 11 per cent increase from 2016, it added.

16. Researchers produce kerosene from sunlight, CO2 and water

- In a first, German researchers have used **sunlight, carbon dioxide (CO2) and water to make kerosene**, which has potential to revolutionise the energy sector, according to German-Aerospace Centre (DLR).

- In a pilot project, researchers from the ETH Zurich developed a novel technology that uses concentrated solar energy to synthesise liquid hydrocarbon fuel from water and CO₂. For this product, **CO₂ and water are taken directly from the air and split using solar energy. The process yields synthesis gas or syngas — a mixture of hydrogen and carbon monoxide. It is subsequently processed and converted into kerosene, methanol or other hydrocarbons.**
- The reversal of combustion is accomplished via a high-temperature thermochemical cycle based on metal oxide redox reactions, which converts water and CO₂ into energy-rich synthesis gas (syngas).
- The technology is part of the European Union's sun-to-liquid project, which began in January 2016 with the aim to decarbonise transport sector.

Benefits

- The demonstration of this technology could have large effects on the transport sector, especially for aviation and shipping that will remain dependent on liquid fuels for long distances.
- **If compared with fossil fuels, the sun-to-liquid cuts CO₂ emissions by more than 90 per cent,** according to the Clean Energy Wire, a network of climate change journalists working from Germany. The project also intends to extract CO₂ from the atmosphere.
- The future global kerosene demand can therefore be covered with renewable solar fuels that are compatible with the existing fuel infrastructure.
- According to researchers, the solar mini-refinery based in Zurich establishes that the technology is feasible even in Zurich's climate condition. Currently, the mini-refinery produces around one decilitre of fuel per day. The team next aims to scale the technology for industrial implementation and make it economically competitive.

17. How good hydroelectric really is: Non-profit's report calls out sector

- **Hydroelectricity has been considered to be a relatively cleaner source of power than firing up 'dirty' coal.**
- But how 'eco-friendly' is hydel power really? A new report flags environmental hazards and additional threats such as risks posed by the construction of power plants in fragile terrains, especially in Himachal Pradesh.
- The report, the Hidden Cost of Hydropower, by non-profit Himdhara Environment Research and Action Collective has studied risks associated with hydropower construction, especially in regions like the northern hill states.

Findings

- Primary and secondary evidences in the report pointed towards the impacts triggered by underground construction for run-of-river projects, highlighting potential environmental hazards.
- The report blamed "failure of policy, coupled with the absence of functional regulation and governance institutions".

- It blamed the Central Water Commission and the Central Electricity Authority for overlooking “hazard vulnerability and safety aspects”. Despite being aware that geological challenges and surprises reportedly delay projects, the CEA “has not fed (this) into planning”.
- The report pulled up Expert Appraisal Committee of the Union Ministry of Environment, Forests and Climate Change for “hardly ever” deliberating on environmental hazards and disaster-vulnerability of such projects. Little heed is paid even when issues are repeatedly raised by environmental researchers, activists and community representatives, the report alleged.
- Even cumulative environment impact assessment studies for projects on the Sutlej and Beas rivers haven’t addressed the issues, according to the dossier.
- It blamed the state Pollution Control Board for not monitoring violations. Unless a central law makes states responsible for the safety of dams, authorities and regulation will continue to be weak, it added.
- Uncertainties, hazards and risks in Himalayan states, including Jammu and Kashmir and those in the North East, had environmental and financial implications. But no punitive or legal action has been taken.
- Decreasing costs of thermal energy and the subsidies for solar power has been eating into revenues of Himachal’s hydel sector for a few years now. Yet, in a decade, nearly 40 hydel projects were decided to be bailed out of bad loans worth Rs 16,000 crore in 2016-17. It was an opportunity to review policy and viability. A report by the Parliamentary Standing Committee on Energy, tabled in 2018, however “fails to look into the challenges faced by this sector,” according to the report.
- Presenting Himachal’s hydel power model as something to be followed by other was inappropriate, according to the dossier. There was no mention of environmental impacts and issues of disasters and safety in the report, it pointed out.
- While only projects up to 25 MW capacity were considered eligible for financial assistance and loans at lower interest rates, the committee proposed to recognise projects with capacity above 25 MW as renewable sources.
- The report called for a pause on the sector in the Himalayas to stop further devastation. “There needs to be a complete stop to freebies and subsidies to the hydropower sector based on the ‘green’ tagging,” it added.
- Construction activities perhaps accentuate the fragility of the new-fold mountains, according to the report. It underscored the need for investigation before undertaking underground component of civil work in hydel projects, including blasting.
- “A report of the state’s own disaster management cell says that around 10 mega hydropower stations are located in the medium and high-risk landslide area,” It pointed out.
- Visuals and testimonies from Himdhara Collective’s document of affected people from project sites in Kinnaur, Kullu and Chamba at Satluj, Beas and Ravi basins were presented. There were also case studies of the Parbati II, Karccham Wangtoo, Kashang and Bajoli Holi projects to show how landslides, drying up of springs, damages to houses, farms and forests have made the lives difficult.

- The document also referred to CAG reports to explain how costs had to be borne by affected people or are transferred to the public exchequer, in cases of unwelcome surprises. Costs that producers have been forced to bear have led to financial losses, bad loans and cumulatively a slump.
- As a solution, it has been suggested to commission an independent scientific review on the immediate or long-term implications of construction work for hydropower development in the Himalayas. Citizens' engagement, a strong public consent mechanisms and a grievance redressal can also help.
- Himachal has been at the forefront of hydel power, with 27 operational projects above 25 MW capacity each, totalling 9,755 MW. Eight more, totalling 1,855 MW, are under construction and 18 (5,218 MW) are in various stages of planning, Himdhara said.

18. Drought watch: More than 44% of India now suffers

- More than 44 per cent of India's areas were under various degrees of drought conditions (abnormally dry to exceptionally dry) as of June 10, 2019 – that is nearly 11 percentage point over a year ago, according to the Drought Early Warning System (DEWS).
- Within this, 'severe to exceptionally dry conditions' prevailed in 17.33 per cent area, according to the real-time drought monitoring platform. While just 0.65 per cent of area had 'exceptionally dry' conditions in June 2018, it has now jumped to 5.87 per cent, stated the latest data. Further, the delay in southwest monsoons has worsened the drought index, the DEWS reported.
- India has witnessed the second-driest pre-monsoon season in the last 65 years. The country received 99 millimeters (mm) rainfall between March and May – with 23 per cent below the normal rainfall during this time of the year –, showed the latest data from the India Meteorological Department (IMD).
- The deficit is prevalent across the country with south India having a deficit of 47 per cent, followed by northwest India (30 per cent), central India (18 per cent), and east and northeast (14 per cent).
- The month of June, which accounts for 18 per cent of rain, may end up with a deficit of 40 per cent in at least 66 districts across the country. The low rainfall would be difficult to make up for the deficit in coming months, it noted.
- According to the IMD, there is also a possibility of weaker monsoon in July. It could be a great cause of worry, as the month is crucial and receives one third of the total monsoon rains in the country.
- The sluggish pace of the south west monsoon has compounded the severe dry spell. As a result, at least 30 sub-divisions are likely to experience 'deficient' and 'largely deficient' monsoon season, the IMD said. Most of these are in Andhra Pradesh, Kerala, Madhya Pradesh, Maharashtra, Chhattisgarh, and the north eastern states. Only four sub-divisions in Karnataka, Gujarat, and Lakshadweep have witnessed 'normal' rainfall.
- Low rainfall has also contributed to a downward trend in water levels in at least 71 of 91 reservoirs across India, a recent bulletin by the Central Water Commission (CWC), has showed.
- The situation is particularly grim in the north-western region – in Gujarat and Maharashtra – and in the southern states of Kerala, Andhra Pradesh, and Tamil Nadu, it said.

19. A water clinic for elephants opens on the banks of the Yamuna

- India has opened its first specialised hydrotherapy treatment for elephants suffering from arthritis, joint pain and foot ailments near the Wildlife SOS' Elephant Conservation and Care Centre (ECCC), which currently houses 20 rescued elephants and is run in collaboration with the Uttar Pradesh Forest Department and the NGO Wildlife SOS.
- The new hydrotherapy jumbo pool is 11-foot-deep and has 21 high pressure jet sprays that create water pressure that massage the elephants' feet and body and help in increasing blood circulation.
✓Hydrotherapy is a form of physical therapy that uses the therapeutic benefits of water to perform physical rehabilitation in animals.
- It is India's first and fully equipped hospital dedicated to elephants in collaboration with Uttar Pradesh Forest Department. It as been established in Farah block of Mathura, complete with wireless digital X-Ray, laser treatment and dental X-ray facilities.
- **IUCN Status – Endangered.** It is under schedule I of the Indian Wildlife (Protection) Act, 1972 and in Appendix I of the Convention on International Trade in Endangered Species of Flora and Fauna (CITES).
- **Karnataka has the highest number of elephants followed by Assam and Kerala respectively.**

20. US EPA scraps Obama-era plan limiting coal emissions

- The United States Environmental Protection Agency's (EPA) new guidelines dilute the Barack Obama era Clean Power Plan (CPP) to cut carbon dioxide (CO₂) emissions from thermal power generators.
✓ American states will now get to set their own guidelines to keep in check emission from coal-fired power plants, according to the new Affordable Clean Energy rule.
✓ Existing coal-powered plants can now continue to operate as they were; they would not be forced to meet the regulations, the CNN reported on June 19, 2019.
- The US has been historically the biggest emitter of greenhouse gases that has led to climate change and still continues to be the second biggest emitter.

Why Affordable Clean Energy (ACE)?

- The CPP, that forced companies to switch to greener power sources, was opposed by a section for being restrictive — in line with President Donald Trump's much-publicised scepticism about global warming and climate change.
- Unlike the Clean Power Plan, ACE adheres to the Clean Air Act and gives states the regulatory certainty they need to continue to reduce emissions and provide a dependable, diverse supply of electricity that all Americans can afford.
- ACE would outpace CPP. The **CPP aimed to cut power sector emissions by 30 per cent below the 2005 levels by 2030. ACE boasts of being able to reduce CO₂ emissions “by as much as 35 per cent below 2005 levels”.**

21. Bihar bans tree-felling

- The Government of Bihar recently banned felling of trees, citing increasing pollution as well as a fatal heat wave. Trees on private land, however, can be felled in the absence of a tree-protection Act in Bihar.
- The current order was passed under the Forest Conservation Act. All permissions granted to cut trees for development works, have become null and void.

Reasons

- The order has cited increasing pollution in Patna, Gaya, Bhagalpur, Muzaffarpur and other cities in the state. Another reason was the severe heatwave, which killed 90 people in Gaya, Aurangabad and Nawada districts besides rendering many others sick.
- The government's decision could have been a reaction to the indiscriminate felling of big, old trees in Capital Patna during the last few years for the construction of roads and buildings.

Changes

- Anybody who would now want to remove a tree for any development project would have to translocate it. Engineers have been asked not to cut trees while building or expanding roads. The forest department has also expressed its displeasure over filling roots of trees with concrete on roads in various towns.

22. Ozone pollution in Delhi worse this summer than last: CSE

- People in Delhi faced more days with average ozone levels spiking over the national air quality limits in 2019 than last year, according to an analysis by Centre for Science and Environment (CSE). It is due to intense heat waves in this summer.
- The national capital witnessed 122 microgram per cubic metre (ug/cu m), of ozone pollution – which is 1.22 times higher than the eight-hour average standard. During 2018, it had gone up to 106 ug/cu m which is 1.1 times higher than the standard, the analysis showed.
- The eight-hour average standard for ozone exposure is 100 ug/cu m. Ozone – along with particulate matter – remained the dominant pollutant of the day for 28 days between April 1 and June 5. In comparison, the pollutant was the highest for 17 days in 2018.

Effect

- This is a matter of serious concern as **ozone is a highly reactive gas and can have immediate adverse effect on those suffering from asthma and respiratory conditions.**

Formation

- **Ozone is not directly emitted from any source. It gets formed when emissions from vehicles, industry or power plants – nitrogen oxide and volatile organic compounds – react in the air under the influence of sunlight and temperature.**
- To curb this, governments must –
 - ✓ Keep real world emissions from vehicles low and phase in electric mobility

- ✓ Scale up – massively – convenient, affordable and reliable public transport systems
- Initiate more pedestrian- and cycling-friendly, compact and accessible development
- Introduce city-wide parking management and pricing and low emissions zones to restrain use of personal vehicles
- Aggressively control industrial emissions

23. Among world's worst polluters, ASEAN vows to tackle ocean waste

- With Southeast Asia awash in rubbish, from plastic-choked whales to trash-clogged canals, leaders are planning to push through a deal to fight maritime debris at a regional meeting this weekend.
- Just **five Asian countries – China, Indonesia, the Philippines, Vietnam and Thailand – dump more than half of the eight million tonnes of plastic waste** that end up in oceans every year, according to a 2017 Ocean Conservancy report.
- The region has come under fire for not doing enough to tackle its mounting trash troubles, with single-use plastic and sub-par waste management adding to the problem.
- Leaders at a meeting of the Association of Southeast Asian Nations (ASEAN) are expected to sign a **“Bangkok Declaration” on fighting maritime waste** – a first of its kind – which promises to “prevent and significantly reduce marine debris,” according to a draft. But activists are worried the agreement doesn’t go far enough.
- If we are not reducing single-use plastic at the production process, this ‘Bangkok Declaration’ will not succeed.
- The **agreement also omits penalties for the worst offending companies or countries, and fails to specify measures to tackle the problem.**
- **In addition to spewing out billions of tonnes of trash, these nations are among the world’s top importers of trash from developed countries like the U.S. and Canada.**
 - ✓ Activists have urged countries to stop accepting rubbish, which can end up in landfills and waterways.
- Alarming images of polluted canals in the Philippines, plastic-laden Vietnamese beaches, or whales, turtles choking on plastic debris have grabbed global headlines.
 - ✓ Some private firms in Thailand and Vietnam have started replacing plastic products with recyclable materials, but government policies have yet to catch up.

24. Device to trap ocean plastic waste relaunches

- A floating device designed to catch plastic waste has been redeployed in a second attempt to clean up an **island of trash swirling in the Pacific Ocean between California and Hawaii.**

- Fitted with solar-powered lights, cameras, sensors and satellite antennas, the device intends to communicate its position at all times, allowing a support vessel to fish out the collected plastic every few months and transport it to dry land.
- The plastic barrier with a tapered 10-foot-deep (3-meter-deep) screen is intended to act like a coastline, trapping some of the 1.8 trillion pieces of plastic that scientists estimate are swirling in the patch while allowing marine life to safely swim beneath it.
- During its first run, the organization said marine biologists on board the support vessel did not observe any environmental impact.

25. Indian temple helps nurture 'extinct' turtle back to life

- An "extinct" species of turtle is being reintroduced to the wild after a small population was found flourishing in a pond at an Indian temple.
- The black soft shell turtle (*Nilssononia nigricans*) was declared extinct in the wild 17 years ago by the International Union for Conservation of Nature. However, in Hayagriva Madhav temple in Assam, these reptiles are believed to be a reincarnation of Hindu deity Vishnu and so they are protected.
- However, given their ritual nature, scientists are denied complete access to these ponds and hence have used the technique of extracting environmental DNA (eDNA) to confirm the presence of specific varieties.
 - ✓ In addition to *N. nigricans*, tests at the Nagshankar temple pond in Assam have confirmed the presence of two more species — *Nilssononia gangetica* or Indian soft-shell turtle, classified as Vulnerable, and *Chitra indica* or South Asian narrow-headed soft shell turtle, listed as Endangered by the IUCN.
- Environmental DNA or eDNA is DNA that is collected from a variety of environmental samples such as soil, seawater, snow or even air rather than directly sampled from an individual organism.
 - ✓ As various organisms interact with the environment, DNA is expelled and accumulates in their surroundings.
 - ✓ Example sources of eDNA include, but are not limited to, faeces, mucus, gametes, shed skin, carcasses and hair
- India hosts 28 species of turtles, of which 20 are found in Assam. But consumption of turtle meat and eggs, silt mining, encroachment of wetlands and change in flooding pattern have had a disastrous impact on the State's turtle population. 70% of the species found in Assam are threatened with extinction.
- The temple ponds have more turtles than they can sustain and lack egg laying space because of so-called beautification of these ponds with concrete boundary. Besides, temple turtles are fed non-natural food such as bread and wheat balls, which alters their biology.



26. Joint effort to conserve wildlife at Bandipur

- National Tiger Conservation Authority (NTCA) has convened an inter-state meeting of senior forest personnel from Karnataka, Tamil Nadu and Kerala at Bandipur in Karnataka.

- It discussed various issues, including the invasion of invasive plants in the forest areas, steps being adopted by the authorities to vulture conservation, movement of radio collared higher mammals such as tiger and elephants and various measures to be adopted to mitigate man-animal conflict in the region.
- The meeting decided to intensify joint efforts to eradicate invasive plants such as Senna Spectabilis which caused major threat to the wildlife habitat in the Nilgiri Biosphere Reserve.
- Standard operating procedure of the NTCA, such as joint patrolling, share enforcement-related information and monthly meeting of senior forest officials of borders areas of tiger reserves and protected areas, would be executed effectively for the conservation of big cats.
- Joint conservation measures with public participation would be executed to mitigate increasing human-wildlife conflict on the forest fringes of the region. As part of it, information regarding radio collared animals and their movements would be exchanged among the department staff.
- Joint actions would be taken to douse forest fire and information on such incidents would be handed over to the officials in the adjacent sanctuaries and tiger reserves.
- Information on accused in forest cases would also be exchanged each other to avert wildlife-related crimes.

27. Himalayan glaciers are melting twice as fast since 2000: study

- Comparing data obtained by Cold War-era spy satellites with images from modern stereo satellites, scientists have shown that **Himalayan glaciers have lost more than a quarter of their ice mass since 1975**, with melting occurring twice as fast after the turn of the century as average temperatures rose.
- In the 1970s, at the height of the Cold War, the U.S. had deployed spy satellites that orbited the globe and took thousands of photographs, using a telescopic camera system, for reconnaissance purposes. Film recovery capsules would be ejected from the KH-9 Hexagon military satellites and parachuted back to Earth over the Pacific Ocean.
- More than four decades later, scientists are using those same images to show the devastating impact of a warming earth on the Himalayan glaciers.
- The overlapping images, each covering 30,000 square kilometres with a ground resolution of six to nine metres, have been pieced together to form digital elevation models of the Himalayas of that era.
- The observed annual mass losses suggest that of the total ice mass present in 1975, **about 87% remained in 2000 and 72% remained in 2016. Similar mass loss rates across subregions and a doubling of the average rate of loss during 2000–2016 relative to the 1975–2000 interval have been noticed.**
- The study goes on to assert that **rising temperatures are responsible for the accelerating loss.**
- “This is consistent with the available multidecade weather station records scattered throughout HMA [High Mountain Asia, which includes all mountain ranges surrounding the Tibetan Plateau] which indicate quasi-steady mean annual air temperatures through the 1960s to the 1980s with a

prominent warming trend beginning in the mid-1990s and continuing into the 21st century, noting an average increase of 1° celsius since 2000.

28. Climate change affects major crops in India: Study

- Yields from rice, India's main crop, experience larger declines during extreme weather conditions.
- India's grain production is vulnerable to climate change, say scientist who have found that the yield of the country's rice crop can significantly decline during extreme weather conditions.
- Researchers from Columbia University in the US studied the effects of climate on five major crops in India: finger millet, maize, pearl millet, sorghum and rice.
 - ✓ These crops make up the vast majority of grain production during the June-to-September monsoon season -- India's main grain production period -- with rice contributing three-quarters of the supply for the season.
 - ✓ Taken together, the five grains are essential for meeting India's nutritional needs, researchers said.
- The study, published in the journal Environmental Research Letters, found that the yields from grains such as millet, sorghum, and maize are more resilient to extreme weather. Their yields vary significantly less due to year-to-year changes in climate and generally experience smaller declines during droughts. However, yields from rice,
- India's main crop, experience larger declines during extreme weather conditions.
- By relying more and more on a single crop -- rice -- India's food supply is potentially vulnerable to the effects of varying climate. Expanding the area planted with these four alternative grains can reduce variations in Indian grain production caused by extreme climate, especially in the many places where their yields are comparable to rice.
 - ✓ Doing so will mean that the food supply for the country's massive and growing population is less in jeopardy during times of drought or extreme weather. Temperatures and rainfall amounts in India vary from year to year and influence the amount of crops that farmers can produce.
- With episodes of extreme climate such as droughts and storms becoming more frequent, it is essential to find ways to protect India's crop production from these shocks.
- The team combined historical data on crop yields, temperature, and rainfall. Data on the yields of each crop came from state agricultural ministries across India and covered 46 years (1966-2011) and 593 of India's 707 districts.
- The researchers also used modelled data on temperature and precipitation. Using these climate variables as predictors of yield, they then employed a modelling approach to estimate whether there was a significant relationship between year-to-year variations in climate and crop yields.
 - ✓ This study shows that **diversifying the crops that a country grows can be an effective way to adapt its food-production systems to the growing influence of climate change.**
 - ✓ And it adds to the evidence that **increasing the production of alternative grains in India can offer benefits for improving nutrition, for saving water, and for reducing energy demand and greenhouse gas emissions from agriculture.**

29. Climate change can trip small island states enroute SDGs: UN

- Many small island developing states (SIDS) may fail to achieve several Sustainable Development Goals by 2030 because of increasing population and climate change risks, according to the United Nation's report on World Population Prospects 2019.
- While population growth is keeping all least developing nations from meeting the goals, the problem is compounded by climate change in SIDS. Several SIDS, including Comoros, Guinea-Bissau, Sao Tome and Principe, the Solomon Islands and Vanuatu, are experiencing a sharper population growth than they can handle, read the UN report.
- The challenge is bigger for these small countries because of their vulnerability to climate change, climate variability and sea-level rise.
- They have **higher population growth rate than the global average**. While Comoros' population grows 2.3 per cent per year, the global growth rate is 1.07 per cent, the report highlighted. Similarly, Solomon Island's population growth rate is 2 per cent, Sao Tome and Principe's is 2.2 per cent and Guinea-Bissau's population is increasing by 2.5 per cent every year.
- The total population of these countries is only 71 million, but growing fast: said to increase to 78 million by 2030 and 87 million by 2050, added the report.
- **SIDS are a group of small island countries that tend to share similar sustainable development challenges, including small but growing populations, limited resources, remoteness, susceptibility to natural disasters, vulnerability to external shocks, excessive dependence on international trade, and fragile environments.**
- Climate change affects the development of all nations, regardless of location or size of economy.
 - ✓ Yet, no other group of nations is as vulnerable to its devastating effects as the SIDS, according to the United Nations Development Programme.
 - ✓ **One-third of the entire population of SIDS lives on lands that are less than five metres below the sea level.**
 - ✓ This makes them highly vulnerable to sea-level rise, storm surge and coastal destruction.
- These countries **contribute to only 1 per cent of global greenhouse gas emissions**, and yet are among the first to experience the worst impacts of climate change, the UNDP added.
- Agricultural production, fisheries, and related sectors are declining as the climate changes, threatening livelihoods and economic growth.
 - ✓ In addition, extreme weather spawned by climate change is destroying SIDS land, real estate and infrastructure, with economically catastrophic effects, highlighted UN Environment Programme in a report.
- Tourism forms the foundation of many SIDS economies, and the impact that climate change is having and will have on the tourism industry is undeniable. Tourists are also discouraged from travelling to SIDS in the fear of violent and life-threatening storms.

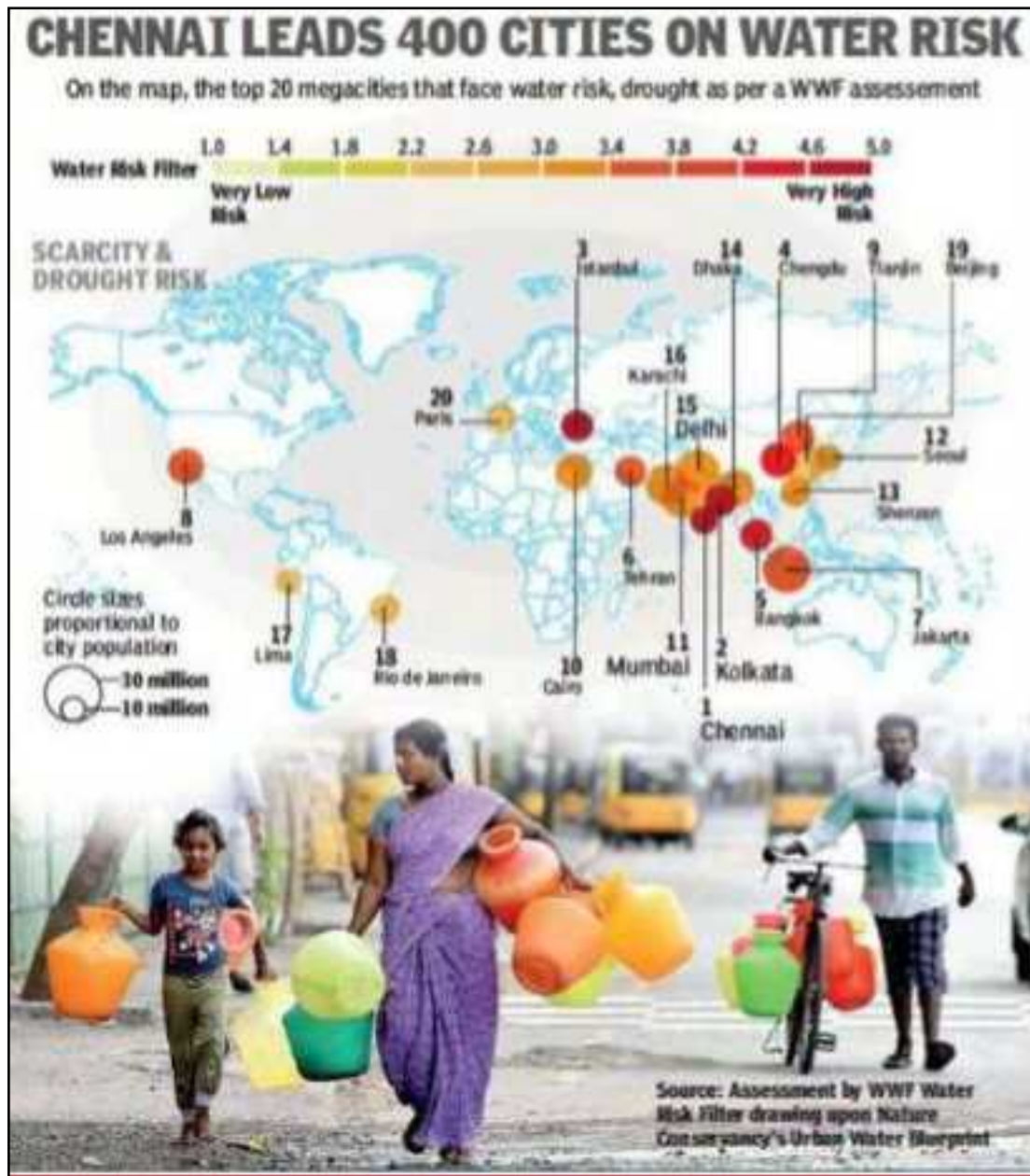
SIDS

- Small Island Developing States (SIDS) are a group of small island countries that tend to share similar sustainable development challenges, including small but growing populations, limited resources, remoteness, susceptibility to natural disasters, vulnerability to external shocks, excessive dependence on international trade, and fragile environments.
- The SIDS were **first recognized as a distinct group of developing countries at the United Nations Conference on Environment and Development in June 1992.**
- The **Barbados Programme of Action** was produced in 1994 to assist the SIDS in their sustainable development efforts. The United Nations Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States (UN-OHRLLS) represents this group of states.
- Currently, the **United Nations Department of Economic and Social Affairs** lists **57 small island developing states**. These are broken down into three geographic regions –
 - ✓The Caribbean
 - ✓The Pacific
 - ✓ Africa, Indian Ocean, Mediterranean and South China Sea (AIMS)

30. Four from India in top 20 water vulnerable megacities

- Four Indian cities, Chennai, Kolkata, Mumbai and Delhi have been ranked among the top 20 megacities in the world facing high levels of water scarcity
- A study by World Wildlife Fund (WWF) evaluated 400 cities globally in 2018 with focus on megacities facing high combined levels of water scarcity – recent and projected drought.
- Chennai has emerged in top position as the city facing the most severe water scarcity and drought in the world. Kolkata has been ranked at number 2, Mumbai at 11 and Delhi at 15.
- Large cities, mostly located along the banks of large rivers, are vulnerable to water scarcity because of the vastly over-allocated and mismanaged river-systems.
 - ✓ Frequent droughts and flooding due to climate change and depleting levels of water in the reservoirs are some of the reasons behind the water crisis in these megacities.
 - ✓ Loss of wetlands is a key reason.
- Reports have noted that the world has lost 35% of its wetlands since 1970 and is losing them three times faster than forests.
- Wetlands are key. Over half of Kolkata's waste water once drained into the East Kolkata Wetlands without any need to treat the sewage.
- But as the wetlands shrink, the city, activists have time and again cited, loses its natural waste water tank, and in the absence of enough sewage treatment plants, the waste water goes straight into the river.

- ✓ A Ramsar protected site, the EKW was such an efficient system of canals and ponds that treated the city's waste water that the sewage treatment plants were not sanctioned here under the Ganga Action Plan.



31. 316 out of 651 protected areas under final ESZ notification: Environment Ministry

- Over 30% of India's protected area has been covered under the final ecologically sensitive zone (ESZ) notification, the Environment Ministry informed the Lok Sabha. As on June 25, 2019, final ESZ notifications covering 316 protected areas (PAs) and draft ESZ notification covering 199 protected areas have been published by the ministry.
- According to the ministry, out of the 651 Protected Areas (PAs) in India, 316 have been covered under the final ESZ notification which provides for **prohibition of mining, stone quarrying and crushing units located within one k.m. of such protected areas**. In the absence of the notification, an area of

10 k.m. around the PAs is considered 'default ESZ' according to the directions of the Supreme Court, it said.

- The ESZ notifications are issued under the Environment (Protection) Act, 1986 and Environment (Protection) Rules 1986.

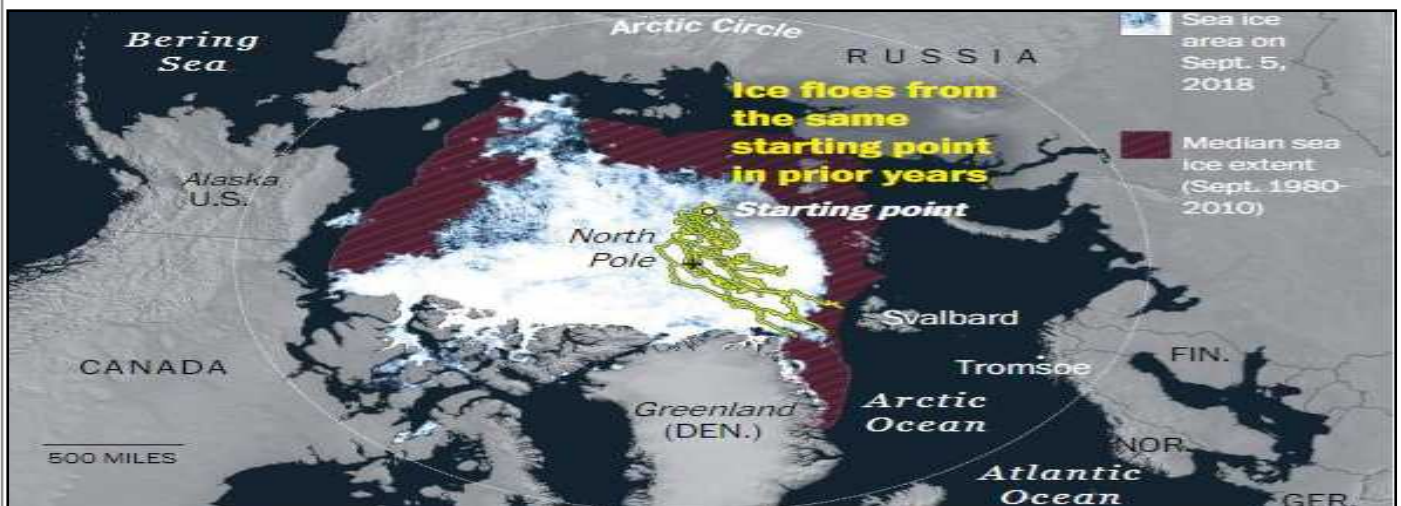
ESZ

- Eco-Sensitive Zones or Ecologically Fragile Areas are **areas within 10 kms around Protected Areas, National Parks and Wildlife Sanctuaries.**
- The **National Wildlife Action Plan (2002–2016)** of the Ministry of Environment, Forest and Climate Change (MoEFCC) stipulated that state governments should declare land falling within 10 km of the boundaries of national parks and wildlife sanctuaries as eco fragile zones or ESZs under the Environmental (Protection) Act, 1986.
- The purpose of the ESZ was to provide more protection to the parks by acting as a **shock absorber or transition zone.**
- ESZs are notified by MoEFCC, Government of India under Environment Protection Act 1986. **The Environment (Protection) Act, 1986 does not mention the word “Eco-Sensitive Zones”.** However, Section 3(2)(v) of the Act, says that Central Government can restrict areas in which any industries, operations or processes or class of industries, operations or processes shall not be carried out or shall be carried out subject to certain safeguards.
- In case of places with sensitive corridors, connectivity and ecologically important patches, crucial for landscape linkage, even area beyond 10 km width can also be included in the eco-sensitive zone. Further, even in the context of a particular Protected Area, the distribution of an area of ESZ and the **extent of regulation may not be uniform all around and it could be of variable width and extent**
- The purpose of declaring ESZs is to create some kind of “shock absorbers” to the protected areas by regulating and managing the activities around such areas. They also act as a transition zone from areas of high protection to areas involving lesser protection. They help to regulate certain activities around National Parks and Wildlife Sanctuaries so as to minimise the negative impacts of such activities on the fragile ecosystem encompassing the protected areas.

