

Environment FOR You 2021



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GOOD MORNING TIMES

Environment (MAY -2021)

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17/10 Old Rajender Nagar N.Delhi

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TOPIC GENERAL STUDIES 3: CONSERVATION, ENVIRONMENTAL POLLUTION AND DEGRADATION, ENVIRONMENTAL IMPACT ASSESSMENT

May -2021

1) PROTECTED PLANET REPORT 2020

Why in News?

UN Environment World Conservation Monitoring Centre (UNEP-WCMC), the International Union for Conservation of Nature (IUCN) and the National Geographic Society released the report.

About the report

- Protected Planet Reports are biennial landmark publications that assess the state of protected and conserved areas around the world.
 - o Protected and conserved areas collectively describe all sites in terrestrial and aquatic systems that aim to achieve, or are effective in achieving, conservation outcomes.
 - o Protected areas can prevent species extinctions and experience lower levels of human pressure than external areas.
- The 2020 edition provides the final report on the status of Aichi Biodiversity Target 11 and looks to the future as the world prepares to adopt a new post-2020 global biodiversity framework.
- It is the first in the series to include data on other effective area-based conservation measures (OECMs) in addition to protected areas.
 - o Other effective area-based conservation measures (OECMs) are conservation designation for areas that are achieving the effective in-situ conservation of biodiversity outside of protected areas.
 - o While protected areas must have conservation as a primary objective, there is no restriction on the management objectives of OECMs, provided those objectives result in effective long-term conservation outcomes for biodiversity.

About Aichi Biodiversity Targets

- In 2010, at Nagoya, Parties to the Convention on Biological Diversity (CBD) adopted the Strategic Plan for Biodiversity 2011–2020, a ten-year framework for action by all countries and stakeholders to safeguard

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biodiversity and the benefits it provides to people.

- As part of the Strategic Plan 20 ambitious but realistic targets, known as the Aichi Biodiversity Targets, were adopted.
 - o Aichi Biodiversity Target 11 aims to conserve 17 per cent of land and inland water ecosystems and 10 per cent of its coastal waters and oceans by 2020.

2) GLOBAL METHANE ASSESSMENT

Why in news?

“Global Methane Assessment: Benefits and Costs of Mitigating Methane Emissions” was published by the United Nations Environment Programme in association with the Climate and Clean Air Coalition.

About Methane

- Methane is a shortlived climate pollutant (SLCP) with an atmospheric lifetime of roughly a decade.
 - o Short-lived climate pollutants are powerful climate forcers that remain in the atmosphere for a much shorter period of time than carbon dioxide (CO₂), yet their potential to warm the atmosphere can be many times greater.
- Methane contributes to the formation of ground-level ozone, a dangerous air pollutant.
 - o Ozone attributable to anthropogenic methane emissions causes approximately half a million premature deaths per year globally and harms ecosystems and crops by suppressing growth and diminishing production.
- Methane’s short atmospheric lifetime means taking action now can quickly reduce atmospheric concentrations and result in similarly rapid reductions in climate forcing (an imbalance in radiation at the top of the Earth's atmosphere) and ozone pollution.

Key findings of the report

- Increasing Concentration of Methane: Methane’s atmospheric concentration has more than doubled since pre-industrial times.
 - o Second only to carbon dioxide in driving climate change.
 - o Methane in the atmosphere reached record levels last year even though CO₂ levels dropped during the pandemic.

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- Reducing anthropogenic emissions: Reduction of anthropogenic emissions by 45% would prevent a rise in global warming by up to 0.3 degrees Celsius by 2045.
- Varying mitigation potential: The mitigation potential varied between countries and regions. For example, China's mitigation potential was best in coal production and livestock, India's in the waste sector.
 - o The fossil fuel industry had the greatest potential for low-cost methane cuts.
- Other recommendations to reduce Methane Emissions:**
 - Behavioural change measures (to prevent emissions from agriculture) like:
 - o reducing food waste and loss,
 - o improving livestock management
 - o adoption of healthy diets (vegetarian or with a lower meat and dairy content)
 - Other measures like:
 - o Improved treatment and disposal of solid waste.
 - o Transition to renewable energy,
 - o A global tax on methane emissions
 - Overcoming barriers like:
 - o Addressing the lack of financing,
 - o enhancing awareness,
 - o Changing production methods, etc.
 - Greater regional and global coordination and governance of methane mitigation: While methane reductions are increasingly being addressed through local and national laws and under voluntary programmes, there are few international political agreements with specific targets for methane.
 - o The Climate and Clean Air Coalition (CCAC) leads global efforts to drive high-level ambition, and strengthens national actions, policies, planning, and regulations around methane mitigation.

UN Environment Programme

- It was established in June 1972 as an outcome from the United Nations Conference on the Human Environment (Stockholm Conference, 1972).
- It works under the umbrella of the UN 2030 Agenda for Sustainable Development, identifying and addressing the most relevant environmental issues of our time.
- It sets the global environmental agenda, promotes the coherent

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implementation of the environmental dimension of sustainable development and serves as an authoritative advocate for the global environment.