32. Mosaic mission

- It stands for **Multidisciplinary drifting Observatory for the Study of Arctic Climate**, comes about 125 years after Norwegian explorer Fridtjof Nansen first managed to seal his wooden expedition ship, Fram, into the ice during a three year expedition to the North Pole.
- Scientists now believe that the **cold cap that forms each year is key to regulating weather patterns across the Northern Hemisphere.** The dramatic warming of the Arctic doesn't stay in the Arctic.
- The German icebreaker RV Polarstern, a hulking ship will set out for the Arctic packed with supplies and scientific equipment for a year-long mission to explore the planet's frigid far north. The icebreaker will be the base for scientists from 17 nations studying the impact of climate change on the Arctic and how it could affect the rest of the world.

- The team will embark on the \$158 million expedition in September, and will anchor the German icebreaker RV Polarstern to a large piece of ice in the Arctic Ocean and wait for the sea to freeze around them. After trapping themselves in the thick ice, they will brave the dropping temperatures as they hurry to build temporary winter research camps on the ice and carry out experiments as the ice drifts towards the North Pole, allowing them to perform tests that wouldn't be possible at other times of the year or by satellite sensing.
- The ship will be packed with supplies and scientific equipment, but the team will be isolated, with any emergency evacuation almost impossible. Temperatures can drop to -50°C (-58°F), and the polar night, when the Sun doesn't rise over the horizon, will last 150 days. The team plans to build a fence around their camps that will sound an alarm if any polar bears come too close, and at least six people will be assigned to polar bear watch.
- The organizers say that the project is unprecedented in scale and ambition.
- Scientists from United States, China, Russia and other countries will be rotating every two months as other icebreakers bring fresh supplies.
- By combining measurements on the ice with data collected from satellites, scientists hope to improve the increasingly sophisticated computer models for weather and climate predictions. In the end the visual, the manual observation and also the measurement, is also needed. The mission has received funding from U.S. institutions such as the National Science Foundation, the Department of Energy, the National Oceanic and Atmospheric Administration, and NASA.
- It hopes to enhance understanding of Arctic climate change and its global implications, and lead to safer maritime and offshore operations and better informed policy development.



33. Alarm sounded over the shrinking of frigid zones


- The sea ice extent — a measure of the surface area of the ocean covered by ice — in both the Arctic and Antarctic has shrunk, proving right climate scientists' warnings about the effect of global warming on the world's frigid zones, according to new data released by scientific agencies.
- Arctic sea ice extent in June was second lowest on record; the lowest was recorded in June 2016. Arctic sea ice extent in June averaged 10.53 million square kilometres, which is 1.23 million square kilometres below the 1981 to 2010 average and 120,000 square kilometres above the previous record in 2016, the US National Snow and Ice Data Center said in a study released recently.

- Climate scientists have been warning of an increase in the frequency of extreme weather events, increased variability and instability of climatic patterns because of global warming.
- The Snow and Ice Data Center also said the sea surface temperatures (SSTs) in the open waters of the Arctic have been unusually high, up to 5 degrees Celsius above average in the Chukchi Sea, a marginal area of the Arctic Ocean.
- And the World Meteorological Organization (WMO), in a statement said the Antarctic sea ice extent was the smallest on record, and Arctic sea ice extent was the second smallest on record in May.
- A new study published in the Proceedings of the National Academy of Sciences (PNAS) by the Cryospheric Sciences Laboratory at the NASA Goddard Space Flight Center on July 1 also red-flagged massive sea ice loss in the Antarctic.
- Satellite observations of Antarctic sea ice coverage since the late 1970s have revealed that after a gradual increase in the Antarctic sea ice over decades until 2014, the trend suddenly reversed completely in the 2014- 2017 period. During 2014-2017, the rate of sea ice loss in the Antarctic far exceeded those recorded for the Arctic.
- “Since then (2014), the decreases have been so great that the yearly averages for 2017 and 2018 are the lowest in the entire 1979–2018 record, essentially wiping out the 35 years of overall ice extent increases in just a few years,” the study by PNAS warned.
- The Snow and Ice Data Center at the University of Colorado also said sea ice surrounding Antarctica was at the lowest mean monthly extent for June, surpassing 2002 and 2017. “While the recent decline is noteworthy, trends in Antarctic sea ice extent over the continuous satellite record since late 1978 remain slightly positive,” it said.
- “Arctic warming and attendant sea ice decline have far reaching consequences for the climate of the Northern Hemisphere. The westerly flowing air that comprises the jet stream is getting wavier with Arctic warming, a wavier jet stream leads to greater persistence in seasonal patterns and an increased frequency of extreme events resulting in increased variability and instability in climate,” the paper said.
- The paper referred to the Intergovernmental Panel on Climate Change (IPCC) models which suggest that Arctic warming will increase significantly, yielding a nearly year-round ice free Arctic Ocean by the end of the 21st century with a mean annual Arctic temperature rise of up to 8 degrees C and Arctic summer temperatures close to two times the present ones.
- WMO, in its statement, also said the four warmest years on record were in the past four years and we are on track for 2015-2019 to be the warmest five years on record. The warming trend continues unabated so far in 2019 and the months January to May were the third warmest such period on record.”

34. Winged wonder: Tamil Yeoman declared state butterfly of Tamil Nadu

- Tamil Yeoman (*Cirrochroa thais*), a butterfly species **endemic to Western Ghats**, has been declared as the state butterfly of Tamil Nadu.

- The tawny-coloured creature with a dark brown outer ring is among the 32 butterfly species found in Western Ghats. Also known as Tamil Maravan, which means warrior, these butterflies could be found mainly in hilly areas.
- After shortlisting two species - Tamil Yeoman and Tamil Lacewing, it finally plumped for the former.
- The expert team said that both species were unique in their own ways. Tamil Lacewing butterfly is very rare and difficult to sight. This is unlike Tamil Yeoman which may be equally rare but can be found in groups in large numbers at a few places. This may have prompted the government to prefer Tamil Yeoman.
- **Tamil Nadu has become the fifth state in the country to announce its state butterfly. Maharashtra was the first to declare Blue Mormon as its state butterfly, followed by Uttarakhand (Common peacock), Karnataka (Southern bird wings) and Kerala (Malabar banded peacock).** While the butterfly becomes the pride of the state after such a declaration, the decision also helps conserve its ecosystem and paves the way for eco-tourism. People also recognize the importance of butterflies which subsequently helps in its conservation. There are a total of 32 butterfly hotspots in Tamil Nadu.
- The state had declared its various other icons earlier, like state animal (Nilgiri Tahr), state bird (Emerald Dove), state tree (palm tree), state flower (Gloriosa) and state fruit (jack fruit).

SPECIAL STATUS			OTHER RECOGNIZED SPECIES IN TN
TIDBITS ABOUT TAMIL YEOMAN BUTTERFLY SPECIES			
Habitat Endemic to Western Ghats. They occur in moist deciduous, evergreen forests and along streams	Larva They lay eggs in vertical chains of 8-10. Larva initially stay in group, below the leaf and often in shady areas. They eat edges of soft tender leaves		➤ State Animal Nilgiri Tahr
Size 60-75 mm	No. of butterfly hotspots in TN 32		➤ State bird Emerald Dove
Habit Fast, straight flight with few wing beats and long glide		Scientific name Cirrochroa thais	➤ State tree Palm
			➤ State flower Gloriosa
			➤ State fruit Jackfruit

35. Jal Shakti Abhiyan

- The Jal Shakti Abhiyan, launched by the Union Jal Shakti Minister has begun from 1st July, 2019. The Jal Shakti Abhiyan is a campaign for water conservation and water security in the country.
- The campaign will run through citizen participation in two phases, firstly, during the monsoon season, from 1st July, 2019 to 15th September, 2019 and then from 1st October, 2019 to 30th November, 2019 for states receiving the North East retreating monsoons.
- The focus of the campaign is on water stressed districts and blocks.
- It is a collaborative effort of various ministries of the Government of India and state governments, being coordinated by the Department of Drinking Water and Sanitation (DDWS) that comes under the Jal Shakti Ministry.

- The teams of officers from the central government will visit and work with district administration in 1592 water stressed blocks in 256 districts, to ensure five important water conservation interventions.
 - ✓ Water conservation and rainwater harvesting,
 - ✓ Renovation of traditional and other water bodies/tanks,
 - ✓ Reuse of water and recharging of structures,
 - ✓ Watershed development and
 - ✓ Intensive afforestation.
- The water conservation interventions will also be supplemented with special interventions including the development of block and district water conservation plans, promotion of efficient water use for irrigation and **better choice of crops through Krishi Vigyan Kendras.**

36. Environment Ministry plans to use immunocontraceptives for wildlife population management

- The Ministry of Environment, Forest and Climate Change (MOEFCC) has launched a project for undertaking **'immuno contraceptive measures' for population management of four species of wild animals – elephant, wild boar, monkey and blue bull (Nilgai).**
- Wildlife Institute of India (WII) and National the Institute of Immunology (NII) are developing a protocol of immune contraception. (**Immuno contraception is a birth control method that uses the body's immune response to prevent pregnancy.**)
- Immuno contraception is a technology that uses a female animal's immune system to **build a protein around the egg that prevents it from fertilising.**
- The **pilot project will begin in Uttarakhand** and then implemented in rest of the country.
- The birth-control method has been tried in Africa in areas like the Kruger National Park but added that the implementation of such a project in India will not be a simple task. It will involve multidisciplinary effort over a long period of time.
- It depends on the goal, whether one wants to completely seize reproduction in a population or you want to delay reproduction so that the population growth rate comes down. So that instead of an elephant producing a calf every three or four years you want the elephant to produce a calf in seven or eight years. That requires mathematical modelling and knowing the adult female population in the group that has to be delivered the vaccine. After developing the technology, the test will be to deliver the contraceptive and the logistics around it. In Africa the system has worked in private reserves with a relatively small elephant population, where every individual can be easily identified.

37. Honour for 'Plan Bee' that helped save jumbos

- Plan Bee, an amplifying system imitating the buzz of a swarm of honey bees to keep wild elephants away from railway tracks, has earned the Northeast Frontier Railway (NFR) the best innovation award in Indian Railways for the 2018-19 fiscal.

- There are 29 earmarked elephant corridors with the operating zone of NFR spread across the north-eastern states and parts of Bihar and West Bengal. Trains are required to slow down at these corridors and adhere to speed specified on signs. But elephants have ventured into the path of trains even in non-corridor areas, often leading to accidents resulting in elephant deaths. The desperation to find an “elephant repellent” was triggered by 67 pachyderms being knocked down by trains from 2013 to June 2019. Most of these cases were reported from Assam and northern West Bengal.
- A device was designed to generate the amplified sound of honey bees audible from 700-800 metres. The first instrument was installed at a level crossing west of Guwahati on a track adjoining the Rani Reserve Forest, an elephant habitat. NFR now has 46 such devices installed at vulnerable points.
- NFR officials said that a mix of Plan Bee and other measures have helped them save 1,014 elephants from 2014 to June 2019.

38. Bengal port records country's highest sea level rise in 50 years

- Of the major ports in India, **Diamond Harbour in West Bengal located at the mouth of river Hooghly has recorded the maximum sea level increase**, according to data by the Ministry of Earth Sciences.
- While recent studies reveal that sea level rise in the country has been estimated to be 1.3 mm/year along India's coasts during the last 4050 years, at **Diamond Harbour the rise was almost five times higher at 5.16 mm per year**.
- The mean sea level rise for Diamond Harbour was based on recordings over the period from 1948 to 2005. This is **followed by Kandla port in Gujarat** where the sea level rise was 3.18 (1950 to 2005) , **followed by Haldia in West Bengal**, which recorded a sea level rise of 2.89 mm a year (1972 to 2005). **Port Blair** also recorded a sea level rise of 2.20 mm per year (1916-1964).
- Sea level rise is said be linked with global warming and as per the fifth assessment report of the International Panel on Climate Change, the global sea level was rising at an average rate of 1.8 mm per year over the last century. Going by the data from the Ministry of Earth Sciences, four ports, Diamond Harbour, Kandla, Haldia and Port Blair recorded a higher sea level rise than the global average. **Chennai and Mumbai, recorded a sea level rise far below the global and the national averages** at 0.33 mm per year (1916-2005) and 0.74 mm (1878-2005) respectively.
- **Studies over Indian region have shown a warming trend of 0.6°C** on all India average basis, mainly contributed by maximum temperatures, the ministry said.
- **The sea level rise is higher in West Bengal, particularly in the Sunderbans delta is because of the deltaic sediment deposition as a result of the mixing of fresh water and saline water**, according to experts.

Effects

- Rising sea levels can exacerbate the impacts of coastal hazards such as storm surge, tsunami, coastal floods, high waves and coastal erosion in the low lying coastal areas in addition to causing gradual loss of coastal land to sea.

- Ministry of Earth Sciences explained that global warming not only causes melting of ice and glaciers, but also leads to internal expansion of water in oceans and thus a rise in the sea level. On results of studies on the impact of global warming, the ministry said **heavy rainfall and temperature extremes like heat waves and shifts in semiarid regions were some of the recent findings which may have linkages with climate change and global warming.**

39. India's first elephant rehabilitation centre in the works at Kerala's Kottor

- The Kerala government is working to set up the country's first elephant rehabilitation centre in Kottor, an ecotourism village near the state capital Thiruvananthapuram. The first phase of the Rs 105 crore-project was launched last month.
- The centre, expected to have an elephant museum, mahout training centre, super-specialty hospital, a retirement home and crematorium for the animals, will house orphaned, injured and older elephants. It is being planned on the lines of the Pinnawala Elephant Orphanage in Sri Lanka.
- Besides giving best care and protection to orphaned and abandoned elephants, it will also give an opportunity for people to know more about elephants. They can understand their behavior and life pattern from a close range.
- The forest department also plans to admit captive elephants. According to the last elephant census, the state has 507 captive elephants. Once operational, the centre, spread over 65 hectares of natural forests, will also start an elephant safari and other activities to attract tourists.
- The centre will also have a training centre for mahouts along with a residential facility for them. There are no authorised training schools for mahouts in the country leading to ill-treatment of animals.

40. A Japanese touch to Telangana green drive

- Having been entrusted with the huge task of planting around 3.29 crore saplings under the fifth phase of the Telanganaku Haritha Haaram (TKHH) in the district, the Forest department has introduced the famous Japanese "Miyawaki" method of afforestation in the Velugumatla urban park here on a pilot basis to supplement the green drive.
- The Forest department has drawn up a plan to harness the popular technique, developed by Japanese botanist Akira Miyawaki, to grow urban forests and expand the district's green cover as well as to meet the stipulated plantation target under the TKHH, sources said.
- **Miyawaki method originated in Japan, and is now increasingly adopted in other parts of the world. It has revolutionised the concept of urban afforestation by turning backyards into mini-forests.** Using this, it's possible to grow a variety of native species in as little a space as 600 sq.ft. **(divided into four layers — shrub, sub-tree, tree, and canopy).**
- The advantage of Miyawaki method is that the saplings need minimum maintenance. By promoting natural vegetation on land destroyed by natural calamities and man-induced mistakes, Miyawaki managed to raise mini forests along the coastline of Japan.

41. CPCB pulls up 52 firms over handling of waste

- The Central Pollution Control Board (CPCB) has pulled up 52 companies — including Amazon, Flipkart, Danone Foods and Beverages and Patanjali Ayurveda Limited — for not specifying a timeline or a plan to collect the plastic waste that results from their business activities.
- The **Plastic Waste Management Rules, 2016, (which was amended in 2018)** prescribed by the **Union Environment Ministry**, says that companies that use plastic in their processes — **packaging and production** — have a responsibility to ensure that any resulting plastic waste is safely disposed of.
- Under this system called the **Extended Producers Responsibility (EPR)** companies have to specify collection targets as well as a time-line for this process within a year of the rules coming into effect on March 2016. The plastic waste can be collected by the company or outsourced to an intermediary. The Rules also mandate the responsibilities of local bodies, gram panchayats, waste generators and retailers to manage such waste.
- A notice posted on the website of the Central Pollution Control Board, a Ministry body, said these 52 companies hadn't yet registered at the online portal and disclosed their disposal plans. The actions taken can include fines or imprisonment under provisions of the Environment Protection Act.
- The companies were to have registered more than a year ago.
- In spite of these laws, India has made little progress in managing its plastic waste. According to Central Pollution Control Board (CPCB) estimates in 2015, Indian cities generate about 15,000 tonnes of plastic waste per day and about 70 per cent of the plastic produced in the country ends up as waste. **Nearly 40 per cent of India's plastic waste is neither collected nor recycled and ends up polluting the land and water.**
- Plastic packaging has been singled out as one of the key contributors to plastic waste though there isn't any number on its relative contribution. However like the companies, states too have come in the CPCB's firing line.
- The National Green Tribunal earlier this year hauled up 25 states and union territories for not following its orders on submitting a plan by April 30, 2019, on how they would comply with the Plastic Waste Management Rules of 2016. They stand to potentially pay a fine of Rs 1 crore.

42. Plan for district environment impact assessment panels under fire

- State-level officers tasked with environmental assessment have objected to several clauses in a draft law that proposes the creation of district-level environment impact assessment authorities. The objections point to the fact that these authorities may have a conflict of interest and may not be technically competent.
- The proposed Environment Impact Assessment Notification, 2019, makes the **District Magistrate (DM) the chairperson of an expert authority, or the District Environment Impact Assessment Authority (DEIAA)**, that will accord environment clearance for "minor" mining projects. Minor mining broadly refers to sand and stone mining in plots smaller than 25 hectares.

- The EIA 2019 aims to be an update of the EIA 2006. This document prescribes the environment clearance process whereby **developers of infrastructure projects that have the potential to significantly alter or impact forests, river basins or other ecologically sensitive regions seek permission from the Union Ministry of Environment and Forests (MoEF) and experts appointed by it.**
- While expert committees constituted by the MoEF appraise projects, those below a certain size are appraised by State-level authorities called the State Environment Impact Assessment Authority (SEIAA). On March 2016, the **Ministry further delegated the authority to grant clearances for up to five hectares of individual mining lease of minor minerals and 25 hectares in clusters, to the DEIAA.**
- Several provisions in the EIA 2006 over the years have been challenged in the National Green Tribunal (NGT) and led to the MoEF modifying rules. The EIA 2019 aims to be an update that accommodates all these revisions.
- So far the EIA 2019 that has been circulated to States is a 'zero draft' meaning that it is at a stage where comments are being sought from State authorities after which the draft will be modified and then further opened to public comments.

Issues

- The **District Magistrate (DM) in the State is also the 'District Mining officer' who is tasked with executing mining licence deeds.** These officers usually had a "target" to collect revenues from mining activities. Making the DM the chairman (of the DEIAA) would be self serving for grant of environmental clearance. The DM doesn't have technical expertise in matters of environment and ecology.
- The 2016 rule that allows the appointment of DM as chairman has already been stayed by the NGT in December 2018 but has still inveigled itself into the draft. The MoEF has also challenged the NGT stay in the Supreme Court.

43. Mediterranean Sharks Face Risk Of 'Disappearing'

- The World Wide Fund for Nature has released a report highlighting the risks to Sharks in the Mediterranean region on the occasion of Shark Awareness Day which is observed on July 14th every year.



- Sharks — the sea's top predators for millions of years — are at risk of disappearing from the Mediterranean as overfishing and plastic pollution choke populations of the endangered hunters, conservationists have warned.
- The World Wildlife Fund (WWF) said that more than half of shark and ray species in the Mediterranean were under threat, and that almost a third of them have been fished to the brink of extinction.
- Its report, released ahead of Shark Awareness Day, singled out **Libya and Tunisia as the worst culprits, with each country's fishery hauling in about 4,200 tonnes of sharks a year — three times that of the next biggest Mediterranean fisher, Italy.** While some species are targeted for food, many of the sharks fished in the Mediterranean are bycatch caught up in nets set for other fish. In addition, the explosion of plastic pollution is endangering shark populations, either through the animals ingesting or becoming enmeshed in refuse items.
- Theme for the year 2019 is "The sharks in crisis: a call to action for the Mediterranean."

44. Tourists Can Cause Stress To Tigers, Says CCMB Study

- A study conducted by the Centre for Cellular and Molecular Biology (CCMB)'s Laboratory for Conservation of Endangered Species (LaCONES) revealed tourism-induced stress in tigers in two major tiger reserves in the country.
- Published in Conservation Physiology, the study examined the relationship between anthropogenic disturbance (pollution due to human activity) and physiological stress levels among two tiger populations in central India in **Bandhavgarh (BTR) and Kanha Tiger Reserve (KTR) in Madhya Pradesh.**
- Researchers assessed concentrations of **faecal glucocorticoid metabolite (fGCM) – a marker of stress in individual tigers. Chronically elevated glucocorticoid levels can negatively impact growth, reproductive success, immunity and cause muscular atrophy.**
- A significant **correlation was also found between fGCM concentrations and the number of vehicles/ disturbance level in these tiger reserves.**
- The study suggests that —unsustainable wildlife tourism causes distinct physiological stress in tigers in protected areas. Previous studies from the same research group had shown that **newly-introduced tigers in Sariska Tiger Reserve, Rajasthan, had failed to reproduce effectively,** presumably due to high levels of stress caused by high anthropogenic disturbance.
- The study recommends a strict regulation of vehicular traffic, the number of tourist vehicles, shifting of artificial waterholes away from tourist roads and reducing other anthropogenic disturbances, including relocation of villages from the core area of tiger reserves.

45. India Is Home To 1,256 Species Of Orchid, Says First Comprehensive Survey

- The Botanical Survey of India has come up with the first comprehensive census of orchids of India putting the total number of orchid species to 1,256. Orchids of India : A Pictorial Guide, a publication detailing all the species of India was unveiled earlier this month by the Ministry of Environment, Forest and Climate Change. A State-wise distribution of orchid species point out that the Himalayas, North-East parts of the country and Western Ghats are the hot-spots of the beautiful plant species.
- The **highest number of orchid species is recorded from Arunachal Pradesh** with 612 species, followed by Sikkim 560 species and West Bengal; Darjeeling Himalayas have also high species concentration, with 479 species.
- While **north-east India rank at the top in species concentration, the Western Ghats have high endemism of orchids.**
- There are 388 species of orchids, which are endemic to India of which about one-third (128) endemic species are found in Western Ghats. The publication points out that Kerala has 111 of these endemic species while Tamil Nadu has 92 of them. Among the 10 bio geographic zones of India, **the Himalayan zone is the richest in terms of orchid species followed by Northeast, Western Ghats, Deccan plateau and Andaman & Nicobar Islands.**
- Considering the importance of orchids in floriculture, the publication, which has photographs of 60% of all species, is the first authentic inventory and will be useful for researchers, growers, nature lovers and people with different backgrounds
- Orchids can be broadly categorised into - Epiphytic - Plants growing on another plants including those growing on rock boulders and often termed lithophyte. Terrestrial - Plants growing on land and climbers) and Mycoheterotrophic - Plants which derive nutrients from mycorrhizal fungi that are attached to the roots of a vascular plant.
- About 60% of all orchids found in the country, which is 757 species, are epiphytic, 447 are terrestrial and 43 are mycoheterotrophic. The epiphytic orchids are abundant up to 1800 m above the sea level and their occurrence decreases with the increase in altitude. **Terrestrial orchids, which grow directly on soil, are found in large numbers in temperate and alpine region** whereas **mycoheterotrophic orchids, mostly associated with ectomycorrhizal fungi, are found in temperate regions, or are found growing with parasites in tropical regions.**
- Another interesting factor is that the **entire orchid family is listed under appendix II of CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) and hence any trade of wild orchid is banned globally.**

46. Butterfly Spotted In Delhi In 2018 Was Last Seen In 1962: Researchers

- Rare butterfly species Common Lineblue, (which was last seen in 1962 in Delhi) and Dark Cerulean (which was last spotted in the late 90s) were spotted by researchers in 2018 after a gap of over half a century.
- Large-scale burning of grasslands detrimental to invertebrates: study Sarus Cranes Order to cull Himachal Pradesh's 'Vermin' monkeys draws activists' ire Researchers discover new tree species in Tanzania mountains Madhya Pradesh government to declare Ratapani sanctuary a tiger reserve Stubble Cutting Machines



Dark Cerulean

■ Spotted at least thrice between October 2018 and February 2019 (District Park in Pitampura and Acharya Narendra Dev College in Govindpuri)

- All male
- Butterflies were settled on foliage

Earlier records: 1985 at Hauz Khas and late 1990s at Sanjay Van



Common Lineblue

■ Spotted in August 2018 at Shalimar Bagh Garden in the city

- Male
- Puddling on the ground

Earlier record: Three males were spotted in 1962

Possible reasons

(Need to be validated by further studies)

- Changing floristic pattern because of several parks and gardens
- Migration (as Dark Cerulean is known to migrate)

Butterfly census in Delhi

75 species were found across 51 locations in the national capital in 2018, as against **69 species** which were found across 14 forest patches in 2017

47. Large-Scale Burning Of Grasslands Detrimental To Invertebrates: Study

- A recent study on “prescribed burning” of large tracts of grassland for the conservation of threatened ungulates in the Eravikulam National Park (ENP), a biodiversity hotspot in the Western Ghats, reveals that such burning is detrimental to endemic invertebrates, including grasshoppers.

Ungulates

- Ungulates are any members of a diverse group of primarily large mammal, which includes odd-toed ungulates such as horses and rhinoceroses, and even-toed ungulates such as cattle, pigs, giraffes, camels, deer, and hippopotamuses, as well as subungulates such as elephants.

48. Eravikulam National Park (ENP)

- Eravikulam National Park is located in the **Kannan Devan Hills of the Southern Western Ghats in the Idukki District, Kerala State**. In the local language, Eravikulam denotes streams and pools. **The highest peak in peninsular India, Anamudi (2695 m), is situated in this park.**



- The **catchment area of three important rivers, Periyar, Chalakudy and Pambar is located in this area.** Three major types of plant communities found in the park are: Grasslands, Shrub Land and Shola Forests.
- **Neelakurunji ,a plant endemic to the Western Ghats, blooms once every 12 years is found in this national park.** It also is home to and the sanctuary of the **Nilgiri tahr**, an endangered goat species. **The Muthuvans are the indigenous people**, who have traditionally been associated with the management of the park.
- As grasshoppers represent a major faunal component of grasslands, effects of fire on them can be easily studied in grassland habitats. The endemic and wingless creatures are sensitive to environmental change and exhibit a high extinction risk. Burning is practised on 90 sq. km. of the park by dividing it into 50 hectare grids to ensure palatable fodder for the Nilgiri tahr and has been practised since the British colonial time. However, the impact of burning of Nilgiri tahr habitats on other biota has never been documented.
- It is suspected that prescribed burning in the park for the past many decades is a major cause for the decline of grasshoppers.
- The study suggested that the interval of burning should be extended to more than five years, and the area of burning should be made only in small plots of 25 m. X 25 m. or 50 m. X 50 m., with unburned adjacent areas between plots.

49. Sarus Cranes

- The sarus is the **tallest flying bird in the world**, and was declared the **official state bird of Uttar Pradesh in 2014**. It is also **India's only resident breeding crane**, as per the Wildlife Trust of India (WTI), a leading nature conservation organisation that works with the State wildlife department. Sarus cranes generally make habitats in marshy places like wetlands.
- The sarus is **listed under Schedule IV of the Wildlife (Protection) Act, 1972**, and also listed as '**vulnerable**' on the **IUCN Red List**. (CITES Appendix II) According to the World Wildlife Fund (WWF), India, their population is now on the decline, with only 15,000-20,000 in India, a majority of which are in UP.
- Sarus cranes are known to live in association with humans and prefer well-watered plains, marshlands, ponds and wetlands, which are suitable for their foraging, roosting and nesting. The Sarus habitat is outside protected areas, in natural wetlands with low water depth, marshy and fallow areas and agricultural fields. **They play a vital role in ecological balance by controlling the population of harmful insects and have significant cultural importance, while also being sociable. Sarus is omnivorous, feeding on fish and insects, as well as roots and plants**
- The population of sarus cranes (*grus antigone*) in Ghaziabad district has failed to pick up in the last five years in a row as seen in the annual census conducted by the divisional forest department. There are many contributing factors to the stagnation of their population in Ghaziabad – infrastructure projects, pollution, development of housing and nonmaintenance of water bodies and wetlands. But the population has climbed to 15,938 as per the 2018 census (summer). This is a jump of 5.2% from 2017, when there were 15,138 Sarus cranes across U.P., as per the State Forest and Wildlife department.

50. Order To Cull Himachal Pradesh's 'Vermin' Monkeys Draws Activist's Ire

- The decision was taken on request of the state government which reported harm to life and property including large-scale destruction of agriculture due to overpopulation of this species outside forests.
- Though Rhesus Macaque monkeys are protected species under Schedule II of the Wildlife (Protection) Act, 1972, the law allows for it to be hunted by declaring it 'vermin' for a specific period if it poses a **danger to human life or property**. As per Section 62 of the Wildlife Protection Act, 1972, States can send a list of wild animals to the Centre requesting it to declare them vermin for selective slaughter.
- This is, however, not the first time the ministry has taken such a decision. It had **declared wild pig 'vermin' in Uttarakhand in November last year**, allowing authorities to carry out extermination wild pigs on a large scale in certain identified a (tehsils) of 13 districts in the state for one year under the Wildlife (Protection) Act, 1972.



51. Researchers Discover New Tree Species In Tanzania Mountains

- A new species of flowering tree, which grows up to 20 metres, was discovered in the Usambara Mountains in Tanzania, according to a research paper published in the journal Kew Bulletin in June 2019. **Mischogyne iddi (M. iddi)** trees have larger leaves than other species of the genus and range between 13 and 45 centimetre in diameter.
- The genus of small-to medium-sized tropical trees and shrubs have four other known species, all in western Africa, including one in the semi-arid Angola. It was earlier considered to have only two species, stated the study, Middi has been categorised '**Endangered**' by the **International Union for Conservation of Nature list**. It is unknown what kind of wildlife might rely on the tree. But it is most likely pollinated by a species of beetle, according to Andy Marshall of the University of York, who discovered the new species.

52. Madhya Pradesh Government To Declare Ratapani Sanctuary A Tiger Reserve

- The Madhya Pradesh government has decided to declare the Ratapani Wildlife Sanctuary a tiger reserve for better conservation of tigers.

- The state had received an approval for the same from the National Tiger Conservation Authority (NTCA) 11 years ago. All the conditions of NTCA to declare Ratapani Wildlife Sanctuary a Tiger Reserve have been completed.
- The **final approval for the reserve will be given in the state wildlife board meeting**, scheduled to be held in August.
- This will boost tourism and improve the local economy of the area.

53. Stubble Cutting Machines

- To address air pollution and to subsidize machinery required for in-situ management of crop residue, a new Central Sector Scheme on 'Promotion of Agricultural Mechanization for In-Situ Management of Crop Residue in the States of Punjab, Haryana, Uttar Pradesh and NCT of Delhi' for the period from 2018-19 to 2019-20 has been launched with the total outgo from the Central funds of Rs. 1151.80 crores

54. Tiger Census - Introduction

- In 2010, at the Tiger Summit of St. Petersburg, world leaders committed to doubling tiger numbers by 2022. The tiger population of India is the largest for any country, accounting for >80% of the Global population of 3,159 adult free-ranging tigers. Therefore, the future of tigers as a species, as well as the success of the Global Tiger Recovery Plan at meeting its targets, depends on successful tiger recovery in India.



Project Tiger

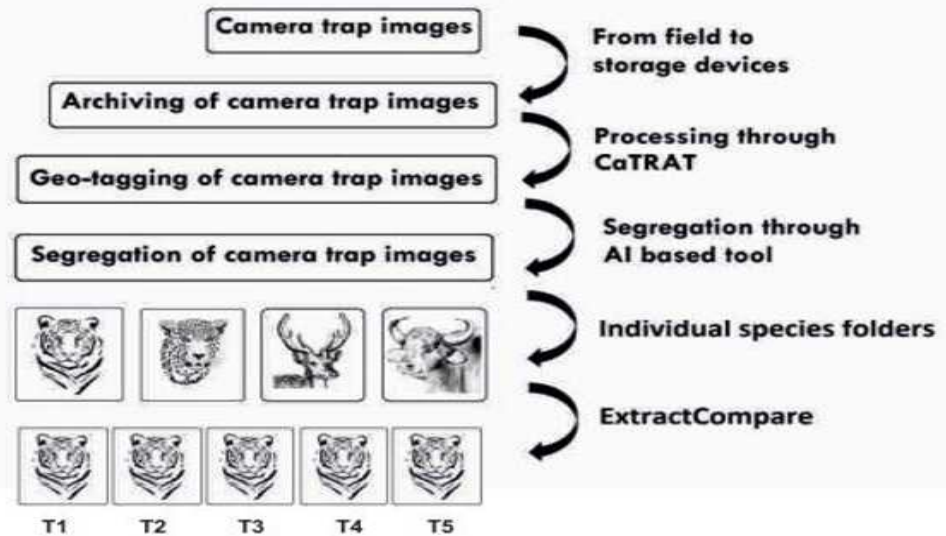
- The Project Tiger, that was initiated in 1973 with nine tiger reserves (~18,278 km) has now grown to cover 50 tiger reserves (~72,749 km) covering about 2.21% of India's geographical area.

Survey

- The survey, the fourth such since 2006, is a gargantuan exercise and conducted once in four years.
- The latest survey is the culmination of 15 months of forest officials surveying 381,400 square kilometres of forested habitat, installing 26,760 camera traps and wildlife biologists ferreting through 35 million images of wildlife – 76,523 of which were tigers (there can be multiple images of the same tiger). Nearly 83% of the estimated tiger population was captured in these images.
- India's national tiger assessment is the largest biodiversity survey being carried out anywhere in the world.
- The fourth cycle of the assessment was undertaken in 2018 and 2019 using the best available science, technology and analytical tools. In this cycle, recording of primary field data digitally through mobile phone application like **M-STripES (Monitoring System for tigers - intensive protection and ecological status)**, that uses GPS to geotag photo evidences, and survey information made this exercise more accurate, with smaller margins of human error.
- Further, it involved the development of innovative technology like automated segregation of camera trap photographs to species using artificial intelligence and **neural network models (software CaTRAT - Camera Trap data Repository and Analysis 6 Tool)**.

Figure 3:

Workflow of species identification from camera trapped images using CATRAT software.



- Program ExtractCompare that fingerprints tigers from their stripe patterns was used to count the number of individual tigers (>1 year old). The unique feature of this cycle of assessment, in keeping up with “Digital India”, is the development and use of innovative technological tools in collection and processing of data to reduce human errors.
- Spatial data on individual tiger photo-captures is used in combination with spatial data on prey, habitat, and anthropogenic factors as covariates in a joint likelihood spatially explicit capture-mark-recapture (SECR) framework to arrive at tiger population estimates for each tiger landscape.

Findings

- The total count of tigers has risen to 2,967 from 2,226 in 2014, an increase of 741 individuals (aged more than one year), or 33%, in four years. India has achieved the target of doubling the tiger count four years ahead of the deadline of 2022.
- This is by far the biggest increase in Tiger count in terms of both numbers and percentage (since the four-yearly census using camera traps and the capture-mark-recapture method began in 2006).
- Madhya Pradesh saw the highest number of tigers at 526, closely followed by Karnataka (524) and Uttarakhand (442). Increase in Tiger population - Madhya Pradesh (71%) > Maharashtra (64%) > Uttarakhand (30%) > Karnataka (29%).
- Chhattisgarh and Mizoram saw a decline in tiger population and all other States saw a “positive” increase.
- Madhya Pradesh's Pench Sanctuary and Kerala's Periyar sanctuary emerged as the best managed tiger reserves in the country.

Since tigers occur across varied habitats and a large geographical expanse of India, we divided tiger bearing habitats into five major landscapes



- Sathyamangalam Tiger Reserve in Tamil Nadu registered the “maximum improvement” since 2014.
- Tigers were not recorded in Buxa, Dampa and Palamau tiger reserves. Reserves had poor tiger status in earlier assessments as well.

55. Global Tiger Day

- Global Tiger Day, often called International Tiger Day, is an annual celebration to raise awareness for tiger conservation, held annually on 29 July.
- It was created in 2010 at the Saint Petersburg Tiger Summit. The goal of the day is to promote a global system for protecting the natural habitats of tigers and to raise public awareness and support for tiger conservation issues.

56. Komodo Dragons

- Indonesia plans to close its eastern island of Komodo to the public next year in a bid to conserve rare Komodo dragons, the largest living species of lizard. Komodo National Park is the **only habitat for the world’s largest lizard species**.
- Closing the island to tourists aims to avert interference and cut the risk of poaching to allow a recovery in the numbers of the animals' preferred prey, such as deer, buffalo and wild boar.

Komodo National Park

- These volcanic islands are inhabited by a population of around 5,700 giant lizards, whose appearance and aggressive behaviour have led to them being called 'Komodo dragons'.
- A conservation area between the islands of Sumbawa and Flores visited by more than 176,000 tourists from all over the world in 2018. As well as the beautiful beaches and scenery, many visitors came to see the dragons, only found in the wild in eastern Indonesia.
- Komodo's have a venomous bite, which has been shown to secrete an anticoagulant. An anticoagulant is a compound that prevents the victim's blood from clotting, causing it to bleed to death.

Komodo Dragon

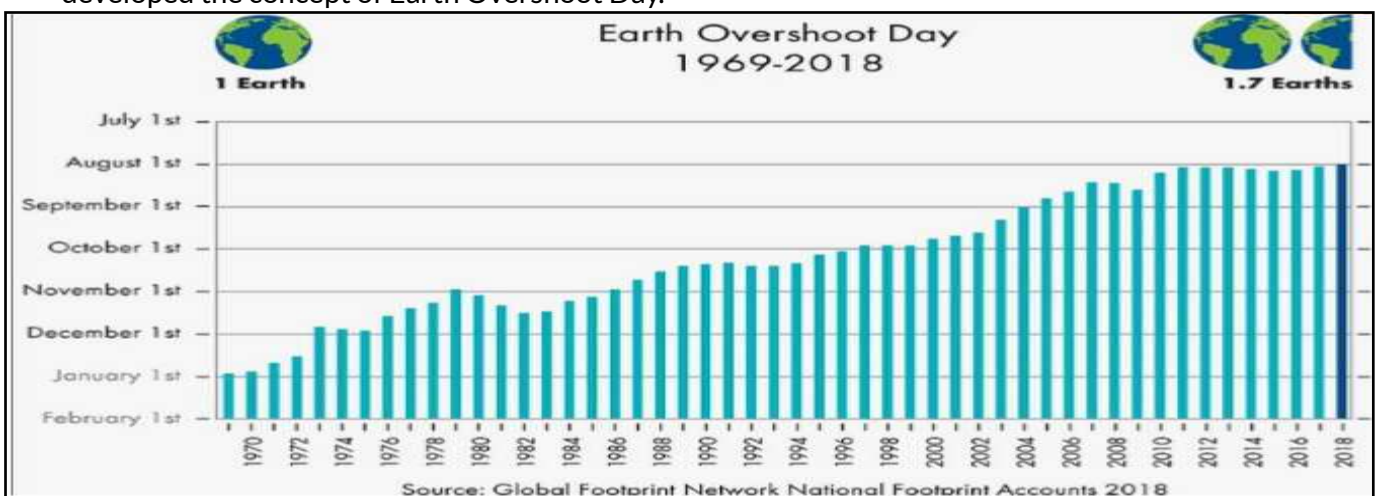
- The Komodo dragon is the largest and heaviest of all living species of lizard. They are listed as Vulnerable by the IUCN.



57. Earth Overshoot Day

- It marks the date when humanity’s demand for ecological resources and services in a given year exceeds what the Earth can regenerate in that year.
- It fell on 29th July, 2019, earliest ever.
- Earth Overshoot Day marks the date when humanity’s annual demand on nature exceeds what Earth’s ecosystems can regenerate in that year. Over the past 20 years, it has moved up two months to July 29, the earliest ever.

- This means that humanity is currently using nature 1.75 times faster than our planet's ecosystems can regenerate, equivalent to 1.75 Earths. Humanity first saw ecological deficit in the early 1970s. Overshoot is possible because we are depleting our natural capital, compromising the planet's future regenerative capacity.
- Earth Overshoot Day is calculated by dividing the world biocapacity (the amount of natural resources generated by Earth that year), by the world ecological footprint (humanity's consumption of Earth's natural resources for that year), and multiplying by 365, the number of days in one Gregorian common calendar year – Earth Overshoot Day = (Planet's Biocapacity/Humanity's Ecological Footprint) x 365
- It is **computed by Global Footprint Network**, which is an international non profit organization founded in the year 2003. Andrew Simms of UK think tank New Economics Foundation originally developed the concept of Earth Overshoot Day.



58. Kerala May Have Undercounted Jumbos

- Kerala may have undercounted almost 2,700 elephants in the latest elephant census.
- In 2017, the Union environment ministry reported that there were 27,312 elephants on average in the country according to figures collated from 23 States, a decline from the 29,576 elephants recorded as the mean figure in 2012. **The exercise was part of the elephant census, conducted once in 5 years under the aegis of Project Elephant.**
- The earlier 2017 figures indicated that Kerala had only 3,054 elephants whereas, recent number showed Kerala as having 5,706 elephants.
- The Andaman and Nicobar islands was the only other region that showed a different number from its 2017 estimate: 25 as opposed to the earlier 19.

Mammoth count

Table lists State-wise population estimates of elephants as per census conducted during 2017



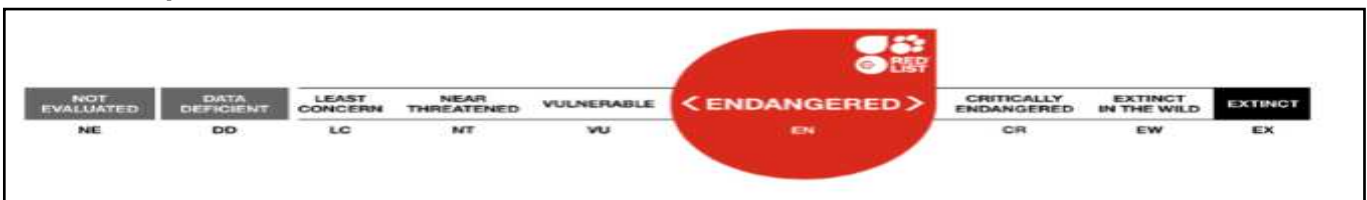
State	Count	State	Count
Karnataka	6,049	Uttar Pradesh	232
Assam	5,719	Tripura	102
Kerala	5,706	Andhra Pradesh	65
Tamil Nadu	2,761	Andaman & Nicobar Islands	25
Odisha	1,976	Bihar	25
Uttarakhand	1,839	Manipur	9
Meghalaya	1,754	Mizoram	7
Arunachal Pradesh	1,614	Madhya Pradesh	7
W.B. (north+south)	682	Haryana	7
Jharkhand	679	Himachal Pradesh	7
Nagaland	446	Maharashtra	6
Chhattisgarh	247		

- A scientist associated with the census said that the discrepancy had resulted from Kerala's insistence in 2017 on using a technique called the 'direct count' method. Because sighting animals in the wild is hard, researchers over the years have used several proxies as well as statistical techniques to estimate population.
- The method in vogue is the 'indirect count' method that estimates populations in a region based on sightings of elephant dung. Kerala's revised figure is likely based on the indirect count.

Project Elephant

- Project Elephant (PE) is a wildlife conservation project initiated in India in February 1992 with the aim to **provide financial and technical support to major elephant bearing States in the country for protection of elephants, their habitats and corridors.**
- It is a centrally sponsored scheme. The Project is being mainly implemented in 16 States/UTs. 32 Elephant Reserves in India.

Asian Elephant



African Elephant



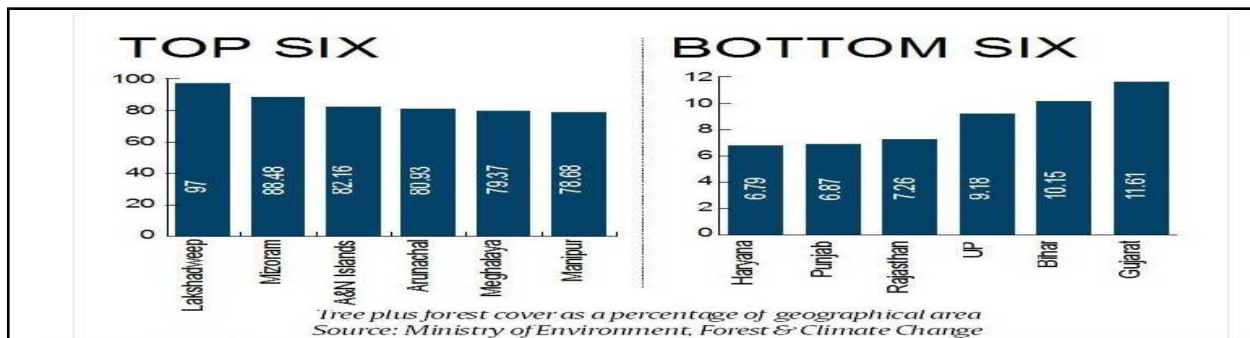
59. World Biofuel Day

- World Biofuel Day is observed every year on 10th of August to create awareness about the importance of non-fossil fuels as an alternative to conventional fossil fuels and highlight the various efforts made by Government in the biofuel sector. Ministry of Petroleum & Natural Gas organizes World Biofuel Day on 10th August 2019 at Vigyan Bhavan, New Delhi. This year the theme of the World Biofuel Day is "Production of Biodiesel from Used Cooking Oil (UCO)".

60. Northeast Crowds List Of States With Most Dense Tree, Forest Cover

- A quarter of India's geographical area (24.49 per cent) is under forest and tree cover, according to data shared in Parliament by the Ministry of Environment, Forest and Climate Change.
- These assessments are done by the Forest Survey of India, whose findings are published in the India State of Forest Report (ISFR).
- The last report was published in 2017.

- The lowest forest and tree cover in the country is in Haryana, at 6.79 per cent of its geographical area.
- Punjab follows with 6.87 per cent.
- Rajasthan's forest and tree cover is over 7.26 per cent of its geographical area while Madhya Pradesh's is 27.73 per cent.
- At 97 per cent, the Union Territory of Lakshadweep is on top - its geographical area is only 30 square km.
- Among the six states with the highest forest and tree cover, four are in the Northeast - Manipur, Arunachal Pradesh, Mizoram and Meghalaya.



61. More Than Half Of Forest Wildlife Declined Since 1970: WWF

- There has been a **53 per cent decline in the number of forest wildlife populations** since 1970, according to the first-ever global assessment of forest biodiversity by World Wide Fund for Nature (WWF).
- Until now, forest biodiversity had never been assessed, but forest area was often used as a proxy indicator.
- The new findings were based on the Forest Specialist Index, developed following the Living Planet Index methodology, an index that tracks wildlife that lives only in forests.
- In total, data was available for 268 species (455 populations) of birds, mammals, reptiles and amphibians.
- Of the 455 monitored populations of forest specialists, more than half declined at an annual rate of 1.7 per cent, on average between 1970 and 2014.
- While the **decline was consistent in these years among mammals, reptiles and amphibians (particularly from the tropical forests)**, it was less among birds (especially from temperate forests), showed the report.

62. India To Seek Boost To Protection Status Of 5 Species At CITES

- India has submitted proposals regarding changes to the listing of various wildlife species in the CITES secretariat meeting, scheduled later this month in Geneva, Switzerland.

- CITES (Convention on International Trade in Endangered Species on Wild Fauna and Flora) is an international treaty to **ensure that trade in wild animals and plants do not threaten their survival.**
- The proposals submitted are regarding changes in the listing of the smooth-coated otter, small-clawed otter, Indian star tortoise, Tokay gecko, wedgefish and Indian rosewood.

63. Centre Unveils Plan For Coastal Zone Management

- The Environment Ministry has unveiled a draft plan that will dictate how prospective infrastructure projects situated along the coast ought to be assessed before they can apply for clearance.
- The draft Environmental and Social Management Framework (ESMF) is part of a World Bank funded project.
- The document lays out guidelines for coastal States to adopt when they approve and regulate projects in coastal zones.
- The project seeks to assist the Government of India in enhancing coastal resource efficiency and resilience, by building collective capacity (including communities and decentralised governance) for adopting and implementing integrated coastal management approaches.
- **So far three coastal States, namely Gujarat, Odisha and West Bengal, have prepared Integrated Coastal Zone Management Plans** with support from the World Bank.
- Such plans would be prepared for the selected coastal stretches in other States/UT, the project notes.
- The document was prepared by the Society for Integrated Coastal Management, a Ministry-affiliated body.

64. Army Vehicles To Be Exempted From BS-VI Norms

- The Ministry of Road Transport & Highways has issued notification exempting the armoured and other specialised vehicles of Indian armed forces and paramilitary forces from the new stringent vehicular emission norms (BS-VI) which are set to take effect from 1st April, 2020.
- Beginning April 1, 2020, all new vehicles in the country will need to conform to BS-VI norms, which lay down drastically tighter exhaust emission requirements for vehicles compared to the BS-IV applicable at present.
- India skipped stage five after concerns over rapidly rising pollution called for strong steps.
- Defence vehicles were earlier given exemption from BS-IV norms in 2016 under Rule 115 pertaining to emission rules of the Central Motor Vehicle Rules.
- The exemption has been granted because these vehicles operate in remote and inhospitable terrains with most challenging operational and environmental conditions.
- Due to security challenges and requirements of specialized operations, the development of suitable engine compliant with the above norms would require considerable time.
- Further, it is difficult to maintain ideal transportation and storage conditions of fuel in these conditions.

65. Global Coalition To Protect Pollinators

- The organisation was formed three years ago, to follow up on the findings of IPBES Assessment on Pollinators, Pollination and Food Production, which found that **many of the world's pollinator species are on the decline.**
- The coalition now has 28 signatories including 17 European countries, five from Latin America and the Caribbean and four from Africa.
- The availability of pollinators and their pollination services not only affects crop production in terms of their quantity but also quality, says a study in Nature.
- **Pollination by honeybees and wild bees significantly increased yield quantity and quality of crops on average up to 62 per cent, while exclusion of pollinators caused an average yield gap of 37 per cent in cotton and 59 per cent in sesame.**
- While there is a well-documented decline in some species of wild pollinators, data on the status of most wild species is lacking.
- There are **no global red list assessments conducted specifically for insect pollinators, according to the United Nations.**

66. Traffic Report

- **India, with the world's largest wild tiger population, topped in the trafficking of tigers and tiger body parts over 19 years since 2000, a new TRAFFIC analysis from Geneva has revealed.** The report titled 'Skin and Bones Unresolved: An Analysis of Tiger Seizures from 2000-2018' was the fourth in a series on tiger trade by TRAFFIC, a wildlife trade monitoring network headquartered in the United Kingdom. **Apart from tiger skin and bones, live tigers are also traded illegally in a number of cases.**
- **India is the country with the highest number of seizure incidents (463, or 40% of all seizures) as well as tigers seized (625).** In terms of various body parts seized, India had the highest share among countries for tiger skins (38%), bones (28%) and claws and teeth (42%).
- The top three countries with the **highest number of seizure incidents were India (463 or 40.5% of total seizures) and China (126 or 11.0%), closely followed by Indonesia (119 or 10.5%).**
- The study was launched to coincide with discussions around the trade in tigers and other big cat species at the 18th meeting of governments that are parties to the Convention in International Trade in Endangered Species of Wild Fauna and Flora, or CITES. Currently, there are around 3,900 tigers left in the wild, the bulk of them in India.

67. India Largest SO₂ Emitter In World: Greenpeace

- **India is the world's largest emitter of anthropogenic sulphur dioxide, which is produced from coal burning, and greatly contributes to air pollution,** a study claimed on August 19. According to an analysis of a National Aeronautics and Space Administration (NASA) data released by environmental NGO Greenpeace on August 19, **India has more than 15% of all anthropogenic sulphur dioxide (SO₂) hotspots in the world detected by the OMI (Ozone Monitoring Instrument) satellite.**

- The major SO₂ emission hotspots in India are **Singrauli in Madhya Pradesh, Neyveli and Chennai in Tamil Nadu, Talcher and Jharsuguda in Odisha, Korba in Chhattisgarh, Kutch in Gujarat, Ramagundam in Telangana and Chandrapur and Koradi in Maharashtra.**
- The vast majority of plants in India lack flue-gas desulfurization technology to reduce their air pollution, according to the analysis.
- The NASA data also highlights other hotspots across the globe, with the Norilsk smelter complex in Russia being the largest SO₂ emission hotspot in the world, followed by Kriel in Mpumalanga province in South Africa and Zagroz in Iran. However, as per country-wise world rankings, **India was found at the top position in emitting SO₂ as it has the maximum hotspots.**
- The report said SO₂ emissions are a significant contributor to air pollution. **The largest source of SO₂ in the atmosphere is the burning of fossil fuels in power plants and other industrial facilities.**
- In December 2015, the Ministry of Environment, Forest and Climate Change had introduced for the first time SO₂ emission limits for coal power plants with an initial deadline to retrofit technology to control SO₂ emissions from power generation by December 2017. At the request of the Ministry of Power and power plant operators, this was later extended till December 2019 for power plants in Delhi-NCR and till 2022 for some other power plants across the country through a Supreme Court order, the NGO said.

68. BASIC Countries

- The BASIC countries held its 28th Ministerial meeting on Climate Change from 14th to 16th August in **Sao Paulo, Brazil. BASIC countries represent one-third of world's geographical area and nearly 40% of the world's population. It is a bloc of four large newly industrialized countries – Brazil, South Africa, India and China – formed by an agreement on 28 November 2009.**
- The BASIC countries reiterated their commitment to work together with all parties in an open, transparent, inclusive and Party-driven manner to achieve a balanced and comprehensive outcome on all remaining items of the Paris Agreement Work Programme. The Ministerial meeting was held in the run-up to the UNFCCC Conference of Parties (COP-25) meet to be held later in the year from 2nd to 13th December.

69. Discovery-WWF Tie Up To Preserve Sundarbans

- To help save the world's only mangrove tiger habitat, Discovery India and WWF India have partnered with the Forest Directorate, the government of West Bengal and local communities in the Sundarbans.
- With a vision to create climate-smart villages in the Sundarbans, WWF India and Discovery India are working with government agencies, civil society partners and scientific institutions to build the capacity of village panchayats and local communities to incorporate climate resilience into development planning, thereby helping secure livelihoods, biodiversity and ecosystem services.

- The project will use technology to solve several of the issues faced in the region. This includes building datasets on impacts of climate change on estuarine ecosystem. Through this project, in partnership with the West Bengal Forest Directorate and Indian Institute of Science Education and Research (IISER) Kolkata, two Sundarbans ecological observatories will be set up, each featuring data loggers, monitoring buoys and an onsite laboratory.
- The project at Sundarbans is part of a global movement, Project CAT (Conserving Acres for Tigers), aimed at building healthy habitats for Tigers by conserving six million acres of protected land across four countries.
- This partnership between WWF India and Discovery India is significant as it brings together different institutions for the benefit of communities and wildlife of Sundarbans. This includes the setting up of ecological observatories, reducing human-wildlife conflict and providing scientific inputs for proper management

70. Odisha To Conserve Two Of Its Largest Lakes

- The Odisha Wetland Authority has approved implementation of an integrated management plan for **Chilika, country's largest brackish water lagoon, and Ansupa, State's largest freshwater lake**, at an estimated investment of ₹180 crore.
- Chilika is spread over 1,100 sq km. Lakhs of tourists visit the lake to watch endangered Irrawaddy dolphins and migratory birds during winter.
- Ansupa spread over almost 2 sq km is also the wintering ground for 32 species of migratory birds. **Ansupa is famous for its sweet water fish, especially labeo bata locally known as pohala.** The lake was sustaining from the freshwater supply during the rainy season from the **Mahanadi river**. With reduced inflow over the years, the lake's hydrology has undergone serious and visible changes. The water spread area has reduced and fishery resource is almost non-existent."

71. Dragonfly Day

- **World Wide Fund for Nature (WWF-India), in collaboration with Bombay Natural History Society (BNHS), is holding a month-long to celebrate Delhi Dragonfly festival** in the city and its neighbouring regions.
- The festival is the second such event dedicated to dragonflies and damselflies and aims to carry out a census and raise awareness about its importance. Dragonfly day is celebrated on August 18.
- **Dragonfly act as important bio-indicators of the ecological health of an area. They feed on mosquitoes and other insects that are vectors to life threatening diseases like Malaria and Dengue.**
- Not only do they scavenge the skies in adulthood, but eat a large number of mosquito larvae. The first of this census was carried out in 2018, which revealed a total of 51 different species of these insects in New Delhi and NCR.

72. Microplastics In Arctic

Dragonfly census on August 18

► Organised by WWF India and Bombay Natural History Society (BNHS)

WHY DRAGONFLIES ARE IMPORTANT

Predators | Help control population of harmful insects

Dragonfly larvae | Feed on mosquito eggs and larvae

Cleanliness | Survive in clean water, assuring purity of a waterbody/lake

3,012 species of dragonflies known in 2010; India has about **500** recorded species

51 dragonfly species in Delhi

- Minute microplastic particles have been detected in the Arctic and the Alps, carried by the wind and later washed out in the snow, according to a study that called for urgent research to assess the health risks of inhalation.
- Every year, several million tonnes of plastic litter course through rivers and out to the oceans, where they are gradually broken down into smaller fragments through the motion of waves and the ultraviolet light of the sun.
- The new study, conducted by scientists at Germany's Alfred Wegener Institute and Switzerland's Institute for Snow and Avalanche Research, found that microplastic particles can be transported tremendous distances through the atmosphere.
- These particles, defined as **shreds less than five millimeters in length**, are later washed out of the air by precipitation, particularly snow. It's readily apparent that the majority of the microplastic in the snow comes from the air

73. Amazon Fire

- The recent fire is just one of thousands currently decimating the Amazon, the world's largest rainforest and a bulwark against climate change.
- **Wildfires have surged 83%** so far this year when compared to the same period in 2018, according to Brazil's space research agency INPE.
- The government agency has registered 72,843 fires, the highest number since records began in 2013.

Amazon Fire – Reasons

- Fires start in the underbrush that has been drying over the dry season. Smoke envelopes still lush patches of fronds and palm trees, as the understory smolders before the upper tiers of vegetation catch fire.
- Environmentalists also say farmers set the forest alight to clear land for cattle grazing.

- The smoke from the resulting fires hangs at the horizon like a fog.

74. Iceland Commemorates First Glacier Lost To Climate Change

- **Iceland honours the passing of Okjokull, its first glacier lost to climate change**, as scientists warn that some 400 others on the subarctic island risk the same fate. A bronze plaque will be unveiled in a ceremony to mark Okjokull -- which translates to "**Ok glacier**" -- in the west of Iceland.
- In 2014, the decision was made that it was no longer a living glacier, it was only dead ice, it was not moving. **To have the status of a glacier, the mass of ice and snow must be thick enough to move by its own weight.** For that to happen the **mass must be approximately 40 to 50 metres (130 to 165 feet) thick.** According to a study published by the International Union for Conservation of Nature (IUCN) in April, nearly half of the world's heritage sites could lose their glaciers by 2100 if greenhouse gas emissions continue at the current rate. **Iceland's Vatnajokull National Park, which was added to UNESCO's World Heritage List in early July, is home to, and named after, the largest ice cap in Europe**

75. Government To Develop A Master Plan For Tigers At High Altitude

- Union Environment Minister has released recently, a report on Status of Tiger Habitats in high altitude ecosystems.
- The reveals that ecology at high altitude is compatible for the tiger growth and the inputs from this study can be used to prepare a high altitude tiger master plan.
- This study, led by the GTF, with range country governments of Bhutan, India and Nepal, along with conservation partners (WWF and country specific collaborators), has been supported by the Integrated Tiger Habitat Conservation Programme (ITHPC) of the IUCN and dFw.
- This provides the action strategy for a high altitude tiger master plan, with gainful portfolio for local communities and ensuring centrality of tiger conservation in development, through an effective coordination mechanism, involving stakeholders and line departments operating within the landscape.
- The habitat of tiger of varied, encompassing several biomes and ecological conditions.
- However, most of the high-altitude habitats, within the range have not been surveyed for an appraisal of tiger presence, prey and habitat status.
- Hence, it becomes important to embark on a said appraisal, involving mapping of the habitat and carrying out a situation analysis for a future roadmap.
- Tiger habitats in high altitude require protection through sustainable land use, as they are a high value ecosystem with several hydrological and ecological processes providing ecosystem services and adaptation to mitigate the ill effects of climate change.
- Several high-altitude habitats in South Asia have the spatial presence of tiger, active in-situ efforts are called for ensuring their conservation.

76. Government To Pull Out All The Stops To Cut Use Of Plastics

- The Union government is working on a multiministerial plan to discourage the use of single use plastics across the country, likely to kick off on October 2, Gandhi Jayanti.
- A presentation for the same has been prepared and circulated across the Ministries.
- The nodal Ministry for the scheme would be the Ministry of Environment, Forests and Climate Change, which has been asked not just to ensure and enforce the ban on single use plastics but also finalise the pending policy for **Extended Producer Responsibility (EPR), especially on milk packet.**
- The **Department of Industrial Promotion (Ministry of Commerce & Industry)** will ensure that all cement factories use plastic as fuel.
- **National Highway Authority of India (NHAI)** will ensure that the plastic waste is collected and transported responsibly along National Highways.
- The collected plastic waste will be used for road construction.
- According to studies quoted by officials, roads constructed using water plastic are durable against extreme weather conditions and are also cost-effective.
- The Ministry of Railways will organize massive shramdaans (voluntary work) on October 2 for the collection of plastic waste at railway stations and along the rail tracks.
- Food and Consumer Affairs Ministry has decided to put-forth a blanket ban on all types of single-use plastic that is used in the ministry & the PSUs including Food Corporation of India (FCI).
- Ministry of Textiles has pushed for greater production of jute bags to replace plastic bags.
- Ministry of Tourism is set to ensure & create awareness on single-use plastic at iconic tourist spots.

77. Australia Downgrades Outlook For Great Barrier Reef To 'Very Poor'

- The long-term outlook for Australia's Great Barrier Reef was downgraded to "very poor" for the first time by the official agency charged with managing the world heritage site.
- In its latest five-yearly report on the health of the world's largest coral reef, the Great Barrier Reef Marine Park Authority singled out rising sea temperatures due to climate change as the biggest threat to the giant organism.
- The significant and large-scale impacts from record-breaking sea surface temperatures have resulted in coral reef habitat transitioning from poor to very poor condition.
- Strong and effective management actions are urgent at global, regional and local scales to rescue the 2,300-kilometre (1,400-mile) reef, a UNESCO World Heritage site.
- The report published by The Great Barrier Reef Marine Park Authority-An Australian Agency will be a major input into UNESCO's Committee.
- There are high chances that Great Barrier Reef to be considered for "List of World Heritage in Danger".

78. Centre Releases 47,436 Crore To 27 States For Afforestation

- The Union Environment Ministry has transferred ₹47,436 crore to 27 States for afforestation.
- These are long-pending dues part of the Compensatory Afforestation Fund (CAF), a 54,000 crore tranche that has been collected for nearly a decade as environmental compensation from industry, which has razed forest land for its business plans.
- The amount to be paid by industry depends on the economic value of the goods and services that the razed forest would have provided.
- These include timber, bamboo, firewood, carbon sequestration, soil conservation, water recharge, and seed dispersal.
- Industrialists pay this money and this is eventually transferred to the States concerned to carry out afforestation.
- Only a fraction of this corpus had actually been disbursed to States, due to the lack of a legal framework and instances of States using it for non forestry purposes.
- Centre would use geographic tagging technology to keep a tab on whether States were using their allotted funds appropriately.
- The Fund will be used as per provisions of the CAF Act and Rules.
- These include catchment area treatment, wildlife management, forest fire prevention, soil and moisture conservation work in the forest, it **cannot be used for payment of salary, travelling allowances, making buildings and buying office equipment for forest officers.**
- Odisha, the top recipient of funds, got nearly ₹6,000 crore followed by Chhattisgarh and Madhya Pradesh with 5,791 crore and 5,196 crore respectively.
- Kerala got the least with 81.59 crore.

79. Giraffes Close To Being Classified As 'Critically Endangered'

- In Africa, the populations of the world's tallest mammals are quietly, yet sharply, in decline.
- Giraffe numbers across the continent fell 40% between 1985 and 2015, to just under 100,000 animals, according to the best figures available to the International Union for Conservation of Nature (IUCN).
- The rate of decline is much higher in central and eastern regions, with poaching, habitat destruction and conflict the main drivers blamed for thinning herds of these gentle creatures.



80. Nilgiri Tahr

- Nilgiri tahrs' sightings in the Mukurthi National Park have risen from 568 in 2018 to 612 this year.
- Officials said this was the second consecutive year that an increase in the population of the animal had been recorded in the park, meaning the population of the Nilgiri tahr, also known as the Nilgiri ibex, has risen by 132 since 2016.

- According to officials, the almost 8% increase in the population of the iconic animal in 2019 follows a similarly significant increase in its population in 2018.
- State animal of Tamil Nadu.
- It has been listed as “**Endangered**” by IUCN.
- It has been listed under Schedule 1 of the Wildlife (Protection) Act, 1972.
- Endemic to Nilgiris.
- It is found in open montane grassland habitat of rain forests ecoregion.

Mukurthi National Park

- It is a protected area located in the northwest corner of **Tamil Nadu** in the **Western Ghats**.
- The park was created to protect its **keystone species**, the **Nilgiri Tahr**.
- It is **part of Nilgiri Biosphere Reserve** along with **Mudumalai Wildlife Sanctuary, Bandipur National Park, Nagarhole National Park, Wayanad Wildlife Sanctuary and Silent Valley**.