- Headquartered in Nairobi, Kenya, UNEP is chaired by its Executive Director.
- UNEP depends on voluntary contributions for 95% of its income.
- It administers, or provides secretariat functions for many multilateral environmental agreements (MEAs) and other entities (see infographic)
- Reports
 - o Global Environment Outlook (GEO) Report
 - o Adaptation Gap Report
 - o Triple Emergency
 - o Cooling Emissions And Policy Synthesis Report (published by UNEP in association with Cooling Emissions And Policy Synthesis Report)
- Climate and Clean Air Coalition
- It is a voluntary partnership of governments, intergovernmental organizations, businesses, scientific institutions and civil society organizations committed to protecting the climate and improving air quality through actions to reduce short-lived climate pollutants.

3) NEW FLY ASH UTILIZATION RULES FOR COAL AND LIGNITE BASED THERMAL POWER PLANTS

Why in News?

The Ministry of Environment, Forests and Climate Change (MoEFCC) has extended fly ash utilization deadline for thermal power plants with the introduction of penalties for non-compliance.

Composition, Generation and Utilization of Fly Ash in India

- Fly ash is a byproduct of coal-based power generation.
 - o It is a fine powder with substantial amounts of oxides of silica, aluminum and calcium.
 - o It also contains traces of Arsenic, Boron, Chromium, lead etc. which leads to air and water pollution if disposed on land.
- With low grade of Indian coal, its ash content is as high as 30-45% in comparison to imported coal with 10- 15%.

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- With nearly 55% of our total power production through coal and lignite based Thermal Power Plants (TPP), the fly ash generation in India is very high (226 million tonnes in 2018-19).
- Out of these 226 million tonnes, about 83% of Fly Ash is utilized. (Refer infographic for the sectoral utilization of Fly Ash).

Key Highlights of the New Notification

First fly ash notification was issued in 1999 to ensure 100% fly ash utilization in India by 2009. This was followed by a similar notification in 2016. The current notification aims to achieve the objective of 100% utilization in 3 to 5 years.

- Shorter Fly-ash utilization cycle: Existing provisions allow TPPs to fully utilize fly ash in a four-year cycle in a staggered manner. The new policy will follow a three-year cycle for 100% utilization of Fly-ash with a grace period of a year if the percentage of ash utilization is between 60-80% and two years if it is below 60%.
 - o In the near future, all TPPs will have to stick to average ash utilization of 100% in a 3-year cycle.
- Legacy Fly Ash Utilization: The progressive utilization of legacy fly ash has been extended by another 10 years.
 - o Fly ash which remains unutilized and consequently gets accumulated is referred to as legacy ash.
- Introduction of Polluter Pays Principle: A fine of Rs 1,000 per tonne of unutilized ash has been introduced if the plant does not achieve at least 80% ash utilization annually or in three years.
- Construction and Transportation: The non-complying power plants will provide ash free-of-cost to agencies engaged in construction activities within a 300 km radius with all transportation cost to be borne by TPPs.
- Role of Central Pollution Control Board: A committee under the chairmanship of CPCB chairman will examine, review and recommend eco-friendly ways on fly ash utilization. Also, CPCB will have real-time data on ash availability.

Issues in Implementation

- Prolonging the legacy-ash issue: With 1.6 billion tonnes of legacy ash as of March 2019, the 10-year extension will further lead to piling up of ash.
- Technological limitations in current TPPs: Majority of the Coal and Lignite based TPPs do not possess dry fly ash collection and storage technology.

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o This also leads to increased risks of unsafe disposal and hiding of ash generated due to increased compliance cost and penalties.

- Penalty amount is lesser than compliance cost: This financially discourages compliance by TPPs as most TPPs cannot afford increasing compliance cost due to market competition.
- Limited data provided by the TPPs: Although the number of TPPs that are providing data has been increasing, but still is not up to the mark.

Way forward

- Ensure compliance through innovative monitoring like use of drones and satellites with stronger penalty regime.
- Promote scientific fly ash disposal methods, i.e., use of Dry Fly Ash Disposal system and Wet Fly Ash Disposal System.
- Standardization with identification of prospective users and bringing them on ASHTRACK (a mobile app to link fly ash users and power plant executives), helping to increase the overall utilization of fly ash.
- Encouraging Industry-Academia Partnership with induction of 'Fly Ash' as a subject in academic curriculum for identifying innovative uses of Fly Ash.
- Thermal Power Stations have to explore and promote all possible modes of fly ash utilization at their respective thermal power station for increasing the fly ash utilization.

National Mission on use of Biomass in coal based thermal power plants (By Ministry of Power)

- It is a proposed mission to address the issue of air pollution due to farm stubble burning and to reduce carbon footprints of thermal power generation.
- Once launched, it will help in achieving objectives of:
 - o Increasing the level of co-firing (combustion of two different fuels in the same combustion system) from present 5% to higher levels for carbon neutral power generation by TPPs.
 - o Taking up R&D activities in boiler design to handle the higher amount of silica, alkalis in the biomass pellets.
 - o Facilitating overcoming the constraints in supply chain of biomass pellets and agro- residue and its transport upto to the power plants.
 - o Addressing regulatory issues in biomass co-firing.