81. National Conference On Crop Residue Management

- National Conference on Crop Residue Management was held for the farmers from the states of Punjab, Haryana, Uttar Pradesh & Delhi.
- The conference was organized by the Ministry of Agriculture and Farmers Welfare in collaboration with Indian Council of Agricultural Research (ICAR) in order to address concerns of farmers and State Governments.
- The straw burning events in 2018 have reduced by 15% and 41% as compared to that in 2017 and 2016 respectively
- 20 farmers from Punjab, Haryana and Uttar Pradesh were honoured for their valuable contribution in management of crop residue by using identified agricultural machinery, as well motivating other farmers of their village for in-situ management of crop residue to stop the straw burning.
- A multilingual Mobile App “CHC Farm Machinery” for the farmers to avail the custom hiring services of CHCs located in the radius of 50 Kms.
- This app connects the farmers with Custom Hiring Service Centres in their area.
- This app can be downloaded on any android phone from Google Play Store.

82. Augmenting Nature By Green Affordable New-Habitat (ANGAN)

- The conference, **Augmenting Nature by Green Affordable New-habitat (ANGAN)** is being organised by the **BEE** along with **GIZ** under the **Indo German Technical Cooperation**.

- The conference focuses primarily on **achieving Energy Efficiency in the building sector**.
- Experts and policymakers from around 16 countries are participating in it.
- The Experts will be discussing various alternative options and technologies in the field of design and construction of energy efficient Commercial as well as Residential Buildings and will suggest the effective ways in implementing the same through policies and programmes.
- India has an investment potential of Rs 2 lakh crore in energy efficiency projects which would lead to saving of 388 billion units of electricity in the next 10 years, according to estimates of the Bureau of Energy Efficiency (BEE).

83. Climate Change And Banana

- **Climate change may lead to a significant decline in banana production in India -- the world's largest cultivator and consumer of the crop**, according to a study.
- Bananas are recognised as the most important fruit crop -- providing food, nutrition and income for millions in both rural and urban areas across the globe.
- The study shows that 27 countries -- accounting for 86 percent of the world's dessert banana production -- have on average seen increased crop yield since 1961 due to the changing climate, resulting in more favourable growing conditions.
- However, the study, published in the journal Nature Climate Change, also suggests that these gains could be significantly reduced, or disappear completely by 2050 if climate change continues at its expected rate.

84. New Species Of Ginger In Nagaland

- Scientists from the Botanical Survey of India (BSI) have discovered two new species of Zingiber, commonly referred to as ginger, from Nagaland.
- While Zingiber perenense has been discovered from the Peren district of Nagaland, Zingiber dimapurense was found in the Dimapur district of the State.
- The rhizome of Zingiber officinale (common ginger) is used as a spice in kitchens across Asia, and also for its medicinal value.
- The genus Zingiber has 141 species distributed throughout Asia, Australia and the South Pacific, with its centre of diversity in Southeast Asia.
- More than 20 species have been found in northeastern India.
- Over the past few years, more than half a dozen species have been discovered from different States of northeast India only.
- High diversity of ginger species in northeast India reveals that the climate is conducive for the growth and diversity of the genus.

85. Vulture Culture

- In the late 1990s, when the population of the vultures in the country had begun to decline sharply, one White-backed vulture was rescued from Keoladeo National Park in Rajasthan, where vultures were dying at an alarming rate.
- To study the cause of deaths of vultures, a Vulture Care Centre (VCC) was set up at Pinjore, Haryana.
- Starting with just a few vultures, the VCC, until then the sole facility for conservation of vultures in the country, has come a long way in the past two decades.
- Later in 2004, the VCC was upgraded to being the first Vulture Conservation and Breeding Centres (VCBC) in India.
- At present there are nine Vulture Conservation and Breeding Centres (VCBC) in India, of which three are directly administered by Bombay Natural History Society (BNHS).
- The main objective of the VCBCs was to look after the vultures and breed them in captivity and also release them into the wild.
- The major reason behind the vulture population getting nearly wiped out was the drug Diclofenac, found in the carcass of cattle the vultures fed on.
- The drug, whose veterinary use was banned in 2008, was commonly administered to cattle to treat inflammation.
- **India's conservation efforts are focussed on the three species of vultures which are Critically Endangered according to the International Union for Conservation of Nature (IUCN)**
 - ✓ White-backed Vulture
 - ✓ Slender-billed Vulture
 - ✓ Long-billed Vulture

86. Uttarakhand Plans Bio-Fences To Check Man-Animal Conflict

- To prevent wild animals from entering residential areas and to protect agricultural crops and livestock in areas adjoining to forests, the **Uttarakhand government has decided to carry out bio-fencing by growing various species of plants in those areas.**
- According to officials, lemongrass, agave, rambans, and certain species of chilly and some other plant species have been identified to be grown at areas where wild animals enter residential areas and near forests.
- Once these plants are in place, the department will string beehives in the next phase to deter elephants.

- The state Forest Department had been using traditional methods like solar-powered wire fencings, walls and pits in the woods to prevent the entry of elephants, wild boars, tigers, leopards and others in residential areas.
- Officials said bio-fencing will be economical and environment-friendly as compared to the other methods.
- The farmers can also earn by growing lemongrass- which is a good source of oil.
- Bio-fencing will help in saving the money that the government spends on building walls, digging pits and solar-powered wire fencing.
- Reduce the man-animal conflict, prevent wild animals from entering residential areas, and protect agricultural crops and livestock in areas adjoining the forests.

87. World Ozone Day

- Every year, 16th September is observed as the International Day for the Preservation of the Ozone layer.
- In 1994, the United Nations General Assembly proclaimed 16th September the International Day for the Preservation of the Ozone Layer, commemorating the date of the signing, in 1987, of the Montreal Protocol on Substances that Deplete the Ozone Layer.
- "32 years and healing" is the theme of 25th World Ozone Day celebrations.
- The theme signifies over three decades of remarkable international cooperation to protect the ozone layer and also the climate system under the Montreal Protocol.
- The **abundance of Ozone Depleting Substances (ODSs) in the atmosphere is declining and a recent study has indicated that the ozone hole is recovering.**

88. UNCCD – COP 14

- **Held in Greater Noida, this was the first time that India hosted an edition of the UNCCD COP.**
- The theme of the Conference was '**Restore land, Sustain future**'.
- India being the global host for COP 14 has taken over the COP Presidency from China for the next two years till 2021.

Delhi Declaration

- Delhi Declaration is an ambitious statement of global action by each country on how to **achieve Land Degradation Neutrality.**
- In an unprecedented global campaign to save productive land, country parties have agreed to make the Sustainable Development Goal target of achieving land degradation neutrality by 2030 a national target for action.
- It also reiterated India's commitment to **achieving land degradation neutrality by 2030.**

- Commitment for a range of issues, including gender and health, ecosystem restoration, taking action on climate change, private sector engagement, Peace Forest Initiative and recovery of five million hectares of degraded land in India.

Drought Toolbox

- It is launched as a **one-stop-shop for all actions on drought**.
- It is a sort of knowledge bank which contains tools that strengthen the ability of countries to anticipate and prepare for drought effectively and mitigate their impacts as well as tools that enable communities to anticipate and find the land management tools that help them to build resilience to drought.

International coalition for action on Sand and Dust storms (SDS)

- The coalition will develop an SDS source base map with the goal of **improving monitoring and response to these storms**.

Initiative of Sustainability, Stability and Security (3S)

- Launched by 14 African countries to address migration driven by land degradation.

Cooperation From Youth

- The global Youth Caucus on Desertification and Land convened its first official gathering in conjunction with the UNCCD COP14 to bring together youth advocates from different parts of the world, to build their capacity, share knowledge, build networks and to engage them meaningfully in the UNCCD processes.

89. Peace Forest Initiative

- It is an **initiative of South Korea** to use **ecological restoration as a peace-building process**. It aims at addressing the issue of land degradation in conflict-torn border areas and would go a long way in alleviating tensions and building trust between communities living there and between enemy countries in particular.
- **India is among the select few countries to have hosted the COP of all three Rio conventions on climate change, biodiversity and land.**

90. World Bamboo Day

- Every year, September 18 is observed as the World Bamboo Day by the World Bamboo Organisation, in order to generate awareness about conserving and promoting the bamboo industry.
- Known as green gold, bamboo is ubiquitous as it dominates rural and urban landscapes.
- From artefacts to sustainable architecture, bamboo remains a favourite as it's fast to grow, low on maintenance and has versatile potential.
- According to reports, **India is the world's second-largest cultivator of bamboo after China**, with 136 species and 23 genera spread over 13.96 million hectares, according to the State of Environment report 2018.

- The **National Bamboo Mission**, under the Ministry of Agriculture & Farmers Welfare, has been initiated to provide a boost to livelihood and environmental acreage.
- Additionally, in 2017, Parliament 'declassified' bamboo as 'a tree' on non-forest lands.
- Similarly, a scheme called **SFURTI** (Scheme of Fund for Regeneration of Traditional Industries) is being implemented by the Ministry of Micro, Small, and Medium Enterprises (MSME) in order to boost traditional industries and bamboo artisans.

91. UN Climate Action Summit

- It took place on 21-23 September at UN Headquarters in New York.
- Having the key focus on raising ambition and accelerate action to implement the Paris Agreement, the Climate Action Summit focuses on nine interdependent tracks, which are led by 19 countries in total and are supported by international organizations.
- It is noteworthy to point that **India along with Sweden, supported by World Economic Forum led the 'Industry Transition' track meeting.**

Renewable Energy

- Not only India reiterated its commitment to the creation of **175 GW renewable energy capacities by 2022** under the Paris Climate Agreement but also vouched to increase its renewable energy target to **450 GW**.

Water Conservation

- India will spend approximately **\$50 billion** in the next few years on the **Jal Jeevan Mission** to conserve water, harvest rainwater and develop water resources.

Leadership Group

- India and Sweden together with other countries have announced a new '**Leadership Group for Industry Transition**' that will drive transformation in hard-to-decarbonise and energy-intensive sectors.
- It will help guide the world's heaviest greenhouse gas emitting industries toward the low-carbon economy.
- This global initiative will be supported by the World Economic Forum, the Energy Transitions Commission, Mission Innovation, Stockholm Environment Institute, and the European Climate Foundation among many others in an ambitious, public-private effort, to ensure heavy industries and mobility companies can find a workable pathway to deliver on the Paris Agreement.

92. New IPCC Report Warns Of Dire Threat To Oceans

- The Intergovernmental Panel on Climate Change (IPCC) made public '**The Special Report on the Ocean and Cryosphere in a Changing Climate**'.
- 'Increased temperatures, further acidification, marine heatwaves, more frequent extreme El Niño and La Niña events,' reads the summary of the report.

- The report updates scientific literature available since 2015 — when the IPCC released its comprehensive 5th Assessment Report — and summarises the disastrous impacts of warming based on current projections of global greenhouse gas emissions.
- It is virtually certain that the **global ocean has warmed unabated since 1970 and has taken up more than 90% of the excess heat in the climate system (high confidence).**
- **Since 1993, the rate of ocean warming has more than doubled.**
- **Marine heatwaves have very likely doubled in frequency since 1982 and are increasing in intensity, the report notes.**
- **Global Mean Sea-Level has increased by 16 cm between 1902 and 2015, and that the rate of increase had doubled of late.**
- The published report is the last in a series of three reports on specific themes that IPCC has published namely

Global Warming of 1.5° C (SR1.5)

- A special report, which was commissioned to specifically **explore the scientific feasibility of the 1.5°C goal, set in the Paris Agreement, on global warming.**

Climate Change and Land (SRCCL)

- The report focuses on the **contribution of land-related activities to global warming**, that is, how the different uses of land affect the emission of greenhouse gases.

93. Even Unborn Babies Can Be Affected By Pollution

- **Black carbon particles typically emitted by vehicle exhaust and coal-fired power plants have been detected on foetus-facing side of placentas.**
- Reported by a study published in 'Nature Communications'.
- **This might affect the overall development of the unborn baby.**
- Critically, traces of black carbon were found on the inward-facing side of the placenta, putting them in direct in contact with the developing foetus.
- There was no evidence; however, of pollution particles in the foetus itself, suggesting the placenta may act as a barrier to the toxins.
- The concentration of black carbon particles was highest in the placentas of women who are most exposed to airborne pollutants in their daily life.
- Inhalation of these particles by the mother gets translocated from the mothers' lungs to the placenta, resulting in life-long changes to the development of the baby along with permanently damaging the lung tissues.
- **It might lead to increased cases of miscarriages, premature births, and low birth weights which in turn increase the chances for diabetes, asthma, stroke, heart disease and a lot of other conditions.**

94. How Clean Is Ganga? Now, A Mobile Application To Monitor Holy River's Water And Aquatic Life

- The **Wildlife Institute of India (WII)** in **Dehradun** recently launched a mobile application named '**Ganga Data Collector**' as a part of the '**Biodiversity and Ganga Conservation**' project.
- The project was initiated by the **National Mission for Clean Ganga (NMCG)** under the **Union Ministry of Jal Shakti**.
- The mobile app is **designed to provide a complete data entry solution to the field researchers, helping them to monitor the aquatic population in the Ganga river**.
- This application will be used by the scientists of WII, **Ganga Prahri volunteers and staff of the forest department in the 11 states of the Ganga Basin** for faster collection of accurate and authentic data related to the water quality and aquatic life in the Ganga.
- There are possibilities that similar mobile applications might come into use in future for the physio-chemical test of other rivers across the country.
- As many as 11 states including **Uttarakhand, Uttar Pradesh, Madhya Pradesh, Rajasthan, Haryana, Himachal Pradesh, Chhattisgarh, Jharkhand, Bihar, West Bengal and Delhi** are part of the Ganga basin.
- The first phase of the training will include volunteers and staff of **five Ganga states, which includes Uttarakhand, Uttar Pradesh, Bihar, Jharkhand and West Bengal** having a Ganga stretches of over 2,200km.
- While the second phase of training will include the staff of the other six states of the Ganga basin.

95. Pacesetter Fund Programme

- The **Ministry of New and Renewable Energy** recently awarded grants to the awardees of the second round of **PACEsetter fund programme**.
- The **PACEsetter fund** was **constituted by India and the USA in 2015** as a joint fund.
- The mission of the **PACEsetter Fund** is to **accelerate the commercialization of innovative off-grid clean energy access solutions by providing early-stage grant funding that would allow businesses to develop and test innovative products, business models and systems**.
- The Fund's main purpose is to **improve the viability of off-grid renewable energy businesses** that sell small scale (under 1 megawatt) clean energy systems to individuals and communities without access to grid connected power or with limited/intermittent access. (Less than 8 hours per day).

96. Enzyme Technology For Cheaper Bio-Fuel Developed By Indian Scientists Gets Us Patent

- A process to produce a cocktail of enzymes that enhances the production of biofuels from agricultural waste developed by scientists in a New Delhi lab has received a patent from the US Patent and Trademark Office.

- The scientists are from the International Centre for Genetic Engineering and Biotechnology (ICGEB), New Delhi.
- The discovery is likely to provide a better **alternative for making commercial cellulase enzyme that can produce ethanol for second generation (G2) biofuel.**
- A cocktail of enzymes that can **break down the agricultural biomass into simple fermentable sugar with great efficiency.**
- The **simple sugars released by the action of these enzymes can further be fermented to ethanol to produce 2G biofuel or any other biochemicals.**
- The work is significant because it can produce higher quantities of 2G ethanol from agricultural waste materials including rice and wheat straws, whose burning deteriorates the air quality in the national capital and other parts of Northern India.
- **Estimates show that India produces around 500 million tonnes of agricultural waste annually.**
- Scientists disrupted a control mechanism found in the fungus penicillium funiculosum (PF) that regulates its metabolic activity.
- **Disrupting this mechanism called carbon catabolite repression helped the scientists to increase the production of enzymes** that are involved in converting cellulose into sugars and, thus increased the production of biofuels.
- The newly-engineered fungus could be a strong alternative in the industrial enzyme repertoire used for biofuel production.
- More importantly, it **can use any type agricultural waste as feedstock.**
- Currently, there is very limited availability of commercial cellulase enzyme preparation in the market for 2G ethanol and this is often stated as the major reason for the higher cost of 2G ethanol.

97. Poison Fire Coral: Deadly Asian Fungus Detected In Australia

- One of the world's most deadly fungi has been identified growing in Australia for the first time, scientists say.
- The **poison fire coral, which has a red appearance, was previously thought to be native to Japan and Korea.**
- Its presence in the tropical state of Queensland - after sightings elsewhere in Asia - "considerably" extends the reach of the species, researchers said.
- If eaten, the fungus **can cause organ failure and brain damage.**
- It can be confused it with an edible fungus used in traditional medicine.
- Even touching the fungus can **cause inflammation and dermatitis.**

98. Rs 50,000 Fine For Idol Immersion In River Ganga And Its Tributaries: Centre

- The Central government has issued a 15-point directive, including cordoning off ghats and imposing a fine of Rs 50,000, to prevent the immersion of idols in the Ganga or its tributaries during festivals, including Dussehra, Diwali, Chhath and Saraswati Puja.
- It has been issued to **11-Ganga basin states -Uttarakhand, UP, Bihar, Jharkhand, West Bengal, Delhi, Himachal Pradesh, Haryana, Rajasthan, Madhya Pradesh, and Chhattisgarh.**
- According to NMCG officials, the large-scale immersion of idols and puja material in the Ganga and its tributaries during festive occasions led to an alarming rise in pollutants in the river.
- The 11 states have also been asked to submit an action taken report within seven days from the end of each festival.
- These directives were issued by NMCG under Section-5 of the Environment (Protection) Act, 1986.

99. National Resource Efficiency Policy

- Concerns over resource depletion have soared in India because of rising factory output, urbanization and population putting pressure on existing resources.
- Against this backdrop, the Union environment ministry has drafted a National Resource Efficiency Policy, aiming to **double the recycling rate of key materials to 50% in the next five years and enable upcycling of waste.**
- The agenda is to **develop a circular economy.**
- This can be achieved by two measures—
 - ✓ **firstly by recycling the materials, and**
 - ✓ **secondly, by increasing the efficiency of use of these resources.**
- The draft policy envisions **setting up a National Resource Efficiency Authority** which will help develop **resource efficiency strategies** for different sectors and adopt them into a three-year action plan.
- To begin with, **seven key sectors** have been identified —automobile, plastic packaging, building and construction sector, electrical and electronic equipment sector, solar photo-voltaic sector, and steel and aluminium sector.
- After the National Green Tribunal imposed a ban on more than ten years old diesel vehicles in the National Capital Region, more vehicles life came to an end.

Under the framed policy, the government plans to set up:

- Collection centres to collect such vehicles and carry out the deregistration process, and Shredding centres which would segregate materials for recycling.
- The plan is to ensure 75% recycling rate for vehicles made before 1990, 85% recycling rate for vehicles made between 1990 and 2000, and 90% recycling rate for vehicles made after 2000.

- Another concern is related to the plastic waste that contributes to 8% of the total solid waste that is addressed by this policy.
- The draft policy aims to achieve a 100% recycling and reuse rate polyethylene terephthalate (PET) plastic by 2025.

Plan of action

Rising factory output, urbanization and population are putting pressure on the country's existing resources.



CURRENT STATUS

- 20-25% of recycling rate, much lower compared to 70% in developed countries
- 1,580 tonnes/acre is India's resource extraction. (World average is 450 tonnes/acre)
- Third highest CO2 emitter, responsible for 6.9% of global CO2 emissions
- Highest water withdrawal globally for agriculture
- 30% of land undergoing degradation



TARGETS

- 50% recycling rate to be achieved by 2025 for aluminium, and 90% by 2030
- By 2030, domestic scrap to fulfil 50% of the total aluminium scrap requirement
- 40% is the targeted rate of utilization of dross by 2025 and 80% by 2030
- Zero import of steel scrap for recycled steel production by 2030
- By 2020 penalty mechanism for violation of e-waste management rules



POLICY STEPS

- Setting up solar panel recycling infrastructure
- Transition to 'zero waste' by converting solid waste to value added products
- Promotion of aluminium scrappage and recycling
- Creation of zonal scrap collection, segregation and treatment facilities
- Quality standards for recycled products, develop codes and standards

Graphic: Sarvesh Kumar Sharma/Mint

100. India's First E-Waste Clinic To Be Set Up In Bhopal

- The Bhopal Municipal Corporation (BMC) and the Central Pollution Control Board (CPCB) have joined hands to set up the country's first e-waste clinic in Bhopal, which would enable segregation, processing and disposal of waste from both household and commercial units.
- It will be a three-month pilot project and if successful, would be replicated elsewhere in the country.
- Electronic waste will be collected door-to-door or could be deposited directly at the clinic in exchange for a fee. The CPCB will provide technical support at the unit
- Door-to-door collection will happen in two ways. Either separate carts for the collection of e-waste will be designed, or separate bins will be attached to existing ones meant for solid and wet waste.
- The clinic is being conceived in compliance with the Solid Waste Management Rules, 2016.
- In the absence of a safe disposal mechanism, electronic waste at present is being disposed of along with other waste.

101. India To Work With China, Pakistan To Gauge Impact Of Climate Change

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- To better gauge the impact of climate change on the Hindu Kush Mountains, which includes the Himalayas, and spruce up data-gathering, the India Meteorological Department (IMD) will collaborate with meteorological agencies in China and Pakistan, among others, to provide climate forecast services to countries in the region.



- The Hindu-Kush-Himalayan (HKH) region is considered the Third Pole [after the North and South Poles], and has significant implications for climate.
- However, data-gathering here is sparse.
- A system needs to be developed whereby countries can share data and improve forecasts and predictions.
- Alongside forecasting weather over long periods, the regional centres would provide data services, training and capacity-building, research and development.
- The HKH region spans Afghanistan, Bangladesh, Bhutan, China, India, Kyrgyzstan, Mongolia, Myanmar, Nepal, Pakistan, Tajikistan, and Uzbekistan.
- It traverses about 5 million square kilometres and hosts a large and culturally diverse population.
- The Third Pole, which contains vast cryospheric zones, is also the world's largest store of snow and ice outside the polar region.
- A report by the Intergovernmental Panel on Climate Change last month highlighted the threat to the HKH region from global warming.
- Floods would become more frequent and severe in the mountainous and downstream areas of the Indus, Ganges and Brahmaputra river basins, because of an increase in extreme precipitation events.
- The severity of floods was expected to more than double towards the end of the century, it said

102. Green Wall

- The government is devising a plan to come up with a 'green wall' expected to be **1,400-km long and 5-km wide between Gujarat and Delhi-Haryana border.**
- The green belt, a **replica of Africa's ambitious 8,000 km 'Great Green Wall' initiative that was designed to run across more than 20 African countries**, will be an attempt to combat land degradation.
- The project is still in its early stages and will likely stretch from Porbandar in Gujarat to Panipat in Haryana.
- The idea behind the green belt is to stop degradation along the Aravali hills ranges by afforestation.
- It will also act as a barrier for dust coming from the deserts in western India and Pakistan.
- It would also help India deal with the Thar desert desertification in Rajasthan.

103. Massive Iceberg Breaks Off Antarctica—But It's Normal

- The iceberg, dubbed **D28**, **broke away from the Amery ice shelf** between September 24 and 25, according to observations from European and American satellites.
- Iceberg production is part of the normal cycle of ice shelves, which are an extension of the ice cap.
- Ice shelves have to lose mass because they gain mass. They want to stay the same size.
- The gain in mass comes from snow falling on the continent and glaciers that move slowly toward the shore.
- The **east of Antarctica—where D28 broke off—is different from the west of the continent and Greenland, which are rapidly warming due to climate change.**

104. India Is Home To Asia's Oldest Bamboo

- With over 49,000 plant species reported as of 2018, India holds about 11.5% of all flora in the world.
- Now, a new fossil record has shown that India is the birthplace of Asian bamboo, and they were formed about 25 million years ago in the north-eastern part of the country.
- An international team of researchers found two fossil compressions or impressions of bamboo culms (stems) and after further study noted them to be new species.
- They were named **Bambusiculmus tirapensis** and **B. makumensis** - as they were found in the **Tirap mine of Makum Coalfield in Assam.**
- These belonged to the late Oligocene period of about 25 million years ago.
- They also found two impressions of bamboo leaves belonging to new species *Bambusium deomarensense*, and *B. arunachalense*, named after the Doimara region of Arunachal Pradesh where it was discovered.
- These leaves were found in the late Miocene to Pliocene sediments, indicating that they were between 11 and three million years old.
- **Yunnan Province in China now has the highest diversity of bamboo**, but the oldest fossil in that region is less than 20 million years old, clearly indicating that **Asian bamboo was born in India and then migrated there.**
- This finding further strengthens the theory that bamboo came to Asia from India and not from Europe.
- Today, we can see bamboo in a wide range of climatic conditions from as cold as 5 degree C to even 30 degrees C.
- And at sea level to heights of about 4,000 metres.
- They can survive in varying rainfall conditions too.
- In fact, the European bamboo fossil is about 50 million years old.
- The Indian plate collided with the Eurasian plate about 50 million years ago.

- However, the suturing between the two plates was not completed until 23 million years, meaning the plates were not completely joined, restricting migration of plants and animals.
- And also as the Himalayas were not formed yet, the temperature was also warm and humid in the Northeastern region, with not many seasonal variations.
- The present climate in the region is cold with strong winter and summer conditions.
- **Bamboo braved these climatic and geographical changes making it the fittest in the survival race**

105. Centre Clarifies On Definition Of Land As Forest

- The freedom to define land, not already classified as forests by the Centre or state records, as forest has been the **prerogative of the States since 1996 and stems from a Supreme Court order called the Godavarman judgement.**
- **The States need not take the Centre's approval to define what constitutes unclassified land as forest,** the Forest Advisory Committee (FAC) of the environment ministry, comprising independent experts and officials in the Centre's forestry division, has clarified
- The conundrum of defining forests has been around since the 1980s.
- The 1996 Supreme Court judgement expanded the definition of forest to include lands that were already notified by the Centre as forests that appear in government records as forests as well as **those that fell in the "dictionary definition" of forest.**
- **The latter clause allows the States to evolve their own criteria and define tracts of land as forest, and these would then be bound by forest conservation laws.**
- However, not all States have submitted such criteria.
- **Forests defined under this criteria constituted about 1% of the country's forests and once so defined would be known as 'deemed forests.'**
- An all-encompassing definition of 'forest' wasn't possible for India because the country had 16 different kinds of forest.
- A tract of grassland in one State might qualify in one region as forest, but not in another.
- **However, once a State applied a criterion, it couldn't be reversed.**

106. Foreign Plastic Invades Great Nicobar Island

- The pristine beaches of the Great Nicobar Island, India's southernmost territory are under threat from plastic.
- A survey of five beaches in the islands recorded the presence of plastic bottles.
- Sixty of these were analysed and found to be of 'non-Indian origin,' according to researchers, whose findings appear in the latest edition of *Current Science*.
- **Major portion of the litter (40.5%) was of Malaysian origin.**
- It was followed by Indonesia (23.9%) and Thailand (16.3%). Other countries contributed a minor portion.

- The litter of Indian origin only amounted to 2.2%
- The overwhelming contribution from Indonesia and Thailand was likely due to its proximity to the island; the plastic is likely to have made its way to the island because of water currents via the Malacca Strait, which is a major shipping route.
- The huge quantities of marine debris observed on this island might be due to improper handling of the solid waste from fishing/mariculture activity and ship traffic.
- However, the researchers also point out that litter of Indian origin on beaches and mangroves of the Andaman Islands is continuously increasing.
- This is probably due to lack of proper guidelines and inadequate staff to monitor these islands
- Plastic pollution has emerged as one of the severest threats to ocean ecosystems and its concentration has reached 5, 80,000 pieces per square kilometre.
- Plastic represents 83% of the marine litter found. The remaining 17% is mainly textiles, paper, metal and wood.
- The Great Nicobar Island of Andaman has an area of about 1044 sq. km.
- According to the 2011 census, has a population of about 8,069.
- The island is home to one of the most primitive tribes of India — the Shompens.
- The island includes the Great Nicobar Biosphere Reserve (GNBR) comprising of the Galathea National Park and the Campbell Bay National Park.
- The island harbours a wide spectrum of ecosystems from tropical wet evergreen forests, mountain ranges and coastal plains.

Plastic threat

Country-wise plastic litter (in %) found on the beaches of Great Nicobar Island

Country	S-1*	S-2*	S-3*	S-4*	S-5*
Indonesia	24.2	23.8	23.5	22.6	25.2
Malaysia	37.4	45.0	44.7	39.6	36.0
Vietnam	2.2	1.3	2.4	2.8	2.7
Thailand	15.4	12.5	18.8	17.0	18.0
Myanmar	2.2	2.5	0.0	1.9	3.6
Singapore	6.6	10.0	5.9	9.4	5.4
China	2.2	0.0	2.4	1.9	3.6
The Philippines	2.2	2.5	1.2	2.8	3.6
Japan	2.2	0.0	0.0	0.9	0.9
India	5.5	2.5	1.2	0.9	0.9

* S-1 to S-5 are five beach areas in the eastern part of the Great Nicobar Island



Tourists walking past a pile of plastic garbage on a beach on Phi Phi Don island in the Andamans ■ AFP

- The island is also home to giant robber crabs, crab-eating macaques, the rare megapode as well as leatherback turtles.

107. C40 World Mayors' Summit

- The C40 World Mayors' Summit is a three-day conference where city leaders from around the world share ideas on green urban development and on ways to get national governments to act on climate issues.
- The host city of this year's conference (scheduled to last from October 9 to October 12) Copenhagen, plans to become carbon neutral by 2025.
- C40 Summits are known for publishing important research, showcasing innovations by cities, and for forging global partnerships.
- At the 2019 Summit, the Mayor of Los Angeles will take over as chair of the group.
- Over the past decade, C40 has convened six Mayors Summits, hosted by London (2005), New York (2007), Seoul (2009), São Paulo (2011), Johannesburg (2014) and Mexico City (2016).
- Each C40 Mayors Summit has provided unique opportunities for the mayors of the world's great cities to showcase their climate leadership on the global stage.
- The cities from India that are part of the C40 are Delhi NCR, Bengaluru, Jaipur, and Kolkata.
- **C40 connects more than 96 of the world's largest cities to deliver urgent and essential climate action needed to secure a sustainable future for urban citizens worldwide.**
- **The group is committed to delivering on climate targets set under the 2016 Paris Agreement, and sets the bar for cities to develop and implement local level plans that comply with those targets.**
- The C40 group was started in 2005 by the then Mayor of London, Ken Livingstone, and got its name in 2006, since it had 40 members that year.
- It has 96 members at present, representing over 70 crore people, and one-quarter of the global economy.
- **Cities, according to the C40 website, have the potential to deliver 40 per cent of the emissions reductions to meet the Paris targets**

108. Anthrax Scare In Reserve After Death Of Buffaloes

- Veterinarians have confirmed anthrax as the cause of death of two Asiatic water buffaloes in central Assam's **Pobitora Wildlife Sanctuary**, which has the highest concentration of one-horned rhinos (whose population in the sanctuary in 2018 was estimated to be 102) in the world and is often called 'Mini Kaziranga' due to similar landscape and vegetation.



- Anthrax, caused by the bacterium *Bacillus anthracis*, can be fatal for humans who come in contact with infected animals.
- It is characterised by blisters around swellings on the skin, chest pain, vomiting, diarrhoea and fever.
- It is found in the **Central Indian Forests** and is mostly restricted to the states of Assam, Arunachal Pradesh and Madhya Pradesh.

- Recently, it was found in the forests of Maharashtra after which the Maharashtra Government declared the Kolamarka forest area as a conservation reserve for the Asiatic Wild Buffalo.
- It has the widest horn span.
- **Endangered - International Union for Conservation of Nature (IUCN).**
- **Schedule - 1 - Wild Life (Protection) Act, 1972.**
- **CITES Appendix - III**
- It is believed to be extinct in Bangladesh, Peninsular Malaysia, and on the islands of Sumatra, Java, and Borneo.

109. Call Of The Wild: India Plans First-Ever Snow Leopard Survey

- India will commission its first-ever survey to estimate the population and geographical range of the snow leopard, an elusive and endangered predator.
- The snow leopard is found along the upper reaches of the Himalayan range and, in India, it is reported to have a presence in **Kashmir, Ladakh, Himachal Pradesh, Uttarakhand, Sikkim and Arunachal Pradesh (5% of the global snow leopard range)**
- However, the inhospitable terrain and the reclusive nature of the animal have so far made a scientific estimation impossible.
- The use of technology such as camera traps and scientific surveys will help to estimate the numbers.
- The snow leopard is found in 12 countries — India, Nepal, Bhutan, China, Mongolia, Russia, Pakistan, Afghanistan, Kyrgyzstan, Kazakhstan, Tajikistan and Uzbekistan.
- Officials announced the survey at a meeting of the **Global Snow Leopard and Ecosystem Protection (GSLEP) programme being organised by Union Environment Ministry.**
- Currently, the Steering Committee meeting of GSLEP chaired by Nepal and co-chaired by Kyrgyzstan. The meeting has officials from Nepal, Russia, Kyrgyzstan, Mongolia and China.



110. Ozone Hole Above Antarctica Shrinks To Smallest Size On Record

- A hole in the ozone layer located near the Earth's South Pole is the smallest it has been since first being discovered in the 1980s, NASA said.
- While depletion of the ozone has decreased over the years, the holes smaller size this year is related to abnormal weather and wind patterns. It's great news for ozone in the Southern Hemisphere.
- But it's important to recognize that what we're seeing this year is due to warmer stratospheric temperatures. It's not a sign that atmospheric ozone is suddenly on a fast track to recovery.

- Located between **seven to 25 miles above Earth's surface**, in a part of the atmosphere called the stratosphere, the ozone layer shields the planet from ultraviolet radiation that can cause skin cancer, cataracts and other hazardous conditions.
- Due to the warmer temperatures over Antarctica in 2019, fewer polar stratospheric clouds formed and they couldn't persist longer, which limited the ozone-depletion process.
- It is the third time in the past 40 years that weather systems have caused conditions that limited ozone depletion.

111. Wildfires Peaked In August, Half Were In Asia

- Compared to August 2018, there were almost five times as many wildfires across the world in August 2019; the European Space Agency (ESA) has announced citing data from its Sentinel-3 World Fire Atlas.
- August and September 2019 were also the months during which fires in the Amazon rainforest were at the centre of worldwide attention.
- A detailed analysis of the August 2019 fires, however, shows that it was Asia that accounted for nearly half of these fires, the ESA said.
- The data revealed that 49% of the fires were detected in Asia, around 28% were detected in South America, 16% in Africa, and the remaining were recorded in North America, Europe and Oceania.
- The Sentinel-3 World Fire Atlas uses a method that enables it to identify all active fires at night.
- The sensors on satellites measure thermal infrared radiation to take the temperature of Earth's land surfaces.
- This information is used to detect and monitor the heat emitted by the fires.
- Quantifying and monitoring fires is important for the study of climate because, as the ESA pointed out, fires have a significant impact on global atmospheric emissions, with biomass burning contributing to the global budgets of greenhouse gases, like carbon dioxide.

112. Doubt Over Future Of Antarctic Ocean Sanctuary Plans

- A push by Australia and France to create a massive ocean sanctuary in east Antarctica is in doubt as nations meet in Hobart to discuss the plans, with China and Russia opposing.
- The proposed East Antarctic marine park would protect one million square kilometres of ocean, but has repeatedly been struck down at meetings of the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR).
- It was first floated by Australia, France and the European Union in 2010 before being scaled down in 2017.
- Both China and Russia have fishing interests in the region.
- The consent of all 26 members of the CCAMLR is required for the creation of Marine Park.
- CCAMLR has previously established other major ocean Antarctic sanctuaries — including the world's largest spanning 1.55 million square kilometres in the Ross Sea.

113. Tasmanian Tiger

- The Tasmanian tiger, a large striped carnivore, is believed to have gone extinct over 80 years ago -- but newly released Australian government documents show sightings have been reported as recently as two months ago.
- Tasmania's Department of Primary Industries, Parks, Water and Environment (DPIPWE) recently released a document detailing eight reported sightings of the Tasmanian tiger, or thylacine, in the last three years.
- The thylacine, a marsupial that looked like a cross between a wolf, a fox, and a large cat, is believed to have gone extinct after the last known live animal died in captivity in 1936.
- It had yellowish brown fur, with powerful jaws and a pouch for its young, according to the Australian Museum.

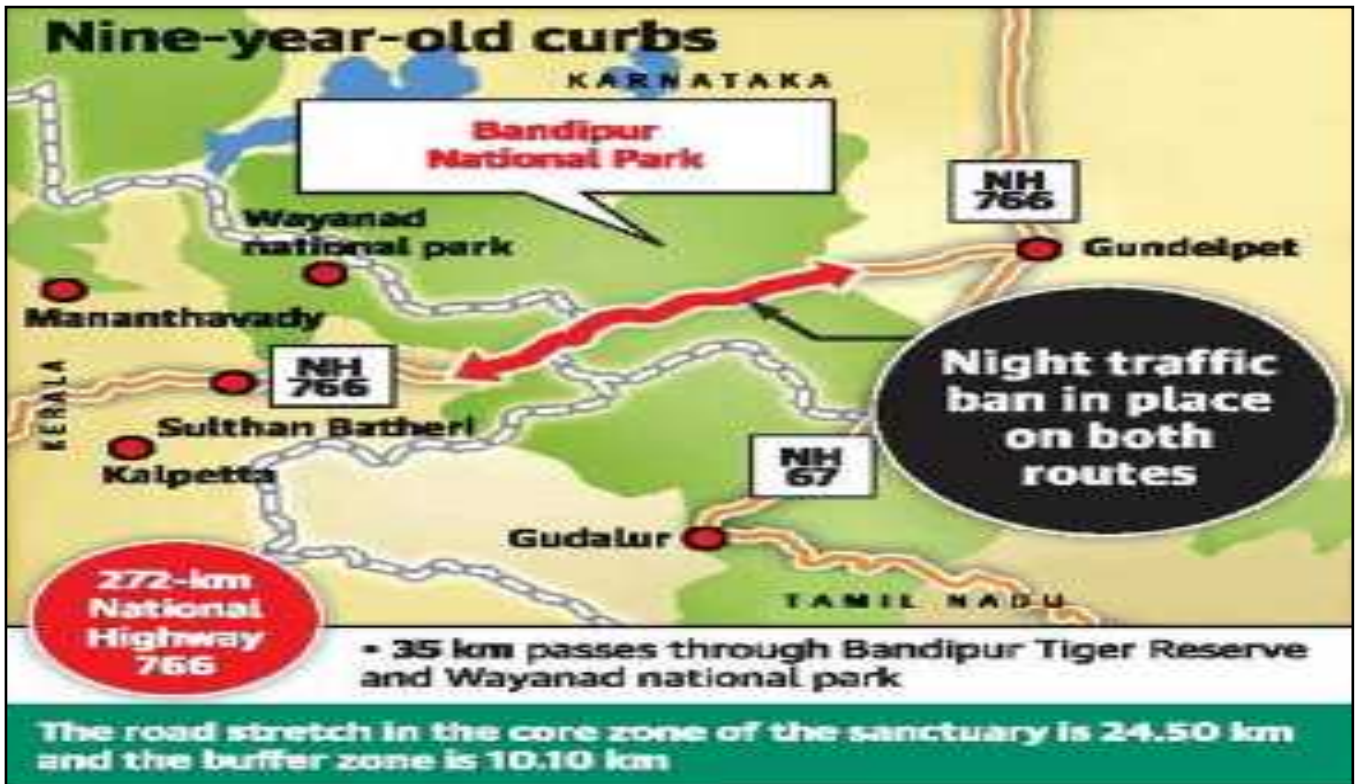


114. The Western Ghats Still Home To A Rainbow Of Butterflies

- The four-day butterfly survey conducted by the forest department in Wayanad Wildlife Sanctuary (WWS) has revealed significant butterfly diversity.
- The survey team recorded as many as 191 species of winged beauties.
- The survey has also recorded first sightings of six species in WWS, including three rare butterfly varieties.
- The first-time sighting of Silver forget me not, Common three rings, and Brown onyx was also recorded. The sighting of Silver forget me not was reported only from the Chinnar Wildlife Sanctuary in Idukki district of the State.
- The survey was mainly aimed at assessing the butterfly diversity in the forest areas of the region, which is vulnerable to climatic changes.
- It was also wanted to assess the availability of nectar plant and larval host plant, essential for the survival of butterflies.
- This year's butterfly survey had taken place during the annual butterfly migration in south India from the plains to the Western Ghats areas.
- The sighting of 191 species of butterflies is an evidence of a healthy butterfly habitat in the region, but the degradation of the riparian forest in many part of the region may adversely affect the butterfly habitat in the near future.
- Also, the sanctuary provided a healthy ecosystem for butterflies (227 butterfly species so far recorded in the sanctuary, it is significant that the survey could spot 191 species in this year's survey) the proliferation of Senna spectabilis was a cause for concern as the domination of the plant would mean stifling of many host plants of butterflies.

115. Lift Travel Curbs On NH 766, Says Kerala

- The Kerala Assembly has passed a resolution demanding the Union government to lift the travel restrictions on National Highway-766 linking Kerala and Karnataka and safeguard the right of the people of north Kerala to move freely.
- The resolution pointed out that night travel on this main artery passing through the Bandipur National Park had been banned since 2009 for protecting wildlife.
- **National Highway 766 passing through the Bandipur tiger reserve connects Wayanad with Chamarajanagar district of Karnataka.**
- It is seen as a survival route for the people of Wayanad which lacks rail and connectivity and water



routes.

- Bandipur is home to about 140 tigers, more than 1,500 elephants and over 25,000 deer and is one of the oldest tiger reserves in India.
- When Project Tiger was launched in 1973, Bandipur forest was declared as a tiger reserve.
- In 1984, Bandipur tiger reserve became a national park.
- It is spread over about 1,000 sq km across three states - Karnataka, Tamil Nadu and Kerala.
- In fact, it connects three reserved forests of the Nagarhole National Park of Karnataka, the Mudumalai Wildlife Sanctuary in Tamil Nadu, the Wayanad Wildlife Sanctuary of Kerala.

116. EU Bank To Cease Funding Fossil Fuel Projects By End Of 2021

- The European Investment Bank said that it would stop funding fossil fuel projects at the end of 2021, in a landmark decision.

- The bank's new energy lending policy, which was approved with “overwhelming” support, will bar most fossil fuel projects, including traditional use of natural gas.
- Under the new policy, **energy projects applying for EIB funding will need to show they can produce one kilowatt hour of energy while emitting less than 250 grams of carbon dioxide, a move which bans traditional gas-burning power plants.**
- Gas projects are still possible, but would have to be based on what the bank called “new technologies,” such as carbon capture and storage, combining heat and power generation or mixing in renewable gases with the fossil natural gas.
- Environmental organisations celebrated the EIB decision, but expressed disappointment at the one year delay. (Originally proposed end of fossil fuel lending from the end of 2020 to end of 2021)
- The EIB, the biggest multilateral lender in the world, has ambitious goals on sustainable finance.
- The bank wants to “set the standard” for what it means for a multilateral bank to be aligned with the Paris agreement

117. Swachh–Nirmal Tat Abhiyaan

- To strive to **make our beaches clean and create awareness amongst citizens about the importance of coastal ecosystems, the Ministry of Environment, Forest and Climate Change (MoEF&CC) are undertaking a mass cleanliness-cum-awareness drive in 50 identified beaches under the “Swachh – Nirmal Tat Abhiyaan”, from 11th -17th November, 2019.**
- The identified beaches are in 10 coastal States/Union Territories (UTs) namely Gujarat, Daman & Diu, Maharashtra, Goa, Karnataka, Kerala, Tamil Nadu, Puducherry, Andhra Pradesh, and Odisha.
- The beaches have been identified after the consultation with the States/UTs
- The cleaning drives in all beaches are being undertaken, involving school/college students of Eco-clubs, district administration, institutions, volunteers, local communities and other stakeholders.
- For beach cleaning activities which will be a duration of two hours on daily basis, a minimum of one Kilometre stretch of the beach shall be identified.
- Beach sand cleaning machines shall also be deployed.
- Thereafter collected waste will be processed as per extant Waste Management Rules, 2016.
- Environment Education Division of the Ministry and Society of Integrated Coastal Management (SICOM) under the aegis of this Ministry will be responsible for the overall coordination for the drive in 50 beaches.
- Respective State Governments and Central Ministries will also be actively participating in the beach cleaning drives.
- The Ministry has also decided that on completion of the drive; best three beaches will be suitably awarded along with a Certificate of Appreciation for all the participating Eco-clubs.

118. Thousands Of Migratory Birds Die Mysteriously In Rajasthan's Sambhar Lake

- Thousands of migratory birds of about ten species were found dead around Sambhar Lake, the country's largest inland saltwater lake near Jaipur, sending shock waves among locals and authorities.
- The Sambhar Salt Lake is located 80 km southwest of the city of Jaipur.
- It surrounds the historical Sambhar Lake Town.
- It attracts thousands of migratory birds every year.
- There could be some sort of contamination in the water.
- The increased salinity of the water could also be another reason, as it increases salt concentration in the blood, which can further lead to slow blood flow and the internal organs like the brain may stop working.
- The lake is also a favourite of flamingos, stilts, stints, garganey, gulls and a number of other species of birds.

119. Geochemical Baseline Atlas Of India Released

- For the first time, 'Geochemical Baseline Atlas of India' developed by CSIR-National Geophysical Research Institute (NGRI) for use by policy makers to assess environmental damage.
- The atlas consisting 45 maps of metals, oxides and elements present in top and bottom soils across India will serve as a reference against which future generations of the country would be able to assess the chemical compositional changes on Earth's surface.
- These maps help in finding out future contamination caused by industries or other bodies which cause pollution.
- To develop the maps, the globe was divided into 5,000 cells of 160 km by 160 km each. Of it, India has 122 cells.
- The work in started in 2007 from cell number 1 which is in Kanyakumari. The last cell is in Arunachal Pradesh.
- Soils from uninhabited places were collected.
- The work ended in 2011.
- There are maps for 22 metals.
- With a glance at it, we will get to know regions with high and low concentrations of a metal.
- The geochemical data presented in these maps will be a part of the global map to be prepared by the International Union of Geological Sciences (IUGC).

120. No Elephant Safari In Dudhwa National Park This Season

- Tourists visiting the Dudhwa National Park will not be able to enjoy elephant safari this season as most trained jumbos have been deployed in patrolling duties.
- Another major reason to put restrictions on the safari is the aggressive nature of male elephants, which may pose a serious threat to the safety of riders.
- Dudhwa National Park is a national park in the Terai belt of marshy grasslands of northern Uttar Pradesh.
- It is part of the Dudhwa Tiger Reserve covering the areas of Kheri and Lakhimpur districts. It is located on the Indo-Nepal border. Major attractions of Dudhwa National Park are the tigers and swamp deers.
- **Dudhwa National Park is a stronghold of the barasingha. In March, 1984 Indian rhinoceros was reintroduced into Dudhwa from Pobitora Sanctuary in Assam and Nepal. It is the only place in U.P. where both tigers and rhinos can be spotted together**



121. Sea Level Along Indian Coast Rose By 8.5 Cm In Last 50 Years

- Sea level along the Indian coast has risen by 8.5 cm in the last five decades.
- On an average, the sea level along the Indian coast is considered to be rising at about 1.70 mm/year meaning thereby that during the past 50 years, the sea level along the Indian coasts has risen by 8.5 cm. Further, satellite altimetry and model simulations showed that the North Indian Ocean (NIO) also exhibits decadal variability.
- During the last decade (2003-2013) it experienced sea level rise at a rate of 6.1 mm/year.
- The rising sea levels can exacerbate the coastal inundation along the low lying areas during extreme events such as tsunami, storm surge, coastal flooding and coastal erosion.
- Rate of increase of sea level due to climate change cannot be attributed with certainty. Since no long term data on land subsidence or emergence are available for these locations, the rate of increase of sea level due to climate change cannot be attributed with certainty.
- Recently, a report of the UN's Inter Governmental Panel on Climate Change (IPCC) had warned that global sea levels are set to rise by at least 1m by 2100 if carbon emissions go unchecked, submerging hundreds of cities, including Mumbai and Kolkata, and in some cases entire countries

122. Tiger Conservation Gets A Boost In AP



- Due to concerted efforts by the Tiger Conservation Foundation (TCF), the **number of tigers in the Nagarjunasagar Srisailem Tiger Reserve (NSTR) in Andhra Pradesh has gone up, reversing the steady decline in the number of the endangered species over a period.**
- Enthused by the findings of the fourth cycle of the All India Tiger Estimation (AITE), which showed an increase of six in Andhra Pradesh and Telangana, the TCF has drawn up an action plan to double its efforts to facilitate proliferation of the big cats in the largest tiger reserve in the country.
- **Nagarjunsagar-Srisailem Tiger Reserve is the largest tiger reserve in India .**
- The reserve spreads over five districts of Andhra Pradesh and Telangana.
- The multipurpose reservoirs, Srisailem and Nagarjunasagar, are located in the reserve.
- The area consists mostly of the **Nallamala Hills**. The hill ranges contain number of plateau of which Amrabad, Srisailem, Peddacheruvu, Sivapuram, Nekkanti are noteworthy. The **Krishna river** cuts its basin almost 200 m (660 ft) deep over a distance of 130 km (81 mi) through the reserve. It is home to a dazzling array of wild animals.
- In addition to the **Bengal Tiger**, which is the apex predator, many other species like leopard, rusty-spotted cat, sloth bear, wild dog, pangolin, mouse deer, Chausingha, Mugger Crocodiles, Indian Rock Python, and innumerable varieties of birds are found here.

123. Odisha To Compensate 8,000 Fishermen Families For Fishing Ban For Olive Ridley Protection

- The Odisha government would compensate 8,000 fishermen families who would bear losses due to the fishing ban imposed for protection of the endangered Olive Ridley sea turtles.
- The annual fishing ban would be in force from November, 2019 to May 31, 2020 during which lakhs of turtles would arrive at the Odisha coast for mass nesting.
- The olive ridley sea turtle, also known as the Pacific ridley sea turtle, are the **second smallest and most abundant of all sea turtles found in the world; this species of sea turtle is found in warm and tropical waters, primarily in the Pacific and Indian Oceans.**
- These turtles, along with the related Kemps ridley turtle, are best known for their unique mass nesting called arribada, where thousands of females come together on the same beach to lay eggs.
- The olive ridley is classified as vulnerable according to the International Union for Conservation of Nature and Natural Resources (IUCN), and is listed in Appendix I of CITES.



- Gahirmatha beach
- Astaranga coast
- Three river mouths, namely Dhamara, Devi and Rushikulya

124. Emissions Gap Report By UNEP

- **United Nations Environment Programme (UNEP) released its annual Emissions Gap Report.**
- The report warns that unless global greenhouse gas emissions fall by 7.6 per cent each year between 2020 and 2030, the world will miss the opportunity to get on track towards the 1.5°C temperature goal of the Paris Agreement.
- Produced annually since 2010, the UNEP flagship report assesses the gap between anticipated emission levels in 2030 and levels consistent with a 2°C/1.5°C temperature target.
- The 'Emissions Gap Report 2019' presents the latest data on the expected gap in 2030 for the 1.5°C and 2°C temperature targets, exploring different scenarios, from no new climate policies since 2005 to full implementation of all national commitments under the Paris Agreement.
- **The top four emitters (China, USA, EU and India) contributed to over 55% of the total emissions over the last decade**, excluding emissions from land-use change such as deforestation.
- The rankings would change if land-use change emissions were included, with Brazil likely to be the largest emitter.
- **The largest share of emissions comes from the energy sector and its fossil fuel emissions.**
- **Industry produces the next largest footprint, followed by forestry, transport, agriculture and buildings**, it said.
- **G20 nations collectively account for 78 per cent of all emissions, but only five G20 members have committed to a long-term zero emissions target.**
- The report, however, adds that India is among a small group of countries that are on track to achieve their self-declared climate targets under the Paris Agreement with their current policies in place.
- However, it mentions that there are uncertainties regarding India's emissions future, the biggest of which is how rapidly the country's economy will grow.

125. Living Root Bridges

- **The jingkiengjri or living root bridges, aerial bridges built by weaving and manipulating the roots of the Indian rubber tree – have been serving as connectors for generations in Meghalaya.**
- Spanning between 15 and 250 feet and built over centuries, the bridges, primarily a means to cross streams and rivers, have also become world-famous tourist attractions.
- A root bridge uses traditional tribal knowledge to train roots of the Indian rubber tree, found in abundance in the area, to grow laterally across a stream bed, resulting in a living bridge of roots.
- The process begins with placing of young pliable aerial roots growing from *Ficus elastica* (India rubber) trees in hollowed out *Areca catechu* or native bamboo trunks.

- These provide essential nutrition and protection from the weather, and also perform as aerial root guidance systems.
- Over time, as the aerial roots increase in strength and thickness, the Areca catechu or native bamboo trunks are no longer required.
- Ficus elastica is conducive to the growth of bridges because of its very nature.
- There are three main properties
 - ✓ They are elastic,
 - ✓ The roots easily combine
 - ✓ The plants grow in rough, rocky soils.

126. Sumatran Rhino Extinct In Malaysia As Lone Survivor Dies

- The Sumatran rhinoceros has become extinct in Malaysia, after the last of the species in the country succumbed to an illness.
- IUCN Status – **Critically Endangered**

127. New Snake Species Found In Arunachal

- Researchers have discovered a new species of **non-venomous burrowing snake in Arunachal Pradesh, named Trachischium apteii.**
- It was found under fallen logs inside a thickly forested area of the **Tally Valley Wildlife Sanctuary** near the town of Ziro in Arunachal Pradesh.
- Experts behind the discovery suggested that due to the burrowing habits of species of this genus, snakes belonging to the group are seldom seen and hence remain poorly studied.
- This could have been one of the reasons that the species had eluded the researchers.
- *Trachischium apteii* was named so to honour the contribution of Deepak Apte, well-known marine biologist and Director of the BNHS.
- *Trachischium* species are commonly called slender snakes, and are currently known by seven species that are distributed across the Himalayas, and the Indo-Burma and Indo-China regions.

128. Kolleru Lake

- The **Atapaka Bird Sanctuary at Kolleru Lake** has become a safe breeding ground for two migratory species namely, Grey Pelicans and Painted Storks. (Both are **Near Threatened**)
- The migratory birds have chosen a few locations within Kolleru Lake for breeding and have arranged the nests.
- The birds' census in Kolleru Lake is likely to be carried out in early January, documenting the number of bird species that arrive at the lake, and the status of breeding.

- **Kolleru lake is located between the deltas of the Krishna and Godavari rivers in Andhra Pradesh. It is an important habitat for an estimated 20 million residents and migratory birds like Grey or Spot-billed pelicans.**
- It was declared a wetland of international importance in 2002 under Ramsar convention

129. Global Climate Risk Index 2020

- **India is the fifth most vulnerable country to climate change according to Global Climate Risk Index 2020 released by Environment think tank, German watch.**
- **India's rank has worsened** from the 14th spot in 2017 to 5th in 2018 in the global vulnerability ladder.
- **India has also recorded the highest number of fatalities due to climate change and the second-highest monetary losses from its impact in 2018.**
- The Global Climate Risk Index 2020 analyses to what extent countries and regions have been affected by impacts of weather-related loss events (storms, floods, heat waves etc.).
- The most recent data available— for 2018 and from 1999 to 2018 —were taken into account.
- German watch, based in Bonn and Berlin (Germany), is an independent development and environmental organisation which works for sustainable global development.
- The countries and territories affected most in 2018 were Japan, the Philippines as well as Germany.
- For the period from 1999 to 2018 Puerto Rico, Myanmar and Haiti rank highest.
- Altogether, about 5 lakh people died as a direct result of more than 12 000 extreme weather events globally.
- Losses amounted to around US\$ 3.54 trillion (in purchasing power parities).

130. Operation Clean Art

- It the first pan India **operation to crackdown on the smuggling of mongoose hair in the country.**
- An adult mongoose yields over 30-40 gm of long hair, from which only 20-25 gm of “brush-making hair” is recovered.
- Operation Clean Art was conceived by WCCB with the singular aim of ensuring that the mongoose hair brush trade should be closed down across the country.
- There are **six species of mongoose** found in India -Indian grey mongoose, Small Indian mongoose, Ruddy mongoose, Crab-eating mongoose, Stripe-necked mongoose and Brown mongoose and mostly recovered in the raids is grey mongoose hair.
- Mongoose is **listed in Schedule II Part 2 of the Wildlife Protection Act, 1972** and any smuggling or possession of its body part is a non-bailable offence.
 - ✓ IUCN Red List status- **Least Concerned**
 - ✓ All six species are **listed on CITES Appendix III** with a zero quota for commercial trade.

131. COP-25

- The 2019 United Nations Climate Change Conference, also known as COP25, is the **25th United Nations Climate Change conference**.
- It is being held in **Madrid, Spain**, from 2 to 13 December 2019 under the presidency of the Chilean government.
- The conference incorporates the 25th Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC), the **15th meeting of the parties for the Kyoto Protocol (CMP15)**, and the **second meeting of the parties for the Paris Agreement (CMA2)**.
- Originally, the Summit was scheduled to be held at Chile (South America) but violent mass movement across the country made Chile reluctant from hosting the event.
- The prime objective of the conference is to complete the rule-book to the 2015 Paris Agreement that will become effective in 2020 to replace the 1997 Kyoto Protocol (comes to an end in 2020).
- The last part of the Paris regime that needs to be resolved is Article 6.
- This article describes rules for a carbon market and other forms of international cooperation.
- In the COP24 no agreement could be reached on this topic.
- It will also discuss how to create functioning international emissions trading systems and compensate poor countries for losses they suffer from rising sea levels and other consequences of climate change.
- It will also consider the **Emissions Gap Report, produced by the UN Environment Programme (UNEP)** and a series of reports from the Intergovernmental Panel on Climate Change (IPCC).

132. World Soil Day

- Every year, December 15 is celebrated as the World Soil Day.
- The day highlights the soil's importance on Earth.
- Soil is one of the basic requirements for survival.
- However, continuous deforestation was leading to a number of problems.
- The United Nations saw a need to raise awareness about the dangers of soil loss.
- Therefore, the existence of World Soil Day came into being.
- The day was first celebrated on December 5, 2012, corresponding with the birthday of Thai king Bhumibol Adulyadej, who officially sanctioned the event.
- However, back in 2002, the international Union of Soil Sciences (IUSS) made a resolution to propose December 5 as World Soil Day.
- After International Union of Soil Sciences' recommendation to celebrate World Soil Day annually, FAO also supported the formal establishment of World Soil Day.

- In December 2013, UN General Assembly at the 68th session declared December 5 as World Soil Day.
- For the year 2019, the theme for World Soil Day is “Stop soil erosion, save our future”.
- It aims at raising awareness on the importance of sustaining healthy ecosystems and human well-being.

133. India Tests Swedish Technology To Reduce Stubble Burning

- To find a solution to the issue of Stubble burning, India is testing a **Swedish technology – torrefaction that can convert rice stubble into ‘bio-coal’**.
- The Office of the Principal Scientific Advisor (PSA) to Government of India has funded a pilot project in Punjab to evaluate the feasibility of the technology.
- **Bioendev, a Swedish company, has set up a pilot plant at the National Agri-Food Biotechnology Institute in Mohali.**
- If scaled up, about 65% of the biomass could be converted to energy.
- The technology involves heating up straw, grass, saw mill residue and wood biomass to 250 degrees Celsius - 350 degrees Celsius. This changes the elements of the biomass into ‘coal-like’ pellets.
- These pellets can be used for combustion along with coal for industrial applications like steel and cement production.

134. Carbon Market

- **Carbon markets, which allow for buying and selling of carbon emissions with the objective of reducing global emissions, is an unfinished agenda from last year’s meeting in Katowice, Poland. (COP 24)**
- **Carbon markets also existed under the Kyoto Protocol, which is being replaced by the Paris Agreement next year.**
- The market mechanisms being proposed under the Paris Agreement are conceptually not very different, but are supposed to have more effective checks and balances, and monitoring and verification processes.

How to set up a market

- The provisions relating to setting up a new carbon market are described in Article 6 of the Paris Agreement.
- These are enabling provisions that allow for two different approaches of carbon trading.
- Article 6.2 enables bilateral arrangements for transfer of emissions reductions, while ensuring that they do not double-count the reductions.
- Article 6.4 talks about a wider carbon market in which reductions can be bought and sold by anyone.
- Article 6.8 provides for making ‘non-market approaches’ available to countries to achieve targets.

- It is not yet very clear what these approaches would constitute, but they could include any cooperative action, like collaboration on climate policy or common taxation, that are not market-based.
- The main tussle is over these broad issues — what happens to carbon credits earned in the Kyoto regime but not yet sold, what constitutes double-counting, and transparency mechanisms to be put in place.

Unsold CERs

- India has about 750 million unsold CERs and, along with other similarly placed countries, wants these credits to be valid in the new mechanism too.
- Developed countries are opposing it on the ground that the rules and verification procedures under the Kyoto Protocol were not very robust; they want the new mechanism to start with a clean slate.

Double Counting

- The second issue is that of double counting, or corresponding adjustment.
- The new mechanism envisages carbon credits as commodities that can be traded multiple times among countries or private parties.
- It is important to ensure that in this process, credits are not counted at more than one place; whoever sells carbon credits should not simultaneously count these as emissions it has reduced.
- The developing countries argue that the country that reduced emissions should be able to show it even after selling the credits, and that adjustments should be made only for subsequent transfers, if any.

Carbon Market

- Carbon markets are not essential to the implementation of Paris Agreement.
- But with the world doing far less than what is required to prevent catastrophic impacts of climate change; the markets can be an important tool to close the action gap.
- Developed countries and many civil society organisations say they would rather have no deal on Article 6 of the Paris Agreement than have a bad or compromised deal that would allow transition of Kyoto regime CERs or any kind of double counting.
- Some developing countries, on the other hand, prefer to have an agreement finalised in Madrid.

135. Deoxygenation Of Oceans

- The world's oceans have less oxygen today than they did up to in 1950 or 1960, according to a new study.
- The report is the work of 67 scientists from 17 countries around the world.
- The International Union for Conservation of Nature (IUCN), the global authority on the status of the natural world and the measures needed to safeguard it, released the study recently at the United Nations Climate Change Conference currently underway in Madrid

- According to the findings of the study, the levels of oxygen in oceans fell by around 2 per cent from 1960 to 2010.
- Also, a study published in the journal 'Science' had established that the water in some parts of the tropics had experienced a 40 per cent to 50 per cent reduction in oxygen.

Reasons

- The deoxygenation of the oceans occurred due to climate change and other human activities (such as the nutrient runoff from farm fertilizers into waterways), the report said.
- **Most of the excess heat from CO₂ and other greenhouse gas emissions is absorbed by the oceans.**
- **Warmer oceans cause deoxygenation both because oxygen is less soluble in warmer water, and through temperature driven stratification of the ocean which inhibits the production of oxygen from photosynthesis.**
- The IUCN report also found that pollution around coastlines was having a significant effect on oxygen levels, with fertiliser and agricultural runoff promoting more algae growth, which in turn depletes oxygen as it decomposes.

Effects

- In many parts of the world, including along the western coast of the United States, fish have been dying en masse – a clear illustration of the ways in which deoxygenation is choking the oceans.
- Also, **the loss of oxygen in the oceans can affect the planetary cycling of elements such as nitrogen and phosphorous.**
- **As oceans lose oxygen, they become more acidic (26% more acidic since IR), a phenomenon that has resulted in some places in shellfish having their shells degraded or dissolved – the so called “osteoporosis of the sea”.**
- Apart from their declining oxygen content, oceans have, since the middle of the 20th century, absorbed 93 per cent of the heat associated with human-caused greenhouse gas emissions, leading to mass bleaching of coral reefs.
- Also, **since warmer water occupies more space than cooler water, NASA estimates that this is the reason for roughly a third of the rise in sea levels.**

136. Plogging

- Plogging Run, which was launched on October 2, 2019, concluded recently having covered 50 cities across the country.
- Ripu Daman Bevli, popularly known as the Plogman of India was felicitated and named the Plogging Ambassador of India.

- The minister also launched the nation-wide **Plogging Ambassador Mission** under which, Indians who have been running and cleaning their cities, towns or districts, will be nominated as Plogging Ambassadors of their region.
- **Plog Run** is a unique way of picking up garbage while jogging and was added to the Fit India Movement as a unique way of combining cleanliness and fitness.
- It combines the Fit India Movement and Swachh Bharat Abhiyan.
- In the first Fit India Plogging Run held on October 2, 2019, over 36 lakh people participated in over 62,000 locations across the country.
- This was organised with the combined efforts of Sports Authority of India, Nehru Yuva Kendra Sangathan (NYKS), National Service Scheme (NSS), NGOs, Kendriya Vidyalaya and several other organizations joining in.

137. Tyre Pyrolysis

- The Central Pollution Control Board (CPCB) has pulled up 270 tyre pyrolysis units in 19 States for employing technology that is polluting and harmful to the health of workers employed.
- **Tyre pyrolysis refers to a technique of breaking down used tyres in the absence of oxygen.**
- Shredded tyres, at temperatures between 250° C and 500° C, produce liquid oil and gases.
- While this is considered a **safer technique than burning tyres, pyrolysis leaves fine carbon matter, pyro-gas, oil as residue and the inadequate management of these by-products poses health risks.**
- India discards about 100 million tyres every day and only a fraction of it is recycled.
- **India is also responsible for 6% of the global tyre waste**, according to a 2017 report by environmentalist group Chintan.
- **India is also a recipient of used tyres from Australia and the U.K., which are sent for recycling and disposal.**
- The CPCB reported that there were 637 units in 19 States of which 251 units were compliant, 270 non-compliant and 116 were closed.

138. COP-25

- Nearly 27,000 delegates arrived in the Spanish capital in early December aiming to finalise the “rulebook” of the Paris Agreement – the operating manual needed when it takes effect in 2020 – by settling on rules for carbon markets and other forms of international cooperation under “Article 6” of the deal.
- They also hoped to send a message of intent, signalling to the wider world that the UN climate process remains relevant – and that it recognises the yawning gap between current progress and global goals to limit warming.
- It was the longest climate COP meeting ever in 25 nearly annual editions.

Chile-Madrid Time for Action Declaration

- The summit passed the declaration calling on countries to improve their current pledges to reduce greenhouse gas emissions.
- It also endorsed to help poor countries that are suffering the effects of climate change, although any new funds were not allocated for the purpose.
- It called on the “urgent need” to cut planet-heating greenhouse gases in line with the goals of the 2015 Paris climate change accord.
- That fell far short of promising to enhance countries’ pledges to cut planet-heating greenhouse gases next year, which developing countries and environmentalists had lobbied the delegates to achieve.
- The Summit couldn’t reach a final agreement on Carbon markets and Climate finances.
- The key polluting countries responsible for 80% of the world’s emissions did not make any substantial announcement while smaller countries announced their targets to reduce emissions in the coming years.
- **The next Climate Summit will be held in Glasgow (Scotland) in 2020.**

139. Atal Bhujal Yojana

- The World Bank has approved Atal Bhujal Yojana (ABHY), a Rs.6,000 Crore **Central Sector Scheme, for sustainable management of ground water resources with community participation.**
- The funding pattern is 50:50 between Government of India and World Bank.
- It is being implemented by the Ministry of Jal Shakti.
- The scheme envisages active participation of the communities in various activities such as formation of Water User Associations, monitoring and disseminating ground water data, water budgeting, preparation and implementation of Gram-Panchayat wise water security plans and Information, Education & Communication (IEC) activities related to sustainable ground water management.
- The **identified over-exploited and water stressed areas for the implementation of the scheme fall in the States of Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan and Uttar Pradesh.**
- The States have been selected according to a number of criteria, including degree of groundwater exploitation and degradation, established legal and regulatory instruments, institutional readiness, and experience in implementing initiatives related to groundwater management.

140. National Ganga Council

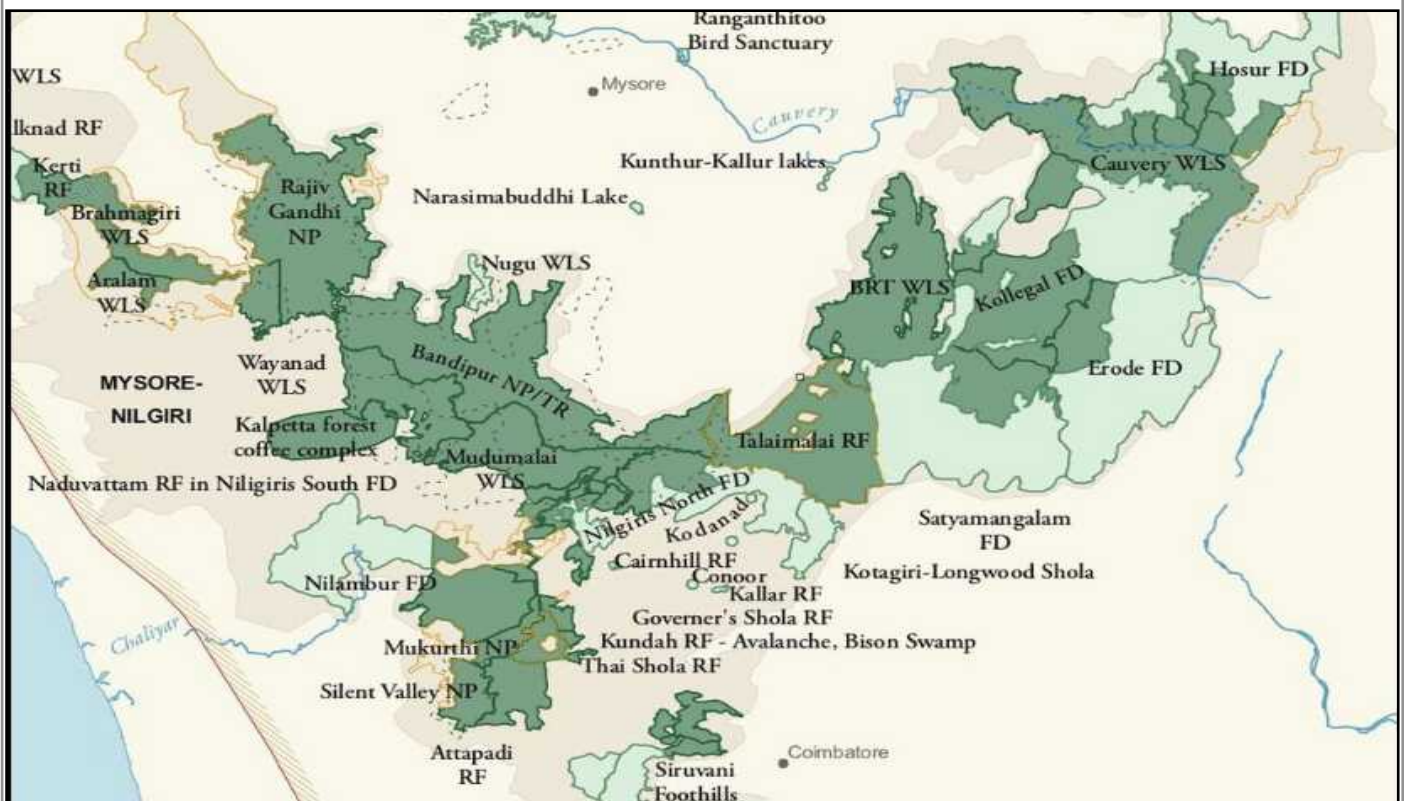
- The **Prime Minister recently chaired the first meeting of the National Ganga Council at Kanpur, Uttar Pradesh.**
- It was aimed at reinforcing the importance of a ‘Ganga-centric’ approach in all departments of the concerned states as well as relevant Central Ministries.

- A lot had been accomplished since the Government took up 'Namami Gange' in 2014 as a comprehensive initiative integrating various government efforts and activities with the aim of pollution abatement, conservation and rejuvenation of Ganga, notable achievements being zero waste creation by paper mills and reduction in pollution from tanneries; but much more needs to be done.
- For the first time, the Central Government had made commitment of Rs. 20,000 crores for the period 2015-20 to the five states through which Ganga passes, to ensure adequate as well as uninterrupted water flows in the river.
- Rs. 7700 crores have already been spent so far, prominently for construction of new sewage treatment plants.
- An improvement framework for Nirmal Ganga would require fullest cooperation from the public at large and greater awareness through dissemination of best practices from cities situated along the banks of national rivers.
- Efficiency of District Ganga Committees should be improved in all districts, in order to provide a effective framework for expeditious implementation of plans.
- Government has set up the **Clean Ganga Fund (CGF) to facilitate contributions from individuals, NRIs, corporate entities for funding Ganga rejuvenation projects.**
- **'Namami Gange' should evolve to 'Arth Ganga' or a sustainable development model with a focus on economic activities related to Ganga.**
- As part of this process, farmers should be encouraged to engage in sustainable agriculture practices, including zero budget farming, planting of fruit trees and building plant nurseries on the banks of Ganga.
- Priority could be given to women Self Help Groups and ex-servicemen organizations for these programs.
- Such practices, along with creation of infrastructure for water sports and development of camp sites, cycling and walking tracks etc., would help to tap the 'hybrid' tourism potential of the river basin area- for purposes of religious as well as adventure tourism.
- The income generated from encouraging eco-tourism and Ganga wildlife conservation and cruise tourism etc. would help to generate sustainable income streams for cleaning of Ganga.
- For monitoring the work progress and activities from various schemes and initiatives under Namami Gange and Arth Ganga, PM also gave directions for the setting up of a Digital Dashboard where data from villages and urban bodies should be monitored on a daily basis by Niti Ayog and Ministry of Jal Shakti.
- Prime Minister also said that like aspirational districts, all districts bordering Ganga should be made a focus area for monitoring efforts under Namami Gange.

141. Cauvery Wildlife Sanctuary

- Recently, wild elephants have been dying of electrocution in the Cauvery Wildlife Sanctuary.

- It has been due to villagers installing illegal electric fences, which lead to the deaths of elephants.
- The environmentalists have stressed the immediate need for protecting wild animals.
- The Cauvery Wildlife Sanctuary is a protected area located in the Mandya, Chamarajanagar and Ramanagar districts of Karnataka, India.
- It is located on the banks of the river Cauvery running through a distance of 101 kms forms a part of Eastern Ghats.
- The river Cauvery acts as an interstate boundary between Karnataka and Tamil Nadu states to a stretch of 73 kms bounded by the forests of Tamil Nadu and Karnataka.
- The major portions of the forests are of South Indian dry deciduous type.
- The sanctuary harbours a variety of faunal life classified under schedule I of Wildlife Protection Act namely Indian Elephant, Gaur, Leopard, Four horned antelope, Mouse deer, etc.
- The river Cauvery being the important lifeline of the Sanctuary supports a diversified aquatic fauna, predominant species being Crocodiles found in Schedule I of Wildlife Protection Act, Otters, Masheer Fish, etc.



142. National Centre For Sustainable Coastal Management

- The Ministry of Environment set up the National Centre for Sustainable Coastal Management (NCSCM), Chennai to undertake studies and research in the area of Coastal Zone Management including coastal resources and environment.
- The aims and Objectives of the Center are:
 - ✓ Strive for being a World Class Knowledge Institution related to coastal zones, environment, resources and processes,
 - ✓ To promote integrated and sustainable management of the coastal and marine areas in India for the benefit and wellbeing of the traditional coastal and island communities, and
 - ✓ Advice the Union and State Governments and other associated stakeholder(s) on policy, and scientific matters related to Integrated Coastal Zone Management (ICZM).
 - ✓ The six research divisions of the NCSCM are:
 - ❖ Geospatial Sciences,
 - ❖ Remote Sensing and Geographic Information Systems (GIS),
 - ❖ Integrated Social Sciences & Economics, Coastal environmental impact assessment,
 - ❖ Conservation of Coastal & Marine Resources, Knowledge,
 - ❖ Governance and Policy, and
 - ❖ Futuristic Research and Integrated Island Management Unit
- Survey of India and NCSCM have mapped the Hazard Line for the entire coast of India, which includes vulnerability mapping of flood, erosion and sea level rise.
- The outputs will be used by all the coastal States and UTs in managing coastal vulnerability in the coming years and as a tool for preparation of disaster management plans.

143. Environmentally Sustainable Coal Mining

- The Ministry of Coal has decided to establish a 'Sustainable Development Cell' in order to promote environmentally sustainable coal mining in the country and address environmental concerns during the decommissioning or closure of mines.
- This move gains significance as the new private entities are now going to form a significant part of the future, a set of guidelines for proper rehabilitation of mines need to be evolved in tune with global best practices.
- The Sustainable Development cell (SDC) will advise, mentor, plan and monitor the mitigation measures taken by the coal companies for maximising the utilisation of available resources in a sustainable way, minimising the adverse impact of mining and mitigating it for further ecosystem services and will act as nodal point at Ministry of Coal level in this matter.
- This cell will also formulate the future policy framework for the environmental mitigation measures including the Mine closure Fund.
- The SDC will focus on

- ✓ Land amelioration and afforestation,
- ✓ Air quality, emission and noise management,
- ✓ Mine water management,
- ✓ Sustainable overburden management,
- ✓ Sustainable mine tourism,
- ✓ Planning and monitoring,
- ✓ Policy, Research, Education, and Dissemination

144. Asian Houbara Bustard

- The government of Pakistan has issued special permits to the Emir of Qatar and nine other members of the royal family to hunt the houbara bustard, an internationally protected bird species.
- **Bustards are large, terrestrial birds that belong to several species, including some of the largest flying birds.**
- The houbara bustard, which lives in arid climates, comes in two distinct species as recognised by the International Union for Conservation of Nature, one residing in North Africa (*Chlamydotis undulata*) and the other in Asia (*Chlamydotis macqueenii*).
- **The population of the Asian houbara bustards extends from northeast Asia, across central Asia, the Middle East, and the Arabian Peninsula to reach the Sinai desert.**
- According to the International Fund for Houbara Conservation (IFHC), roughly 33,000 Asian houbara bustards and over 22,000 of the North African houbara bustards remain today.
- After breeding in the spring, the Asian bustards migrate south to spend the winter in Pakistan, the Arabian Peninsula and nearby Southwest Asia.
- Some Asian houbara bustards live and breed in the southern part of their ranges including parts of Iran, Pakistan and Turkmenistan.
- According to IFHC, the main reasons for the houbara's decline are poaching, unregulated hunting, along with degradation of its natural habitat.

145. Waste-To-Wealth

- In an extraordinary waste-to-wealth feat, researchers from Assam have used the commonly found **invasive plant water hyacinth to produce carbon nanoparticles.**
- These extremely tiny (less than 10 nanometre) particles can be used for detecting a commonly used herbicide – pretilachlor.
- The nanoparticles were found to be selective and sensitive for the detection of the herbicide.
- The detection of herbicides through carbon dots is a commercially viable option compared to the currently available sensors in the market as the raw material i.e. water hyacinth is readily available.
- It will help to convert waste material like the water hyacinth to produce useful technology.

- The team harvested water hyacinth leaves, removed the chlorophyll, dried and powdered it.
- The sieved powder underwent several treatments including heating at 150 degree Celsius to convert it to carbon dots.
- When a nanoparticle is less than 10 nanometre we call it a dot or nano dot.
- Carbon dots were also able to give a green fluorescence under UV light. The extremely small oxygen functional groups on the surface of the dot are responsible for the fluorescence.
- The herbicide pretilachlor is mixed with water and carbon dots, and studied using special equipment.
- The fluorescence intensity increases in the presence of the herbicide.

146. Bar-Headed Goose

- Bar-headed Goose has been spotted in the wetlands of Karingali Puncha in Pathanamthitta District of Kerala.
- Majorly, large flocks visit the Koonthankulam bird sanctuary at Tirunelveli in Tamil Nadu.
- It is very rare that the bird is spotted in Kerala.
- The wetlands of Karingali Puncha is a major birding spot in the district and has reported the highest bird count in the Asian Waterbird Census of 2015.
- Bar-headed geese are found in central China and Mongolia and they breed there.
- They start migration to the Indian sub-continent during the winter and stay here till the end of the season.
- They are one of the birds which can fly even at very high altitude.
- They come to India and return to their homes by crossing the Himalayan ranges.
- Their ability to sustain the high oxygen demands of flight in air that is exceedingly oxygen-thin is exceptional.
- The capacity of bar-headed geese to transport and consume oxygen at high rates in hypoxia distinguishes this species from similar lowland waterfowl.

147. National Institute Of Oceanography (NIO) Study On Plastics

- National Institute of Oceanography (NIO), based in Goa, conducted a study which states that beaches in Maharashtra are more polluted with microplastics and macroplastics than those in Goa and Karnataka.
- The study is titled 'Assessment of macro and micro plastics along the west coast of India: abundance, distribution, polymer type and toxicity'.
- The highest abundance of macro and microplastic contaminants is found on beaches in Maharashtra at the high tide line as compared to Karnataka and Goa.

- Such a phenomenon of finding macro and micro-plastics in abundance on Maharashtra beaches suggests that the contaminants are land-based, like (coming from) near shore plastic industries, port areas, petroleum industries and high tourism activities.
- The study has blamed plastic industries located near the shore and increased tourism activities for the pollution.
- To prevent the marine environment from being affected by plastic contaminants, the researchers have suggested that the government frame policies to shun single-use plastic and increase its recycling, besides conducting community awareness programmes frequently.
- **Plastics less than five millimeters in length are called 'microplastics' and the relatively larger particles, of more than 5 mm, are classified as 'macroplastics'.**
- The Goa-based NIO is one of the constituent laboratories of the Council of Scientific and Industrial Research (CSIR).

148. Eco-Clubs

- First Annual Meet of the State Nodal Agencies implementing the National Green Corps 'Ecoclub' programme of the Ministry of the Environment, Forest and Climate Change (MoEF&CC), organized by the Ministry's Environment Education Division, in collaboration with the GEER Foundation, Gujarat was held from 20th to 21st December 2019 in Kevadia, Gujarat.
- Senior officers from 22 States and UTs implementing the programme along with about 200 Ecoclub students from Gujarat participated.
- An exhibition also showcased the projects, resource material, handicrafts items etc. prepared by the Ecoclub students across the States/UTs.
- The event witnessed a huge footfall, even of other tourists and visitors.
- **Environment Education Awareness and Training (EEAT) is an established central sector scheme of the Ministry continuing since 1983-84 and aims to promote environmental awareness and mobilize student's participation for environment conservation.**
- **Under the scheme, National Green Corps (NGC) 'Ecoclub' programme was initiated in 2001-2002 with the objective to impart knowledge to school children through hands on experience, about their immediate environment, interactions within it and the problems therein.**
- It is envisaged that number of Ecoclubs shall be enhanced from about 1.5 lakh at present to 2 lakh in the ensuing year 2020-21.
- The programme aims to inculcate proper attitude towards environment and sensitize children on issues related to environment and development.

149. Invasive Species

- The spread of invasive plants, especially *Senna spectabilis* (Manjakonna in local parlance), poses major threat to forest areas of Nilgiri Biosphere Reserve.

- The Forest and Wildlife Department is planning to adopt steps to arrest the rampant growth of invasive plants, especially *Senna spectabilis*, in the forest areas of the Nilgiri Biosphere Reserve (NBR), including the Wayanad Wildlife Sanctuary.
- Earlier, the plant species was planted as avenue trees in Wayanad
- Due to mass flowering and drying of bamboo species in Wayanad, lots of open spaces were created which had been occupied by *Senna spectabilis*.
- An adult tree grows up to 15 to 20 metres in a short period of time and every year distributes thousands of seeds after gregarious flowering.
- The thick foliage arrests the growth of other indigenous tree and grass species and causes food shortage for the wildlife population, especially herbivores.
- The allelochemicals produced by this plant adversely affect the germination and growth of the native species.
- Moreover, wildlife will not feed on the leaf of the tree as it is not palatable for them.
- The *vayal* ecosystem (marshy land) of the forest area now has this plant in large numbers (Seasonally waterlogged grasslands are colloquially called vayals)
- This plant shows invasive nature only above 500 m elevation.
- But in the favourable conditions, it shows invasive nature in lower altitude too

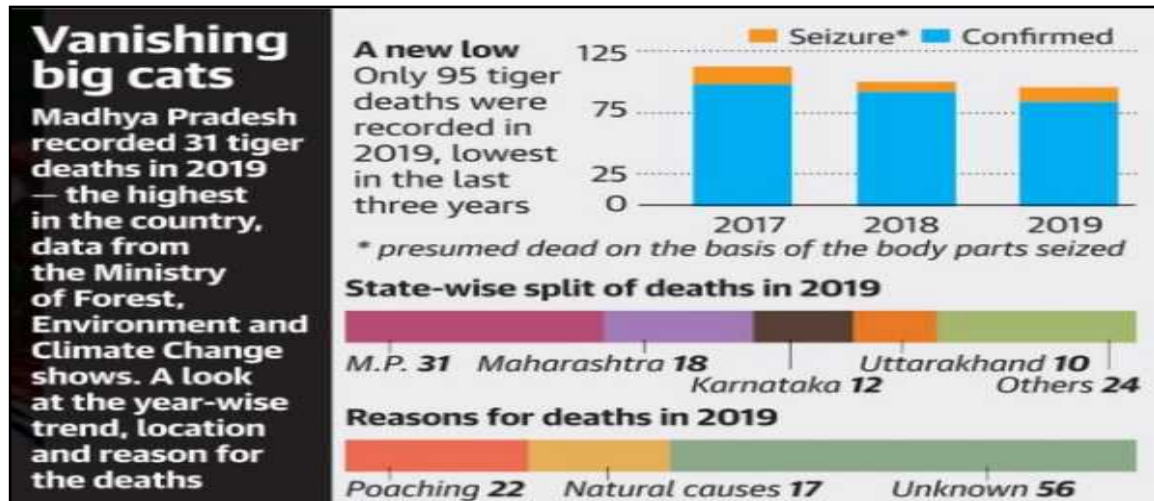


Nilgiri Biosphere Reserve

- The Nilgiri Biosphere Reserve was the first Biosphere Reserve in India. (MAB in 2000)
- It is located in the Western Ghats and includes 2 of the 10 bio-geographical provinces of India.
- The Nilgiri Biosphere Reserve falls under the biogeographic region of the Malabar rain forests.
- The Mudumalai Wildlife Sanctuary, Wayanad Wildlife Sanctuary, Bandipur National Park, Nagarhole National Park, Mukurthi National Park and Silent Valley are the protected areas present within this reserve.

150. Tiger Deaths

- For the first time in the past three years, the number of tiger deaths in a year in the country has been less than 100.
- According to data from the Ministry of Forest Environment and Climate Change (MoEFCC), there were 84 cases of tiger deaths in the country and 11 cases of seizures (in which a tiger is presumed dead on the basis of body parts seized by authorities).
- Both put together, the number of tiger deaths in 2019 is 95.
- An analysis of the tiger mortality figures shows that 57 of the 95 deaths occurred inside Tiger Reserves, while 38 cases of tiger deaths were recorded outside Tiger Reserves.
- **Almost over 70% of cases of poaching, have been reported outside Tiger Reserves.**



- Deaths were also recorded from non-tiger bearing States like Gujarat, where a tiger had strayed into the State and died.
- These figures should be seen in the context that tiger numbers in the country were growing.
- The last tiger census report, released in July 2019, had placed the number of tigers in India at 2,967, up by a third when compared with the numbers reported in 2014. (Madhya Pradesh saw highest number at 526, followed by Karnataka (524), Uttarakhand (442), Maharashtra (312) and Tamil Nadu (264))
- The reduced numbers of tiger mortalities are because of surveillance, good management of Tiger Reserves and a lot of awareness and education programmes on tiger conservation.

151. Red Sand Boa Snake

- Recently, a red sand boa snake worth around ₹1.25 crore, was rescued from five persons, who were trying to sell it in Madhya Pradesh.
- It is a species of nonvenomous snake.
- The species is **endemic to Iran, Pakistan, and India**.
- It has many superstitious beliefs attributed to it because of its double-headed appearance, such as bringing good luck, curing AIDS, etc.
- Such blind faith has resulted in endangering the species, and in illegal trade in India, despite being a protected species under **Schedule IV of Wildlife Protection Act, 1972, of India**.

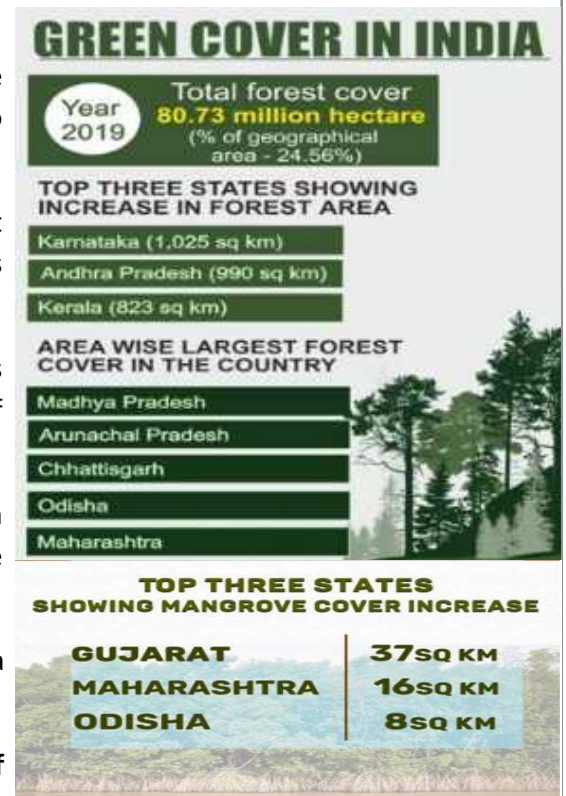


152. ISFR 2019

- Minister for Environment, Forest and Climate Change, recently released the biennial “India State of Forest Report (ISFR)”.
- The report is **published by the Forest Survey of India (FSI)** which has been mandated to assess the forest and tree resources of the country including wall-to-wall forest cover mapping in a biennial cycle.
- Starting 1987, 16 assessment have been completed so far. ISFR 2019 is the 16th report in the series.
- It **assesses the forest and tree cover, bamboo resources, carbon stock and forest fires**.
- The 2019 report for the **first time has assessed the qualitative nature of the forest cover, including listing its biodiversity and the type of plants and trees found**.
- It also created a **national forest inventory for the first time on produce from forests**.
- The **total forest cover** of the country is 7,12,249 sq km which is **21.67% of the geographical area of the country**.
- The **tree cover** of the country is estimated as 95,027 sq km which is **2.89% of the geographical area**.
- The **total Forest and Tree cover** of the country is 8,07,276 sq km which is **24.56% of the geographical area of the country**.
- The current assessment shows an **increase of 3,976 sq km (0.56%) of forest cover, 1,212 sq km (1.29%) of tree cover and 5,188 sq km (0.65%) of forest and tree cover put together**, at the national level as compared to the previous assessment i.e. ISFR 2017.
- **Forest cover within the RFA/GW has shown a slight decrease of 330 sq km (0.05%) whereas there is an increase of 4,306 sq km of forest cover outside the RFA/GW as compared to previous assessment of 2017.**
- The **top five States in terms of increase in forest cover** are Karnataka (1,025 sq km), Andhra Pradesh (990 sq km), Kerala (823 sq km), Jammu & Kashmir (371 sq km) and Himachal Pradesh (334 sq km).
- **Forest cover in the hill districts** of the country is 2,84,006 sq km, which is **40.30% of the total geographical area of these districts**.
 - ✓ The current assessment shows an **increase of 544 sq km (0.19%)** in 140 hill districts of the country.
- The **total forest cover in the tribal districts** is 4,22,351 sq km, which is **37.54% of the geographical area of these districts**.
 - ✓ The current assessment shows a **decrease of 741 sq km of forest cover within the RFA/GW in the tribal districts and an increase of 1,922 sq km outside**.
- **Total forest cover in the North Eastern region** is 1,70,541 sq km, which is **65.05% of its geographical area**.
 - ✓ The current assessment shows a **decrease of forest cover to the extent of 765 sq km (0.45%) in the region**.

✓ Except Assam and Tripura, all the States in the region show decrease in forest cover.

- Area-wise Madhya Pradesh has the largest forest cover in the country followed by Arunachal Pradesh, Chhattisgarh, Odisha and Maharashtra.
 - In terms of forest cover as percentage of total geographical area, the top five States are Mizoram (85.41%), Arunachal Pradesh (79.63%), Meghalaya (76.33%), Manipur (75.46%) and Nagaland (75.31%).
 - The nation's tree and forest cover has largely hovered from 21-25% and is short of the National Forest Policy, 1988, which envisages 33% to be under such cover.
 - The mangrove cover increased by 54 sqkm, or about 1%, from the last assessment, with Gujarat and Maharashtra registering the largest improvements.
 - The total bamboo bearing area was estimated to be 160,037 sqkm and increased by 3,229 sqkm, compared to the 2017 estimate.
 - The total carbon stock of the country was estimated at 7124 million tons, which is an increase of 42.6 million tons from the last assessment.
 - Wetlands within forest areas form important ecosystems and add richness to the biodiversity in forest areas, both of faunal and floral species.
 - Due to importance of wetlands, FSI has carried out an exercise at the national level to identify wetlands of more than 1 ha within RFA.
- ✓ There are 62,466 wetlands covering 3.8% of the area within the RFA/GW of the country.
- Amongst the States, Gujarat has the largest area of wetlands within RFA in the country followed by West Bengal



153. Re-Grassing After Mining

- The Supreme Court has ordered that mining lease holders should be held responsible for re-grassing mined areas, so that biodiversity gets a second chance in these scarred landscapes and help to restore the land to a condition which is fit for growth of fodder, flors and fauna etc.
- A Bench led by Chief Justice of India S.A. Bobde ordered the government to include re-grassing of mined areas as a mandatory condition in every mining lease, environmental clearance and mining plan across the country.
- Environmental issues caused by mining include erosion, formation of sinkholes, loss of biodiversity, and contamination of soil, groundwater and surface water by chemicals from mining processes, and the effects persist for years.

- The SC ordered the government to file a report in three weeks after taking appropriate actions and directed it to devise methods to ensure compliance by mining leaseholders.
- The cost of re-grassing the mined area and wherever damage was caused, would be entirely borne by the licence holder.
- Mine closure plan imposes conditions on the licence holder to restore biodiversity.
- The mandatory re-grassing would be in addition to these conditions.

154. Mhadei Wildlife Sanctuary

- The Mhadei Wildlife Sanctuary, spread over 208 sq kms, is one of the four wildlife sanctuaries in Goa.
- The sanctuary is a part of a tiger corridor for the apex predator, which runs contiguous with the states of Maharashtra, Goa and Karnataka.
- It is regarded as a **Global Biodiversity Hotspot**, as well as an area of high endemism by Conservation International.
- This sanctuary was formed in 1999.
- The formation of this sanctuary has made Goa the only state in India that has completely protected the Western Ghats that are located within its boundaries.
- The three highest peaks in Goa are situated in the hill ranges of the sanctuary.
 - ✓ They are Sonsogod (1027 mts), Talavche Sada (812 mts) and Vageri (725 mts). Vageri means 'the abode of the tiger'.
- The Mhadei River, known downstream as the Mandovi River, the lifeline of the state of Goa, originates in Karnataka, passes through the Mhadei Wildlife Sanctuary and meets the Arabian Sea at Panaji in Goa.



155. IMD Report – Climate Summary

- According to a report published by the **India Meteorological Department (IMD)** named '**Climate Summary**' recently, since record-keeping commenced in the year 1901, **2019 was the 7th warmest year in India as per the records of previous 119 years available.**
- During the year, the annual mean surface air temperature, averaged over the country, was +0.36°C above average.
- The average is defined as the mean temperature from 1980-2010.
- The highest warming observed over India was during 2016 or 0.71°C above the mean.
- 2018, which was the 6th warmest in India, was 0.41°C, and 2017 was 0.55°C warmer, than the average.
- According to the World Meteorological Organisation, the rise in global mean surface temperature during 2019 (January to October) was +1.10°C.
- The main contributors to the warming this year were temperatures in the pre-monsoon (March-May) and monsoon seasons (June-September).

- Meteorologists said that the decline over the previous three years was not indicative of any trend and was just “a regular variation”.
- The only pattern is that global warming is raising average temperatures globally, as well as in India.
- 2019 was also characterised by **unusually high rainfall, which was 9% over what is normal for a year** — this was due to monsoon rains (June–September) being 10% over its normal, and the northeast monsoon rains being 9% over its normal.
- During 2019, **eight cyclonic storms formed over the Indian seas, with the Arabian Sea contributing five out of these eight cyclones against the normal of one per year.**
- This was a phenomenon not seen in India since 1902.
- This was, meteorologists said, due to a strong Indian Ocean Dipole, or an IOD, which cyclically heats the west Indian Ocean that stimulated cyclone formation over the Arabian Sea. An unusually strong IOD has contributed to the ongoing Australian drought

156. Hesarghatta As A Conservation Reserve

- The grasslands, spread over 3,000 acres, are home to over 221 species of flora and fauna, and its marshy waters have been one of the few places left in the city where rare migratory bird species can be spotted.
- The **Bombay Natural History Society had listed Hesarghatta grasslands as one of the ‘potential’ Important Birding Areas in the country**, considering the sighting of lesser floricans in the area.
- Environmentalists have pointed out that the Hesarghatta lakebed area and grasslands in the surrounding catchment area are an important reservoir of biodiversity and a refuge for endangered wildlife species like the lesser florican and leopard, yet remain outside the protected area network and face severe threats to its biodiversity.
- This area is a large carbon sink and can be a powerful tool to mitigate climate change and counter the rapid urbanisation of **Bengaluru**.
- The landscapes surrounding the lakebed is the last remaining grassland habitat in the Bengaluru region and supports unique biodiversity.

157. State Energy Efficiency Index 2019

- **The Bureau of Energy Efficiency (BEE), Ministry of Power released the ‘State Energy Efficiency Index 2019’, which tracks the progress of Energy Efficiency (EE) initiatives in 36 states and union territories based on 97 significant indicators.**
 - ✓ The Index will **help states contribute towards national goals on energy security and climate action by Helping drive EE policies and program implementation at the state and local level**
- Tracking progress in managing the states’ and India’s energy footprint
- Institutionalising data capture and monitoring of EE activities by states
- The index is developed by Bureau of Energy Efficiency (BEE) in association with Alliance for an Energy Efficient Economy (AEEE).

- The first such Index, the “State Energy Efficiency Preparedness Index 2018”, was launched on August 1, 2018.
- Taking forward the State Energy Efficiency Preparedness Index 2018, the State Energy Efficiency Index 2019 incorporates **qualitative, quantitative and outcome-based indicators to assess energy efficiency initiatives, programs and outcomes in five distinct sectors – buildings, industry, municipalities, transport, agriculture, and DISCOMs.**
- New indicators for this year include adoption of Energy Conservation Building Code (ECBC) 2017, energy efficiency in MSME clusters, etc.
- The required data was collected from the concerned state departments such as DISCOMs, Urban Development departments and other departments with the help of State Designated Agencies (SDAs).
- The Index categorises states as
 - ✓ Front Runner
 - ✓ Achiever
 - ✓ Contender
 - ✓ Aspirant
- Based on their efforts and achievements towards energy efficiency implementation.
- There isn't any front runner state this year.
- For rational comparison, States/UTs are grouped into four groups based on aggregated Total Primary Energy Supply (TPES) required to meet the state's actual energy demand (electricity, coal, oil, gas, etc.) across sectors.
- TPES grouping shall help states compare performance and share best practices within their peer group.
- Karnataka, Haryana, Himachal Pradesh and Puducherry led their groups.
- Manipur, Jammu & Kashmir, Jharkhand and Rajasthan performed the worst in each of their groups.

158. Diego - The Giant Tortoise

- Diego (*Chelonoidis hoodensis*, or the giant tortoise species) has retired from the captive breeding programme in the Galapagos National Park, Ecuador.
- Diego joined the breeding programme in 1976, and the tortoise population has since gone up from 15 to 2,000.
- IUCN Red List Status is **Critically Endangered**

Why was his species in danger

- Tortoises on the Galápagos Islands served as excellent source of food for seafarers in the 1800s.
- They could survive inside ships for upto a year, and so a large number were picked up from the islands.

- Not all were eaten — they would be cast off a ship when it needed to lose ballast.
- Feral goats on the islands posed another danger, competing for food, destroying the tortoises' habitat.
- Apart from breeding programmes, scientists are also working on restoring the ecology of these islands, so Diego's and other species like his can thrive.

159. Chinese Paddlefish Extinct

- Scientists from China said recently that the **Chinese Paddlefish, once plentiful in the Yangtze River, is now extinct, making it the first such instance in 2020.**
- It was one of the largest freshwater fish.
- Sometimes called the “panda of the Yangtze,” has gone extinct, mainly due to overfishing and dam construction.
- It was last spotted in 2003.
- IUCN status is **Critically Endangered**
- Although declared extinct by Chinese scientists but its IUCN status is Critically Endangered, which was last assessed in 2009.

160. Wetland Count–Kaziranga

- The **second wetland bird** count was conducted in the Kaziranga National Park from 9th- 10th January 2020.
- The **first wetland bird survey was conducted in 2018.**
- Data on avian wealth is important because the wetlands nourish Kaziranga's ecosystem.
- Increase or decrease in the number of birds is indicative of the park's health
- The survey covered four ranges of the park — Agoratoli, Bagori, Kohora and Burapahar.
- More than half the birds (9,924) and 85 of the 96 species were recorded in Agoratoli Range.
- This was because Sohola, the largest of Kaziranga's 92 perennial wetlands, is in this range.
- The park also has more than 250 seasonal water bodies, besides the Dipholu River running through it.

Findings

- 96 species of wetland birds, one of the highest for wildlife preserves in India.
- The teams counted a total of 19,225 birds belonging to 96 species under 80 families.
- The first waterfowl census in 2018 had yielded 10,412 birds covering 80 families from 21 families

161. Complete Phase Out Of Hydrochlorofluorocarbon (HCFC)-141 B

- India has successfully achieved the complete phase out of Hydrochlorofluorocarbon (HCFC)-141 b, which is a **chemical used by foam manufacturing enterprises and one of the most potent ozone depleting chemical after Chlorofluorocarbons (CFCs)**.
- (HCFC)-141 b is used mainly as a blowing agent in the production of rigid polyurethane (PU) foams.
- India has consciously chosen a path for environment friendly and energy efficient technologies while phasing out Ozone Depleting Substances (ODSs).
- Importantly, India is one among the few countries globally and a pioneer in some cases in the use of technologies, which are non-Ozone Depleting and have a low Global Warming Potential (GWP).
- India had proactively and successfully taken the challenge of complete phase out of Hydrochlorofluorocarbon (HCFC)-141 b, which is a chemical used by foam manufacturing enterprises by 1.1.2020.
- The Ministry has adopted a structured approach to engage with foam manufacturing enterprises for providing technical and financial assistance in order to transition to non-ODS and low GWP technologies under the HCFC Phase-out Management Plan (HPMP).
- HCFC-141 b is not produced domestically and all requirements were met through imports.
- The Ministry of Environment, Forest and Climate Change (MoEFCC) notified that the issuance of import license for HCFC-141b is prohibited from 1st January 2020 under Ozone Depleting Substances (Regulation and Control) Amendment Rules, 2019.

162. Irrawaddy Dolphins

- Odisha Forest Department officials, wildlife experts and researchers recently sighted 146 endangered Irrawaddy dolphins in **Chilika Lake (India's largest brackish water lake)**, which boasts of the highest single lagoon population of the aquatic mammal in the world.
- The Irrawaddy dolphin is a **euryhaline species of oceanic dolphin found in discontinuous subpopulations near sea coasts and in estuaries and rivers in parts of the Bay of Bengal and Southeast Asia.**
- It is found in three rivers
 - ✓ Irrawaddy (Myanmar)
 - ✓ Mahakam (Indonesian Borneo)
 - ✓ Mekong (China)
- The Irrawaddy Dolphin (*Orcaella brevirostris*) is the flagship species of Chilika lake.
- Chilika is home to the only known population of Irrawaddy Dolphins in India.
 - ✓ One of only two lagoons in the world is home to this species -- Irrawaddy Dolphin



- In 2004, CITES transferred the Irrawaddy dolphin from Appendix II to Appendix I, which forbids all commercial trade in species that are threatened with extinction.

163. Environmental Clearance

- The Environment Ministry has exempted oil and gas firms, looking to conduct exploratory drilling, from seeking an environmental clearance.
- The clearance is for both on-shore and offshore drilling explorations and the process is an ecologically-intensive exercise that involves digging multiple wells and conducting seismic surveys offshore.
- The notification has demoted exploratory projects to the category of B2 in the process of Environment Impact Assessment (EIA).
- Category B projects are appraised at the state level and they are classified into two types. Category B1 projects - Mandatorily requires EIA. Category B2 projects - Do not require EIA
- The development of an offshore or onshore drilling site as a hydrocarbon block will continue to be classified as a category A.
- The move is part of a larger process of 'decentralisation' by the Centre in that it seeks to farm more regulatory actions to State and local units.
- Environmentalists aver that this can mean lax oversight.

164. Prehistoric Wollemi Pines

- A specialized team of Australian firefighters was bent on saving invaluable plant life, hidden groves of the **Wollemi pine**, a prehistoric tree species that has outlived the dinosaurs.
- *Wollemia nobilis* peaked in abundance 34 million to 65 million years ago, before a steady decline.
- Today, only 200 of the trees exist in their natural environment – all within the canyons of Wollemi National Park, just 100 miles west of Sydney.
- The trees are so rare that they were thought to be extinct until 1994.
- **Wollemi Pine (*Wollemia Nobilis*)** is listed as critically endangered in the IUCN Red List.
- **Wollemi National Park** is a part of the Greater Blue Mountains Area which is a UNESCO World Heritage Site.

165. New Snake Eel Species

- A new snake eel species residing in the **Bay of Bengal** has been discovered and documented this month (January) by the Estuarine Biology Regional Centre (EBRC) of the Zoological Survey of India (ZSI) at Gopalpur-on-sea in Odisha.
- This new marine species has been named *Ophichthus kailashchandrai* to honour the vast contributions of Dr. Kailash Chandra, Director of ZSI, to Indian animal taxonomy.
- *Ophichthus kailashchandrai* is the eighth species of the *Ophichthus* genus found on the Indian coast.

- It is the fifth new species discovered by the Gopalpur ZSI in the last two years.
- The discovery of the new species suggests that the marine biodiversity of the long Indian coastline is considerably unexplored.

166. Duck-Billed Platypus

- Australia's devastating drought, and other effects of climate change are pushing the iconic duck-billed platypus, a globally unique mammal, towards extinction.
- Platypuses were once considered widespread across the eastern Australian mainland and Tasmania, although not a lot is known about their distribution or abundance because of the species' secretive and nocturnal nature.
- Researchers, who for the first time examined the risks of extinction for this intriguing animal, call for action to minimise the risk of the platypus vanishing due to habitat destruction, dams and weirs.
- The platypus is the sole living representative of its family, and genus, though a number of related species appear in the fossil record.
- It is one of the five extant species of monotremes, the only mammals that lay eggs instead of giving birth to live young.
- Documented declines and local extinctions of the platypus show a species facing considerable risks, while the International Union for Conservation of Nature (IUCN) recently downgraded the platypus' conservation status to Near Threatened.

167. African Cheetah

- The Supreme Court allowed the Centre to **introduce the African cheetah to a suitable habitat in India.**
- With India's own cheetahs vanishing, a plea for this had been filed by the National Tiger Conservation Authority (NTCA), seeking permission to introduce the African cheetah **from Namibia.**
- For now, the animals will be brought in on an experimental basis to see if they can adapt to Indian conditions.
- Reintroduction' of a species means releasing it in an area where it is capable of surviving.

IUCN Status

- **African Cheetah - Vulnerable**
 - **Asiatic Cheetah – Critically endangered (Iran)**
 - The Asian and the African species separated between 30,000 and 60,000 years ago.
 - The **country's last spotted feline died in Chhattisgarh in 1947.**
 - Later, the **cheetah – which is the fastest land animal – was declared extinct in India in 1952.**
- ✓The only mammal to become extinct in India in last 1,000 years.

- In 2009, the United Progressive Alliance government had floated a plan to re-introduce cheetahs into the wild in India. (Project Cheetah)
- When Iran, the only country in the world to have a small population of Asiatic Cheetahs refused to send any to India, it was decided to introduce African Cheetahs to India instead.
- The cheetah is the only large carnivore that has been extirpated, mainly by over-hunting in India in historical times.
- India now has the economic ability to consider restoring its lost natural heritage for ethical as well as ecological reasons

168. Ramsar Sites

- In a major recognition towards Government of India's effort towards conservation, restoration and rejuvenation of its wetlands, **Ramsar has declared 10 more wetland sites from India as sites of international importance.**
- With this, the numbers of **Ramsar sites in India are now 37** and the surface area covered by these sites is now **1,067,939 hectares.**
- **Maharashtra gets its first Ramsar site (Nandur Madhameshwar) , Punjab which already had 3 Ramsar sites adds 3 more (Keshopur-Miani, Beas Conservation Reserve, Nangal) and UP with 1 Ramsar site has added 6 more (Nawabganj, Parvati Agra, Saman, Samaspur, Sandi and Sarsai Nawar).**
- The Ramsar Convention signed on February 2, 1971, is one of the oldest inter-governmental accord signed by members countries to preserve the ecological character of their wetlands of international importance.
- The aim of the Ramsar list is to develop and maintain an international network of wetlands which are important for the conservation of global biological diversity and for sustaining human life through the maintenance of their ecosystem components, processes and benefits.
- Wetlands declared as Ramsar sites are protected under strict guidelines of the convention.
- The conservation of wetlands would also go a long way in achieving our Prime Minister's dream of 'Nal se Jal' in each household.
 - ✓ The government has recently in July launched the new 'Nal se Jal' scheme, which aims to provide piped water connection to every household by 2024.

169. Illegal Sand Mining

- Following a series of orders by the National Green Tribunal in 2018, the Ministry of Environment, Forests and Climate Change has for the first time released guidelines to monitor and check illegal sand mining in the country.
- While the MoEF has already put in place the Sustainable Sand Management Guidelines 2016, which focus on the management of sand mining in India, officials say that there is an urgent need to have guidelines for effective enforcement of regulatory provisions and their monitoring.

- The 2020 guidelines are to be enforced simultaneously with the SSMG, 2016, in case of conflict, the new set will hold legal precedence.
- The **Enforcement and Monitoring Guidelines for Sand Mining 2020** released by the Ministry include directions to states to carry out river audits, put detailed survey reports of all mining areas online and in the public domain, conduct replenishment studies of river beds, constantly monitor mining with drones, aerial surveys, ground surveys and set up dedicated task forces at district levels.
- The guidelines also push for online sales and purchase of sand and other riverbed materials to make the process transparent.
- They propose night surveillance of mining activity through night-vision drones.
- The need for replenishment study for river bed sand is also required in order to “nullify the adverse impacts arising due to excessive sand extraction”.
- No riverbed mining will be allowed during the monsoon.
- The enforcement guidelines focus on the effective monitoring of sand mining from the identification of sand mineral sources to its dispatch and end-use by consumers and the general public and looks at a uniform protocol for the whole country
- The Mines and Minerals (Development and Regulation) Act, 1957 has empowered state governments to make rules to prevent illegal mining, transportation and storage of minerals.
- But in the recent past, it has been observed that there was a large number of illegal mining cases in the country and in some cases, many of the officers lost their lives while executing their duties to curb illegal mining.
- Illegal and uncontrolled illegal mining leads to loss of revenue to the State and degradation of the environment.

170. India-Based Neutrino Observatory (INO)

- Villagers in different parts of Tamil Nadu used gram sabha meetings, organised on Republic Day, to pass resolutions against initiatives such as the hydrocarbon exploration and India-based Neutrino Observatory (INO) projects, which, they feared, would be detrimental to their respective regions.
- India-based Neutrino Observatory (INO) is a particle physics research project under construction to primarily study atmospheric neutrinos in a 1,200 meters (3,900 ft) deep cave under INO Peak near Theni, Tamil Nadu, India.
- This project is notable in that it is anticipated to provide a precise measurement of neutrino mixing parameters.
- The project is a multi-institute collaboration and one of the biggest experimental particle physics projects undertaken in India.
- The region was recovering from the Gaja cyclone and the rural economy was in a very bad state.
- The project may have harmful effects on the fertility of the land in the region and adversely affect the agricultural community, farm labourers and others dependent on the profession.

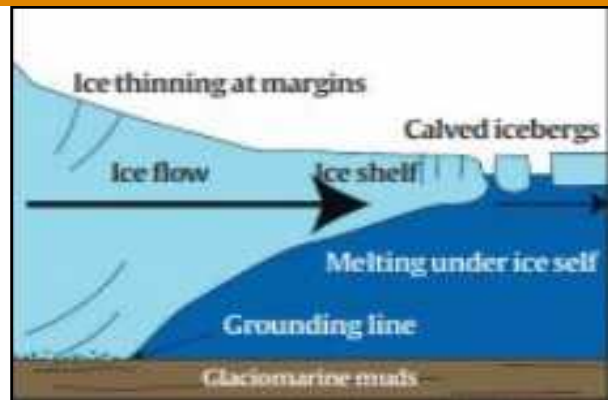
- Other concerns voiced range from radiation, structural damage to the mountain to the emission of hazardous chemicals.

171. Plastic Waste

- E-commerce giants Amazon and Flipkart need to fulfill their extended producer responsibility under the Plastic Waste Management Rules, 2016 and need to establish a system for collecting back the plastic waste generated due to the packaging of their products, the Central Pollution Control Board told the NGT.
- The apex pollution monitoring body told the National Green Tribunal that as per provisions 9(2) of the Plastic Waste Management Rules, 2016,
- **Primary responsibility for collection of used multi-layered plastic sachet or pouches or packaging is of producers, importers and brand owners who introduce the products in the market.**

172. Melting Antarctic Glacier

- A 2019 study had discovered a fast-growing cavity in the glacier sized roughly two-thirds the area of Manhattan.
- Recently, **researchers** from New York University **detected warm water at a vital point below the glacier.**
- The NYU study was funded by the International Thwaites Glacier Collaboration, headed by the Natural Environment Research Council of the UK and the National Science Foundation of the US; the collaboration has been studying the glacier since 2018.



- The New York University study reported **water at just two degrees above freezing point at Thwaites's "grounding zone" or "grounding line".**
 - ✓ **The grounding line is the place below a glacier at which the ice transitions between resting fully on bedrock and floating on the ocean as an ice shelf.**
- The location of the line is a pointer to the rate of retreat of a glacier.
- When glaciers melt and lose weight, they float off the land where they used to be situated.
 - ✓ **When this happens, the grounding line retreats.**
 - ✓ That exposes more of a glacier's underside to seawater, increasing the likelihood it will melt faster.
 - ✓ This results in the glacier speeding up, stretching out, and thinning, causing the grounding line to retreat ever further.
- Thwaites Glacier is **120 km** wide at its broadest, fast-moving and melting fast over the years.
 - ✓ **Because of its size (1.9 lakh square km), it contains enough water to raise the world sea level by more than half a metre.**
- Studies have found the amount of ice flowing out of it has nearly doubled over the past 30 years.

- Today, Thwaites's melting already contributes 4% to global sea level rise each year.
- It is estimated that it would collapse into the sea in 200-900 years.
- Thwaites is important for Antarctica as it slows the ice behind it from freely flowing into the ocean.
- Because of the risk it faces — and poses — **Thwaites is often called the Doomsday Glacier.**

173. Coral Reefs and Biorock

- The Zoological Survey of India (ZSI), with help from Gujarat's forest department, is attempting for the first time a process to **restore coral reefs using biorock or mineral accretion technology.**
- **Biorock is the name given to the substance formed by electro accumulation of minerals dissolved in seawater on steel structures that are lowered onto the sea bed and are connected to a power source, in this case solar panels that float on the surface.**
- A biorock structure was installed one nautical mile off the Mithapur coast in the **Gulf of Kachchh** on January 19.
- The **technology works by passing a small amount of electrical current through electrodes in the water.** When a positively charged anode and negatively charged cathode are placed on the sea floor, with an electric current flowing between them, **calcium ions combine with carbonate ions and adhere to the structure (cathode).**
 - ✓ This results in **calcium carbonate formation.**
- **Coral larvae adhere to the CaCO_3 and grow quickly**
- The **formed material has a strength similar to concrete.**
- It can be used to make robust artificial reefs on which corals grow at very rapid rates.
- **Fragments of broken corals are tied to the biorock structure, where they are able to grow at least four to six times faster than their actual growth as they need not spend their energy in building their own calcium carbonate skeletons.**
- The technology also helps corals, including the highly sensitive branching corals, to counter the threats posed by global warming.

174. Forest Fires

- An area covering 93,273 hectares was affected by forest fires in 2019 in India.
- The fires have been **mainly "ground fires" burning ground vegetation.**
- The number of forest fires differs in India from year to year.
- A large number of forest fires was reported from across the world last year, including in Australia, Brazil, US and Canada.
- **Forests are a subject in the concurrent list of the Seventh Schedule of the Indian Constitution.**
- The MoEF has stated that it prepared a National Action Plan on forest fires in 2018 after several rounds of consultation with all states and Union Territories.

- The objective of this plan is to minimise forest fires by informing, enabling and empowering forest fringe communities and incentivising them to work in tandem with the State Forest Departments.
- The plan also intends to substantially reduce the vulnerability of forests across diverse forest ecosystems in the country against fire hazards, enhance capabilities of forest personnel and institutions in fighting fires and swift recovery subsequent to fire incidents, the ministry said.
- While forests are managed by states concerned, the MoEF provides forest fire prevention and management measures under the Centrally Sponsored Forest Fire Prevention and Management scheme, the ministry said, adding that the Centre further provides funds for forest fire management.
- The FPM replaced the Intensification of Forest Management Scheme (IFMS) in 2017.
- By revamping the IFMS, the FPM has increased the amount dedicated for forest fire work.
- Funds allocated under the FPM are according to a center-state cost-sharing formula, with a 90:10 ratio of central to state funding in the Northeast and Western Himalayan regions and a 60:40 ratio for all other states.
- It also provides the states to have the flexibility to direct a portion of the National Afforestation Programme (NAP) and Mission for Green India (GIM) funding toward forest fire work.

175. World Wetlands Day

- World Wetlands Day is celebrated every year on the 2nd of February.
- This day marks the date of the adoption of the Convention on Wetlands on 2 February 1971 in the Iranian city of Ramsar.
- The theme for 2020 is 'Wetlands and Biodiversity'.
- It was first celebrated in 1997.

176. Global Cost of Air Pollution

- A new Greenpeace report has estimated the **global cost of air pollution from fossil fuels at around \$2.9 trillion per year, or \$8 billion per day – 3.3% of the world's GDP.**
- India is estimated to bear a cost of \$150 billion, or 5.4% of the country's GDP, which is the third-highest absolute cost from fossil fuel air pollution worldwide.
- China and the US are estimated to bear the highest absolute costs from fossil fuel air pollution, respectively at \$900 billion and \$600 billion.
- Globally, PM2.5 is also estimated to cause the loss of 62.7 million years of life, 2.7 million emergency room visits due to asthma, 2 million preterm births and 1.75 billion work absences.
- The 2 million preterm births include 981,000 in India and over 350,000 in China.

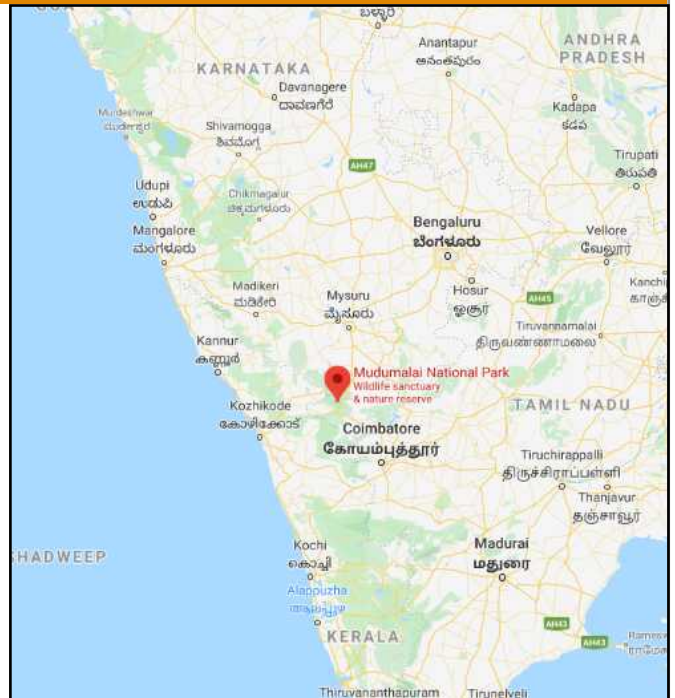
ESTIMATED ECONOMIC COST OF POLLUTION FROM FOSSIL FUELS (\$ BILLION/YEAR)		
China		900
US		600
India		150
Germany		140
Japan		130
Russia		68
UK		66
Italy		61

IMPACT OF PM2.5 POLLUTION DUE TO FOSSIL FUELS		
Impact	Number	Cost (\$ bn)
Premature deaths	3 mn	—
Years of life lost	62.7 mn	1,766
Asthma (emergency room visits)	2.7 mn	0.35
Preterm births	2 mn	91
Work absences	1.75 bn	101

- Additionally, the report links approximately 350,000 new cases of child asthma in India to nitrogen dioxide, which is a byproduct of fossil fuel combustion.
- As a result of this, over 1.28 million more children in India live with asthma, which is linked to fossil fuel pollution.
- In India, exposure to fossil fuels also leads to a loss of around 490 million workdays, the report said.

177. Mudumalai National Park

- The Mudumalai National Park and Wildlife Sanctuary also a declared tiger reserve, lies on the northwestern side of the Nilgiri Hills (Blue Mountains), in Nilgiri District in Tamil Nadu, India.
- It shares its boundaries with the states of Karnataka and Kerala.
- It is a part of Nilgiri Biosphere Reserve (1st Biosphere Reserve in India) along with Wayanad Wildlife Sanctuary (Kerala) in the West, Bandipur National Park (Karnataka) in the North, Mukurthi National Park and Silent Valley in the South.
- There are three main types of forest in the sanctuary:
 - ✓ Tropical moist deciduous occur in the western Benne Block, where rainfall is higher than in the other blocks.
 - ✓ Tropical dry deciduous forest occurs in the middle and south
 - ✓ Tropical dry thorn forests are in the east
- The protected area is home to several endangered and vulnerable species including Indian elephant, Bengal tiger, gaur and Indian leopard.
- There are at least 266 species of birds in the sanctuary, including critically endangered Indian white-rumped vulture and long-billed vulture.



178. CMS COP-13

- India marks the beginning of super year of Biodiversity with the hosting of the 13th Conference of Parties (COP) of the Convention on the Conservation of Migratory Species of Wild Animals (CMS), an environmental treaty under the aegis of United Nations Environment Programme, from 17th to 22nd February 2020 at Gandhinagar in Gujarat.
- The theme of CMS COP-13 is 'Migratory species connect the planet and we welcome them home'.
- The CMS COP 13 logo is inspired by 'Kolam', a traditional art-form from southern India.

- In the logo of CMS COP-13, Kolam art form is used to depict key migratory species in India like Amur falcon, humpback whale and marine turtles.
- The mascot for CMS COP-13 is 'Gibi – The Great Indian Bustard'.
- It is a critically endangered species and is listed in Schedule I under the Wildlife Protection Act, 1972.
- It is also known as the Bonn Convention.
- Under this convention, migratory species threatened with extinction are listed on Appendix I and Parties strive towards strictly protecting these animals, conserving or restoring the places where they live, mitigating obstacles to migration and controlling other factors that might endanger them.
- Migratory species that need conservation and management or would significantly benefit from international co-operation are listed in Appendix II of the Convention.
- India has also signed non legally binding MOU with CMS on the conservation and management of Siberian Cranes (1998), Marine Turtles (2007), Dugongs (2008) and Raptors (2016).
- India is temporary home to several migratory animals and birds.
- The important among these include Amur Falcons, Bar headed Gheese, Black necked cranes, Marine turtles, Dugongs, Humpbacked Whales, etc.
- The Indian sub-continent is also part of the major bird flyway network, i.e, the Central Asian Flyway (CAF) that covers areas between the Arctic and Indian Oceans, and covers at least 279 populations of 182 migratory water bird species, including 29 globally threatened species.
- India has also launched the National Action Plan for conservation of migratory species under the Central Asian Flyway.

179. State of India's Bird 2020 Report

- The State of India's Bird 2020 report assesses the status of 867 Indian birds using a massive database of information contributed by at least 15,500 birdwatchers from across the country.
- It was released at the 13th Conference of Parties of the Convention on the Conservation of Migratory Species of Wild Animals.
- It used a massive database of over 10 million observations uploaded by 15,000 birdwatchers on the online platform (e-Bird) and 'citizen science data' to assess the distribution and trends of common Indian birds.
- The report identifies species that are high in conservation concern, and those that are doing relatively well.
- The analysis indicates 48% of species have remained stable or increasing in the long term, while 79% show declines in the last five years.
- In all, 101 species have been classified as of high conservation concern.
- The report highlights common species that are declining sharply; these need conservation attention before their numbers reduce further.

- **House Sparrow** has been found to be roughly stable across the country as a whole, although declining in the major cities.
- **Reasons for the suspected decline of this species** are a matter of much speculation and are believed to include decreasing insect populations (a key part of the diet of sparrow chicks) and paucity of suitable nesting sites.
- **The popular theory that radiation from mobile phone towers is a factor is not supported by current evidence.**
- Despite the widespread notion that the House Sparrow is declining in India, the analysis presented in this report suggests that the species has been fairly stable overall during the past 25 years.
- Data from the six largest metro cities (Bengaluru, Chennai, Delhi, Hyderabad, Kolkata and Mumbai) do indicate a gradual decline in their abundance in urban centres
- The Peafowl are spread across the plains and hills of India, except in extremely dry or wet regions.
- The increase in numbers of the species has been attributed to a combination of the bird expanding its range, for instance in to Kerala where it was formerly absent, and conservation efforts and associated penalties for poaching and poisoning under Schedule I of the Wildlife Act.
- Its expansion into Kerala has been attributed to the state's "overall drying trend".
- The report points out that the Indian vultures have experienced catastrophic population declines starting in the early 1990s.
- The declines are almost entirely attributable to inadvertent poisoning by the livestock anti-inflammatory drug diclofenac.
- Surveys conducted by the Bombay Natural History Society (BNHS) and Royal Society for the Protection of Birds (RSPB) has shown that **White-rumped Vulture has suffered the most severe declines, followed by Indian Vulture and Egyptian Vulture.**
- The four species of bustards in India – the Great Indian Bustard, Macqueen's Bustard, Lesser Florican and Bengal Florican, have all suffered continuous population declines because of historical hunting and widespread habitat loss, compounded with their slow growth and reproduction.
- The largest of them, the Great Indian Bustard, is classified as Critically Endangered in the IUCN Red List 2019 and has been included in the CMS list in the 13th COP.
- Surveys carried out by different ornithologists, although not strictly comparable in methods, suggest a 90% decline in population size and distribution range over the past five decades.
- Like most other groups, water-birds show overall long-term declines, amongst which migratory shorebirds and gulls and terns appear to have declined the most, although waterfowl (ducks & geese) and other resident water-birds (like swamphens, coots and storks) also show clearly discernible declines.
- **Resident water-birds have been showing particularly severe declines in the past 5 years.**



- Overall, migratory species (both long-distance and within-subcontinent) show steeper declines than residents.
- Bustards, including floricans and korhaans, are large, terrestrial birds living mainly in dry grassland areas and on the steppes of the Old World.
- The country's two resident bustard species, **the great Indian bustard and the Bengal florican, are classified as 'Critically Endangered'** in IUCN's Red List and third one, that is, **Lesser Florican is classified as 'Endangered'** in IUCN's Red List.

180. Future of Earth 2020 Report

- The South Asia Future Earth Regional Office, the Divecha Centre for Climate Change and the Indian Institute of Science have released "The Future of Earth, 2020" report.
- The report has been prepared with the aim of reducing carbon footprint and halting global warming below 2 degree Celsius by 2050.
- It enlists five key global risks –
 - ✓Climate change
 - ✓Extreme weather
 - ✓Biodiversity loss
 - ✓Food crisis
 - ✓Water crisis
- Offering examples of how the interrelation of risk factors play a role, scientists say extreme heat waves can accelerate global warming by releasing large amounts of stored carbon from affected ecosystems, and at the same time intensify water crises and/or food scarcity.
- The loss of biodiversity also weakens the capacity of natural and agricultural systems to cope with climate extremes, increasing our vulnerability to food crises, they point out.

Dialling down the heat

- Lead author Diana Liverman, School of Geography and Development, University of Arizona, points out that over the last 18 months, major assessments by the Intergovernmental Panel on Climate Change, the US National Climate Assessment, and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, have all argued that time is running out to reduce greenhouse gas emissions.
- This has inspired declarations of a climate crisis or climate emergency by the leaders of more than 700 cities, States and governments.
- Yet, during 2019, the concentration of carbon dioxide in the atmosphere reached more than 415 ppm, and the five years from 2014 to 2018 were the warmest recorded over land and ocean since 1880.

Populism versus grassroots movements

- Right-wing populism, a breed of politics that exploits people's fears during times of economic decline and growing inequality, and that focuses on nationalist tendencies to clamp down on borders and reject immigrants is on the rise around the world.
- This often leads to a denial of climate change facts or impacts.

The unravelling web of life

- In the chapter on biodiversity, pointing out that in 2018, the world's last male northern white rhino died in his Kenyan enclosure, while the Brazilian blue parrot, Spix's Macaw, was declared extinct in the wild.
- Reversing the trends of loss of life on this planet will require some new ways of thinking about conservation.
- Strains on food production are expected to increase, as a result of various forces including climate change, biodiversity loss, and a global population on the rise
- False news travels six times faster and can reach up to 100 times more people, says the 'Our future on earth' report on the role of media.
- In 'Industrializing disinformation', says the flow of information in the world is changing, as today, around half of the planet's 7.6 billion people are online, deeply influenced by social media, search engines and e-commerce algorithms.

181. Indian Pangolin

- Scientists have, for the first time, radio-tagged the Indian pangolin, an **endangered animal** that is rarely sighted in forests.
- **Pangolin is only scaly mammal on the planet.**
- Of the **eight species of pangolin worldwide, two are found in India. They are Chinese pangolin, mostly found in northeast India and Indian pangolin.**
- Indian pangolin has been listed as "endangered" in IUCN Red List.
- It is also a **Schedule I category protected animal, under the Wildlife Protection Act (1972).**
- **Chinese pangolin has been listed as "critically endangered"** by International Union for Conservation of Nature's (IUCN) Red List.
- Researchers say tagging the animal will help understand the habits of the reclusive, nocturnal animal.
- **Radio-tagging involves attaching a transmitter to an animal to monitor its movements.**
- The radio-tagging is part of a joint project by the forest department and non-profit organisation, the Wildlife Conservation Trust (WCT). (First time in MP)
- Several wild animals — tigers, leopards and migratory birds — have been tagged over decades.
- **Pangolins are among the most trafficked wildlife species in the world.**

- The International Union for the Conservation of Nature says these **toothless animals have seen a rapid reduction in population.**
- The projected population declines range from 50% to 80 % across the genus.
- **World Pangolin Day, celebrated on the third Saturday in February,** is an international attempt to raise awareness of pangolins and bring together stakeholders to help protect these unique species from extinction.(15th February, 2020)

182. New Species of Urban Lizard

- Guwahati, the largest city in the Northeast, has yielded a new species of lizard – the **urban bent-toed gecko.**
- The new species of lizard, zoologically named *Cyrtodactylus urbanus*, is markedly different in molecular structure, blotch and colour from the *Cyrtodactylus guwahatiensis*, or the Guwahati bent-toed gecko, that was discovered two years ago.
- All bent-toed geckos in Northeast India were thought to be a single species, the *Cyrtodactylus khasiensis* found primarily in the Khasi Hills of Meghalaya.
- Though the urban bent-toed gecko falls within the *khasiensis* group, it differs from other members of this group in various aspects.
- This study tries to establish is that some urban spaces too have life forms that are often overlooked but in danger of being wiped out because of concrete development.

183. Appendix I of UNCMS

India's proposal to include **Great Indian Bustard, Asian Elephant and Bengal Florican** in **Appendix I of UN Convention on migratory species** was **unanimously accepted** in **thirteenth Conference of the Parties to the Convention on Migratory Species (CMS)** in **Gandhinagar.**(10 species added)

Asian Elephant

- The Government of India has declared Indian elephant as **National Heritage Animal.**
- Indian elephant is also provided highest degree of legal protection by listing it in **Schedule I of the Wildlife (Protection) Act, 1972.**
- It is listed as '**Endangered**' on the IUCN Red List of threatened species.
- It is also listed in **Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).**
- Placing Indian elephant in Schedule I of the CMS Convention, will fulfil natural urge of migration of Indian elephant across India's borders and back safely and thereby promote conservation of this endangered species for our future generations.
- Intermixing of smaller sub populations in Nepal, Bangladesh, Bhutan and Myanmar and widen the gene base of these populations.
- It will also help to reduce human elephant conflicts in many parts of its migratory routes.



- The challenges confronting Asian elephant conservation in most elephant Range States are habitat loss and fragmentation, human elephant conflict, and poaching and illegal trade of elephants.

Great Indian Bustard

- The Great Indian Bustard, an iconic, **critically endangered and conservation dependent species**, exhibits **transboundary movements**, and its migration exposes it to threats such as hunting in boundary area of Pakistan-India and power-line collisions in India.
- Inclusion of the species in Appendix I of CMS will aide in transboundary conservation efforts facilitated by International conservation bodies and existing international laws and agreement.
- The Great Indian Bustard is a Critically Endangered species with a small population of about 100–150 individuals that is largely restricted to Thar desert in Rajasthan, India.
- The species has disappeared from 90% of this range; their population has reduced by 90% within 50 years (six generations); and their threats are expected to increase in future.
- It is the **state bird of Rajasthan**.
- It is listed as Critically Endangered on the IUCN Red List.
- It is also listed in Appendix I of CITES and Schedule I of the Indian Wildlife (Protection) Act, 1972.

Bengal Florican

- The Bengal Florican an iconic, **critically endangered** species of topmost conservation priority, exhibits transboundary movements, and its migration exposes it to threats such as land use changes, collision with power transmission line at boundary area of India-Nepal and probable power-line collisions.
- Inclusion of the species in Appendix I of CMS will aid in transboundary conservation efforts facilitated by International conservation bodies and existing international laws and agreement.
- In Indian Subcontinent, it is found mainly in Uttar Pradesh, Assam and Arunachal Pradesh in India and terai region of Nepal.
- Populations have declined as a result of habitat loss, hunting and the species no longer breeds outside Protected Areas in the Indian subcontinent, except in a few areas of Assam.

- The bird is listed under Schedule I of the Wildlife Protection Act of India, 1972 and Appendix I of CITES.
- It has been listed as Critically Endangered on the IUCN Red List.
- Bustards, including floricans and korhaans, are large, terrestrial birds living mainly in dry grassland areas and on the steppes of the Old World.
- The country's two resident bustard species, the great Indian bustard and the Bengal florican, are classified as 'Critically Endangered' in IUCN's Red List and third one, that is, Lesser Florican is classified as 'Endangered' in IUCN's Red List.
- The CMS Conference in Gujarat has kicked off the Super Year for Environment, which will include a UN Summit in September and culminate in the UN Biodiversity Conference at the end of 2020, when a new global biodiversity strategy for the next decade will be adopted - the Post-2020 Global Biodiversity Framework.
- The CMS COP-13 has adopted the Gandhinagar Declaration which calls for migratory species and the concept of 'ecological connectivity' to be integrated and prioritized in the post-2020 global biodiversity framework.
- India pledged to focus on the conservation of migratory birds along the Central Asian Flyway and announced the establishment of an institutional facility for undertaking research and assessment of the conservation of migratory birds, the conservation of marine turtles, reduction of pollution from micro-plastic and single-use plastic, transboundary protected areas, and sustainable infrastructure development.

184. Kawal Tiger Reserve

- Kawal Tiger Reserve is located at Adilabad district in **Telangana** state of India.
- The Government of India declared Kawal wildlife sanctuary as **Tiger Reserve in 2012**.
- It is well known for its abundant flora and fauna.
- This sanctuary is **catchment for the rivers Godavari and Kadam**, which flow towards the south of the sanctuary.
- The sanctuary is one of the **richest teak forests in the state**, with dense pristine areas free of human disturbance.
- Dry deciduous teak forests mixed with bamboo, terminalia, pterocarpus, anogeisus and cassias.
- Mammal species that have been sighted include **tiger, leopard, gaur, cheetal, sambar, nilgai, barking deer, chowsingha, and sloth bear**.
- Several species of birds and reptiles are also found in the sanctuary.
- The worrisome man-animal conflict in Kawal Tiger Reserve (KTR) on account of water seems to be a thing of the past.



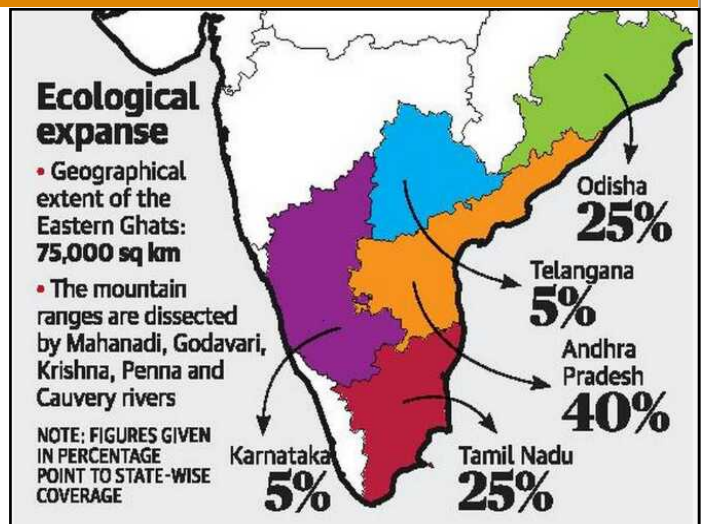
- There was no incident of wild animals straying into human habitations for water last year and it will hold good for the current season too as there is enough water for them to tide over the harsh summer in the Reserve, which is spread over 893 sq km of core area and 1,122 sq km of buffer.
- Water will be available for a comparatively longer period in natural water bodies thanks to a prolonged monsoon and also due to the intensified efforts of the Reserve management in making it available through artificially created water holes.

185. Olive Ridley Turtles

- Preparations are almost done at the Rushikulya rookery on the Odisha coast to welcome and protect olive ridley turtles during mass nesting, likely to begin in the beginning of March.
- Eggs from sporadic nesting that has been going on for the past two months, which were incubated at artificial hatcheries of the forest department, have also started to hatch.
- Olive Ridley Turtles are the smallest and most abundant of all sea turtles found in the world, inhabiting warm waters of the Pacific, Atlantic and Indian oceans.
- **These turtles, along with the Kemps ridley turtle, are best known for their unique mass nesting called Arribada**, that is, mass-nesting event when thousands of turtles come ashore at the same time to lay eggs on the same). But they can also lay eggs by sporadic nesting.
- They are **vulnerable** according to the International Union for Conservation of Nature and Natural Resources (IUCN). They are listed in Appendix I of CITES.
- They are protected under Schedule I of the Wildlife Protection Act, 1972.

186. Declare Eastern Ghats UNESCO Cultural Heritage Sites

- All the historically and culturally significant mountains of the Eastern Ghats should be declared UNESCO cultural heritage sites, and the five States that the Ghats encompass – Tamil Nadu, Andhra Pradesh, Telangana, Karnataka and Odisha – should prepare an action plan to protect and conserve their ecology and natural resources, the Greens' Alliance for Conservation of Eastern Ghats (GRACE) and the Council for Green Revolution (CGR) have said.
- It was all laid out in a report titled 'Eastern Ghats - Environment Outlook'.
- The report said the degradation of the Eastern Ghats, which began a century ago, had accelerated since the 1970s, and the **ecosystem of the hills had lost their natural species composition, forest structure, size, scale and character**.
- The time has come for all the local governments to ensure that the conservation of the Eastern Ghats and the regeneration of all its biodiversity are top priority.



- The region hosts wildlife sanctuaries, biosphere reserves and Ramsar convention sites.
- However, a large part of the Eastern Ghats wilderness is yet to be covered under the conservation umbrella.

187. World Air Quality Report 2019

- World Air Quality Report 2019 was released by the pollution tracker IQ Air and Greenpeace.
- The ranking is based on a comparison of PM 2.5 levels.
- Bangladesh emerged as the most polluted country for PM 2.5. Pakistan, Mongolia, Afghanistan and India followed behind respectively.

MOST POLLUTED CITIES IN 2019

Rank	City	PM2.5 (micrograms/cu. m)
1	Ghaziabad (India)	110.2
2	Hotan (China)	110.1
3	Gujranwala (Pak)	105.3
4	Faisalabad (Pak)	104.6
5	Delhi (India)	98.6
6	Noida (India)	97.7
7	Gurgaon (India)	93.1
8	Raiwind (Pak)	92.2
9	Greater Noida (India)	91.3
10	Bandhwari (India)	90.5

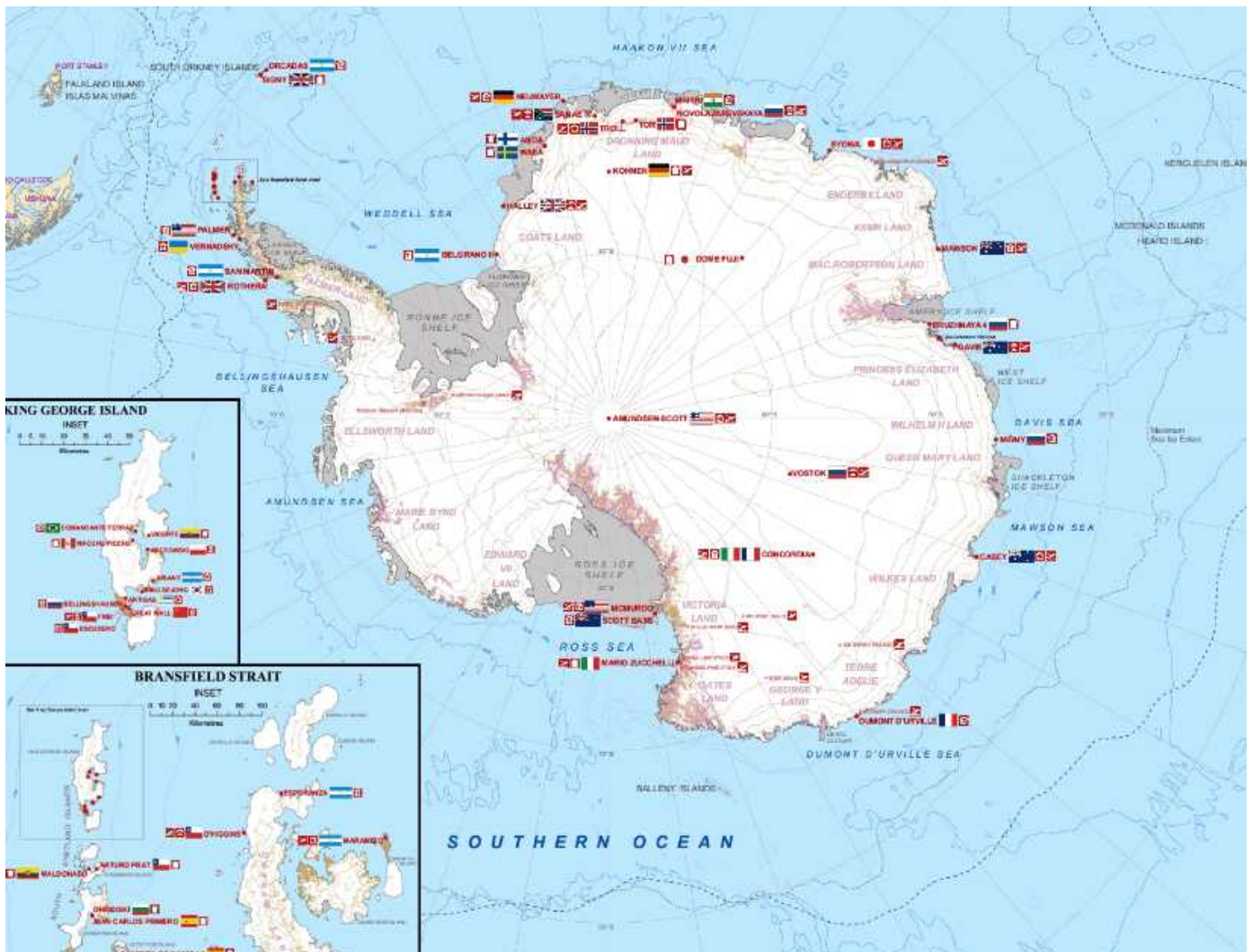
- India is the fifth most polluted country in 2019 and accounts for almost two-thirds of the world's most polluted cities.
- 21 of the 30 most polluted cities in the world are located in India with Ghaziabad in the National Capital Region ranked the world's most polluted.
- Indian cities, on average, exceed the World Health Organisation (WHO) target for annual PM 2.5 exposure by 500%. However, national air pollution decreased by 20% from 2018 to 2019, with 98% of cities experiencing improvements.
- The report points to economic slowdown, favorable weather conditions, and efforts towards cleaning the air as reasons behind the decrease.
- The report also points India's launch of the country's first National Clean Air Programme (NCAP) which aims to reduce PM 2.5 and the bigger particulate PM 10 air pollution in 102 cities by 20-30% by 2024 compared to 2017 levels.
- The report, however, noted that the reduction in pollution in 2019 couldn't be attributed to the NCAP but to the slowing of the marketplace. According to the Economic Survey 2019-20, the economic growth rate in India is expected to slow down to 5% in 2019-20 from 6.1% in 2018-19 and 7% in 2017-18.

Country	Air quality	PM2.5*
Bangladesh	Unhealthy	83.3
Pakistan	Unhealthy	65.8
Mongolia	Unhealthy	62
Afghanistan	Unhealthy	58.8
India	Unhealthy	58.1
Indonesia	Unhealthy for sensitive groups	51.7

188. Red Snow

- Over the last few weeks, photographs of "red snow" around Ukraine's Vernadsky Research Base, off the coast of Antarctica's northernmost peninsula, have gone viral.
- "Red snow" or "watermelon" is a phenomenon that has been known since ancient times.
- Presently, it raises concerns about climate change.
- Aristotle is believed to be one of the first to give a written account of red snow, over 2,000 years ago.

- It is the algae that give the snow its red tinge.
- This alga species, *Chlamydomonas Chlamydomonas nivalis*, exists in snow in the polar and glacial regions, and carries a red pigment to keep itself warm .
- In turn, the **red snow causes the surrounding ice to melt faster**, a 2017 study from Alaska Pacific University said.
- The **more the algae packed together, the redder the snow**. And the darker the tinge, the more the heat absorbed by the snow. Subsequently, the ice melts faster.
- While the melt is good for the microbes that need the liquid water to survive and thrive, it's bad for glaciers that are already melting from a myriad of other causes, the study said.
- These algae change the snow's albedo — which refers to the amount of light or radiation the snow surface is able to reflect back. Changes in albedo lead to more melting.
- In the melting of snow in the Arctic, the key drivers have been snow and ice albedo, according to a 2016 study in the journal Nature.



189. Renewable Energy Management Centers (REMCS)

- Recently, Northern Region Renewable Energy Management Centre (NR-REMC) was inaugurated.
- **Eleven REMCs have been provided placing India among a league of few nations, which have state-of-the-art management centers for renewable energy integration.**
- Presently, 55 GW of Renewable (Solar and Wind) is being monitored through the eleven REMCs, located in Tamil Nadu, Karnataka, Andhra Pradesh, Maharashtra, Madhya Pradesh, Gujarat, Rajasthan.
- The Government of India's target of 175 GW RE Capacity by 2022 driving accelerated RE penetration poses challenges to the grid management due to intermittent and variable nature of RE generation.
- The renewable energy management centers are equipped with Artificial Intelligence based RE forecasting and scheduling tools and provide greater visualization and enhanced situational awareness to the grid operators.
- **Government of India had approved the implementation of the REMCs as a Central Scheme and had mandated POWERGRID, a Maharatna CPSE under Ministry of Power as Implementing Agency.**
- These REMCs are being managed by Power System Operation Corporation of India Ltd. (POSOCO) at Regional and National level and at State level by State Load Despatch Centres (SLDCs).

190. Black Carbon

- **Black carbon concentration in the Gangotri glacier region has increased by 400 times during summer, according to a study.**
- The study suggests **agricultural burning and forest fire** as the **reason** behind this seasonal increase.
- **This can trigger glacial melt because of the light-absorbing nature of black carbon.**
- Scientists from Wadia Institute of Himalayan Geology, (WIHG), an autonomous institution under Department of Science & Technology, in a study conducted at Chirbasa station near Gangotri Glacier, for the Year 2016, found that black carbon (BC) concentration in this region has changed drastically during summer.
- It was revealed by investigating the occasional high values of black carbon extricated, that the **seasonal cycle of increase was significantly influenced by the emissions resulting from agriculture burning (in western part of the country), forest fires (along the Himalayan slopes) in summer, and to some extent by the contribution from long-range transport of pollutants in winter, depending the prevailing meteorological conditions.**
- **The Equivalent Black Carbon (EBC) aerosols contribute significantly towards global warming due to its light-absorbing nature.**
- Their presence in the eco-sensitive zone, such as the Himalayan glacier valleys, is a matter of serious concern and needs to be meticulously monitored.
- However, baseline data on BC is rarely available from most of the glaciated Himalayan region

191. World Wildlife Day

- World Wildlife Day is celebrated every year on the 3rd of March since 2013.
- The date chosen coincides with the day the **Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)** which was signed in 1973.
- World Wildlife Day will be celebrated in 2020 under the theme "Sustaining all life on Earth", encompassing all wild animal and plant species as key components of the world's biodiversity.
- This aligns with **UN Sustainable Development Goals 1, 12, 14 and 15**, and their wide-ranging commitments on alleviating poverty, ensuring sustainable use of resources, and on conserving life both on land and below water to halt biodiversity loss.
- The year 2020, known as biodiversity super year, will host several major global events that place biodiversity at the forefront.

192. Chilika Lake – Species

- Researchers conducting a study in Odisha's Chilika Lake have found the **presence of a viable, breeding population of a fishing cat along with smooth-coated otter and an Eurasian otter in the brackish water lagoon.**
- It is a globally **endangered species** that is elusive and found in very few places in south and south-east Asia.
- About twice the size of a typical house cat, the fishing cat is a feline with a powerful build and stocky legs.
- The fishing cat is an adept swimmer and enters water frequently to prey on fish as its name suggests.
- It is known to even **dive to catch fish.**

Fishing Cat

- Wetlands are the favorite habitats of the fishing cat.
- In India, fishing cats are **mainly found in the mangrove forests of the Sundarbans**, on the foothills of the Himalayas along the Ganga and Brahmaputra river valleys and in the Western Ghats.
- IUCN Red List – **Vulnerable**
- CITES - Appendix II
- Indian Wildlife Protection Act, 1972 - Schedule I



Smooth-Coated Otter

- Smooth-coated otter is characterized by a very smooth, sleek pelage.
- These otters have generally been described as fish specialist.
- They are strong swimmers and hunt in groups.



- Most foraging activity occurs in water and small fish are swallowed whole, but large fish are taken to shore.
- IUCN Red List - Vulnerable
- CITES - Appendix II
- Indian Wildlife Protection Act, 1972 - Schedule II

Eurasian Otter

- Despite being a widely-spread and common species globally, very little is known of the species distribution and abundance in India and especially along the eastern coast.
- It is found in the waterways and coasts of Europe, many parts of Asia, and parts of northern Africa.
- IUCN Red List - Near Threatened CITES - Appendix I
- Indian Wildlife Protection Act, 1972 - Schedule II



193. Whale Shark

- Whale sharks are harmless, slow-moving that feed on phytoplanktons, micro-algae and small sea animals.
- It is the largest known extant fish species.
- They have many rows of **teeth that play no role in feeding**.
- They suck water and close their mouth to expel the water through their gills. During this 'filter feeding' process, they also suck up their food.
- It is found in open waters of the tropical oceans.
- Whale sharks are **annual visitors to the Odisha coast**, usually from January to March.
- In the past, carcasses of whale sharks have been found near Gopalpur, the mouth of the Rushikulya and Devi rivers, the Chilika lake coast, and along Bhitarkanika and Balasore.
- IUCN Status - Endangered
- Indian Wildlife Protection Act, 1972: Schedule I



194. Red Crowned Roofed Turtle

- The freshwater turtle, one of 24 species endemic to India, is characterised by the bright colours of courtship — red, yellow, white and blue — on the faces and necks of the males.
- They mainly inhabit the **Chambal River**.
- Currently in India, the National Chambal River Gharial Sanctuary is the only area with substantial population of the species.
- It is listed as Critically **Endangered** in IUCN Red List and Schedule I of Wildlife Protection Act (WPA).

- The crucial reason being years of human interference creating habitat loss due to sand mining, illegal fishing, and poaching of eggs and meat.

195. Sukhna Lake

- The Punjab and Haryana high court declared Sukhna Lake in Chandigarh a “living entity” or “legal person” with rights, duties and liabilities of a living person.
- It also declared **all citizens of Chandigarh as loco parentis (in the place of a parent) to save the lake from extinction.**
- The court observed that Sukhna Lake is required to be declared as a legal entity for its survival, preservation and conservation.
- The **Chandigarh administration has been directed to declare it a wetland within a period of three months.**
- All structures in Sukhna’s catchment area (which was demarcated by the Survey of India in 2004) should be demolished, and affected owners whose building plans have been approved should be relocated in the vicinity of Chandigarh and they should be compensated with ₹25 lakh each.
- An area of 2 km to 2.75 km around the lake has been declared as an eco-sensitive zone by the Chandigarh Administration.
- **All activities in this area fall under provisions of the Environment Protection Act.**

196. Red Panda

- The trade monitoring network TRAFFIC has released a report titled “Assessment of illegal trade-related threats to Red Panda in India and selected neighbouring range countries” recently.
- The report has analysed poaching and illegal trade of the species for the ten-year period from July 2010 to June 2019.
- The researchers found that **neither India nor Bhutan had reported any incidences of poaching or illegal trade in Red Pandas in the study period.**
- The report also **recommended trans-boundary law enforcement co-operation through the use of multi-government platforms like SAWEN (South Asia Wildlife Enforcement Network).**
- The red panda is a **mammal native to the eastern Himalayas and southwestern China.**
- It is the **state animal of Sikkim.**
- It is listed as **Endangered on the IUCN Red List.**
- International trade is strictly regulated through its listing in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), while in India, the species is protected under Schedule I of the Wildlife (Protection) Act, 1972.
- The population continues to decline due to habitat loss and fragmentation, poaching (for meat and fur), and inbreeding depression.

- About 5,000-6,000 red pandas are estimated to be present in four Indian states – Arunachal Pradesh, Meghalaya, Sikkim and West Bengal.
- This is the second-largest population after China (6,000-7,000).
- Nepal accounts for 580 animals, while Bhutan and Myanmar have no estimate of the animal's population.
- Red pandas have been reported from 11 districts of Arunachal Pradesh, which is presumed to hold the largest red panda population in the country.

197. Hubballi - Ankola Railway Line Project

- The Hubballi-Ankola railway line project, saw stiff opposition from a majority of the board members of the Karnataka State Wildlife Board.
- The proposed rail project entails large-scale destruction of forests, including the felling of nearly 2.2 lakh fully grown trees in a biodiversity hotspot.
- The proposed 164.44-km railway line passes through forests between two major protected areas, Kali Tiger Reserve and Bedthi Conservation Reserve.
- More than 80% the line has to pass through the dense forest lands of the Western Ghats, and this entails the diversion of 727 hectares of prime forests.
- Kali Tiger Reserve is a protected area and tiger reserve.
- It is located in Uttara Kannada district, in Karnataka, India.
- The park is a habitat of Bengal tigers, black panthers and Indian elephants, amongst other distinctive fauna.



- The Kali River flows through the tiger reserve and is the lifeline of the ecosystem and hence the name.
- In December 2015, Dandeli Anshi Tiger reserve was renamed to Kali Tiger Reserve.

198. White Giraffe

- Poachers have **killed two extremely rare white giraffes in northeast Kenya**, leaving just one such animal in the world.
- The **white appearance of the giraffe is due to leucism**, a genetic condition that causes skin cells to have no pigmentation.
- **Unlike albinism, animals with leucism continue to produce dark pigment in their soft tissue, thus her eyes were dark in colour**
- The International Union for Conservation of Nature (IUCN) had classified **giraffes as vulnerable** in the Red List in December 2016, when it noted that their population had dropped by over 40% since 1985.
- **According to IUCN, the four principal factors that have led to a population decline among giraffes are habitat loss, civil unrest, poaching and ecological issues.**
- **Giraffes are listed under Appendix II of the CITES.**

199. South India's Vultures

- The South India Vulture Conservation Group has come up with a blueprint for the conservation of vulture population in five South Indian States (Andhra Pradesh, Telangana, Karnataka, Kerala and Tamil Nadu), which are home to six of the nine vultures species found in the country.
- A synchronously coordinated survey in five States, need to press the governments to restrict availability of Non-steroidal Anti-Inflammatory Drugs (NSAID) for veterinary use and to create a vulture safe zone in each south Indian State.
- Out of nine vulture species in India, four namely, white-backed vulture, long-billed vulture (Indian vulture), slender-billed vulture and red-headed vulture – are listed as **critically endangered** by the IUCN and all except one are in the Schedule-1 of the Wildlife Protection Act, the highest category of endangerment.
- The four critically endangered vulture species in India were given special importance and they were recognised in the Annexure 1 of the CMS framework and a multi-species action plan has been devised for all threatened vulture species.
- Except slender-billed vulture, the three other critically endangered species are found in the Moyar valley in the Nilgiris, whose population has seen a slight increase.

200. CPCB

- There are 128 sites in India contaminated by toxic and hazardous substances, according to the Central Pollution Control Board (CPCB).
- **West Bengal led the list with 27 sites followed by Odisha at 23.**

- CPCB is a statutory organisation which was constituted in September, 1974 under the **Water (Prevention and Control of Pollution) Act, 1974**.
- It was entrusted with the powers and functions under the Air (Prevention and Control of Pollution) Act, 1981.

Functions of the CPCB in the Water (Prevention and Control of Pollution) Act, 1974, and the Air (Prevention and Control of Pollution) Act, 1981 –

- to promote cleanliness of streams and wells in different areas of the States by prevention, control and abatement of water pollution.
- to improve the quality of air and to prevent, control or abate air pollution in the country.

201. Pakke Tiger Reserve

- Pakke Tiger Reserve, also known as Pakhui Tiger Reserve, is a Project Tiger reserve in the Pakke Kessang district of **Arunachal Pradesh** in northeastern India.
- It falls within the Eastern Himalaya Biodiversity Hotspot.
- It is home to over 2000 species of plants, 300 species of birds, 40 species of mammals, 30 species of amphibians and 36 species of reptiles.
- Many species of the flora and fauna are globally threatened, and PTR is one of the last remaining strongholds left for these species.



- It is also known for its amazing sightings of four resident hornbill species.
- The Government of Arunachal Pradesh is planning to build a **692.7 km highway through the 862 sq km Pakke Tiger Reserve (PTR) in East Kameng district, Arunachal Pradesh.**
- **Named the East-West Industrial Corridor, the highway aims to connect Arunachal Pradesh with Assam.**
- It has been argued that corridor will also be a threat to the **adjoining Nameri Tiger Reserve in Assam.**
- Recently, the Arunachal Pradesh government decided to “keep in abeyance” the survey work for a road through the Pakke Tiger Reserve (PTR).
- Any infrastructural development that can be detrimental to the tiger reserve in the future and needs to be considered seriously before proposing it.

202. ISRO'S Assistance In Finding Rich Fishing Areas

- The Indian National Centre for Ocean Information Services (INCOIS), Ministry of Earth Sciences (MoES), Hyderabad has reported that Oceansat Satellite data from Indian Space Research Organization (ISRO) are used to prepare the Potential Fishing Zone (PFZ) advisories on the potential rich fishing areas and provide to the sea faring fishermen in all states.
- ISRO has developed the methodology for the generation of fishery advisories and transfer to INCOIS since 2002 as an operational service for providing PFZ advisories.
- This service utilizes data on chlorophyll concentration (Chl) obtained from ISRO's Oceansat-2 satellite and the sea surface temperature from National Oceanic Atmospheric Administration (NOAA / USA satellites).
- PFZ advisories helped fishermen in avoiding the unwanted search for fish shoals.
- This reduces their fuel consumption.
- Reduction in fuel consumption reduces carbon emission and hence pollution.

203. World Sparrow Day

- World Sparrow Day is a day designated to raise awareness of the house sparrow and then other common birds to urban environments, and of threats to their populations, observed on 20 March.
- It is an international initiative by the Nature Forever Society of India in collaboration with the Eco-Sys Action Foundation (France) and numerous other national and international organisations across the world.
- The theme for World Sparrow Day is "I LOVE Sparrows" and is pictured like "I ♥ Sparrows".
- It is a hope that with this theme more people will join several events and campaigns to protect the sparrows.



204. Olive Ridley Turtles

- Recently, mass nesting of Olive Ridley Turtles started at Odisha's Rushikulya rookery coast.
- The **Rushikulya rookery on the coast of Odisha in India is the largest mass nesting site for the Olive-ridley, followed by the coasts of Mexico and Costa Rica.**
- **Olive Ridley Turtles are the smallest and most abundant of all sea turtles found in the world, inhabiting warm waters of the Pacific, Atlantic and Indian oceans.**
- These turtles, along with the Kemps ridley turtle, are best known for their unique mass nesting called Arribada, that is, mass-nesting event when thousands of turtles come ashore at the same time to lay eggs on the same).
- But they can also lay eggs by sporadic nesting.
- They are vulnerable according to the International Union for Conservation of Nature and Natural Resources (IUCN). They are listed in Appendix I of CITES.
- They are protected under Schedule I of the Wildlife Protection Act, 1972.

205. Glaciers In Sikkim Are Losing Mass Faster

- Scientists from Wadia Institute of Himalayan Geology (WIHG), Dehradun an autonomous research institute for the study of Geology of the Himalaya under the Department of Science and Technology, have found that glaciers in Sikkim are melting at a higher magnitude as compared to other Himalayan regions.
- The study published in Science of the Total Environment assessed the response of **23 glaciers of Sikkim to climate change for the period of 1991-2015 and revealed that glaciers in Sikkim have retreated and deglaciated significantly from 1991 to 2015.**
- **Small-sized glaciers in Sikkim are retreating while larger glaciers are thinning due to climate change.**
- Compared to other Himalayan regions, the magnitude of dimensional changes and debris growth are higher in the Sikkim.
- A major shift in glacier behavior has occurred around 2000.
- **Contrary to the western and central Himalaya, where glaciers are reported to have slowed down in recent decades, the Sikkim glaciers have shown negligible deceleration after 2000.**
- **Summer temperature rise has been prime driver of glacier changes.**
- The behavior of glaciers in the region is heterogeneous and found to be primarily determined by glacier size, debris cover, and glacial lakes.
- The Sikkim glaciers have been poorly studied till now, and field-based mass balance measurements have been limited to only one glacier (Changme Khangpu) and for a short period (1980-1987).
- The studies are regional in nature and do not give emphasis on individual glacier behavior.

- Besides, most of the existing measurements in this region have been focused on length/area changes only.
- Velocity estimations have also been extremely rare.
- This study, for the first time, studied multiple glacier parameters, namely length, area, debris cover, snowline altitude (SLA), glacial lakes, velocity, and downwasting, and explored interlinkage among them to present a clear picture about status and behavior of glaciers in the Sikkim.
- Accurate knowledge of magnitude as well as the direction of glacier changes, as highlighted in the present study, can lead to awareness among common people regarding water supplies and possible glacier hazards, particularly to those communities that are living in close proximity.
- The study can provide ample baseline data on glacier changes and systematically explore the causal relationship between glacier parameters and various influencing factors.
- A clear understanding of glacier state will help orienting future studies as well as taking necessary measures.

206. Legacy Waste

- While observing that the delay in clearing legacy waste was adversely affecting the environment and public health, the National Green Tribunal (NGT) has directed a committee comprising of representative from the Central Pollution Control Board and IIT Delhi, to carry out a study to assess the amount of damage caused to the environment due to the dump sites in Delhi.
- When a solid waste disposal facility, commonly called a “dump” or a “landfill”, reaches the end of its capacity to accept any more garbage, or is scheduled for closure, care much be taken to ensure that it is properly closed so that its environmental impact is minimised.

Legacy Waste – Effects

- ✓ Infiltration of rainfall to control the volume of leachate produced, thus minimising groundwater impacts
- ✓ The potential for waste to come in contact with humans and other environmental receptors
- ✓ Vermin access and impact
- ✓ Discharge of Landfill Gas and fire/explosion potential
- ✓ Odours
- ✓ Erosion, while providing a surface to sustain landscaping and improving visual aesthetics
- Biomining method has been proposed by the Central Pollution Control Board (CPCB) for the effective disposal of legacy wastes.
 - ✓ It is a technique of extracting metals from ores and other solid materials typically using prokaryotes or fungi.
- It may also be used to clean up sites that have been polluted with metals.
- Some microbes can oxidize those metals, allowing them to dissolve in water.

207. World Water Day

- World Water Day is an annual UN observance day (22 March) that **highlights the importance of freshwater** (since 1993).
- This day was first formally proposed in Agenda 21 of the 1992 United Nations Conference on Environment and Development in Rio de Janeiro.
- The day is used to **advocate for the sustainable management of freshwater resources**.
- The theme of each day focuses on topics relevant to clean water, sanitation and hygiene (WASH), which is in line with the targets of Sustainable Development Goal 6 (water and sanitation for all by 2030)
- The UN World Water Development Report (WWDR) is released each year around World Water Day.
- The theme for 2020 is 'Water and Climate Change' which aims to explore interrelation between water and climate change.
- The campaign shows how our use of water will help reduce floods, droughts, scarcity and pollution and will help fight climate change itself.
- In 2020, in response to the COVID-19 pandemic, there was an additional focus on handwashing and hygiene.