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4) SNOW LEOPARD

Why in News?

A recent WWF India report highlighted the urgent need to address knowledge gaps on Snow leopard in order to improve our conservation efforts.

Key Findings of the report

- 330 million people live within 10 km of rivers originating in the snow leopard habitat.
- Only 14-19% of snow leopard range is protected.
- Only 35% of the current snow leopard range is predicted to remain by 2070 due to climate change.
- About 221-450 snow leopards are killed annually with 55% of it in retaliation.

About Snow Leopard

- Snow leopard, scientific name *Panthera Uncia*, is closely related to the largest cat species Tiger (*Panthera Tigris*).
- It is a Vulnerable Species in the IUCN Red List of Threatened Species.
- They are perfectly adapted to cold, arid, barren mountain areas with mountainous rangelands at elevations of 3,000 to over 5,000 m in the Himalaya and Tibetan Plateau as well as Altai Mountains (Russia and Mongolia) at 500 m elevation.
- The overall geographic range of Snow Leopard is spread across 12 High Asia nations, including India.
- The main prey animals of Snow Leopard are Siberian ibex goat, Himalayan Tahr, Argali sheep, Blue Sheep (Bharal), Marmots etc.

What are the steps taken by India to overcome the threats to Snow Leopards?

- India has divided the snow leopard habitat into 3 large landscapes for better conservation: Hemis-Spiti across Ladakh and Himachal Pradesh, Nanda Devi-Gangotri in Uttarakhand, and Khangchendzonga-Tawang in Sikkim and Arunachal Pradesh.
- In 2009, India launched Project Snow Leopard to safeguard and conserve snow leopard and its habitat.
- In 2019, India launched first National Snow Leopard Population Assessment with use of camera traps and scientific surveys.

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- Himal Sanrakshak (a community volunteer programme) in 2020 to involve people on International Snow Leopard Day (23 October).
- Globally, India is part of the Global Snow Leopard and Ecosystem Protection Programme (GSLEP) since 2013 and signed Bishkek Declaration in 2017 to protect snow leopard and its habitat.
- WWF India is also running 'Save our Snow Leopard (SOS)' for conservation. Conclusion Conservation and protection of snow leopard can be further enhanced through evidence-based conservation approach, using technologies like genetic assessment and camera-trap surveys, improvement in knowledge of disease prevalence and creating appropriate strategies to overcome human-wildlife conflict.

Status of Snow Leopard Protection in India

- It is listed in Schedule I of the Indian Wildlife (Protection) Act, 1972 providing absolute protection.
- It is in the list of 22 critically endangered species under the species recovery programme by MoEFCC.

5) USED COOKING OIL BASED BIODIESEL

Why in News?

Recently, Indian Oil Corporation has kicked-off the supply of diesel that is blended with biodiesel made from used cooking oil.

About Used Cooking Oil (UCO)

- UCOs are oils and fats that have been used for cooking or frying in the food processing industry, restaurants, fast foods and at consumer level, in households.
 - o UCO must contain only fats, oils, or greases that were previously used for cooking or frying operations.
- UCO is an important source of raw material to produce biodiesel.
- It is also used for making soap, cosmetics, cooking oil, and animal feed, etc.

Benefits of biodiesel made from UCO

- Health: Use of UCO for manufacturing biodiesel can help prevent people from serious ailments such as hypertension, atherosclerosis, Cancer, Alzheimer's disease, liver diseases by removing reused or burnt cooking medium from the food chain. Overweight and Obesity are also major concerns of using UCO.

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- Environment: UCO when discarded without any treatment clogs drainage systems. Hence, using it for other purposes can benefit the environment.
- Economy: In India, 2,700 crore litres of cooking oil is used out of which 140 crore UCO can be collected from bulk consumer such as hotels, restaurants and canteens for conversion which will give around 110 crore litres of biodiesel every year. Thus, reducing our oil imports.
 - o Using residue and waste oil as raw materials for biofuels is an excellent way of contributing to the needs of a Circular Economy. Initiative taken to make biodiesel from UCO
- In 2019, Ministries of Petroleum and Natural Gas & Steel, along with Health & Family Welfare, Science & Technology and Earth Sciences, had initiated Expressions of Interest for “Procurement of Bio-diesel produced from UCO”
 - o It aims to create an eco-system for collection and conversion of UCO into Biodiesel and developing entrepreneurship opportunities.
 - o Under this initiative, OMCs offer periodically incremental price guarantees for five years and extend off-take guarantees for ten years to prospective entrepreneurs.
- National Policy on Biofuels, 2018, encourages setting up of supply chain mechanisms for biodiesel production from nonedible oilseeds, Used Cooking Oil, short gestation crops.
- Food Safety and Standards Authority of India (FSSAI) in association with the Biodiesel Association of India (BDAI) launched ‘Repurpose Used Cooking Oil (RUCO) project’ in 2019.
 - o Project is aimed at purchasing used oils from hoteliers, caterers, snack makers and traders at a reasonable price and converting it into biodiesel at a plant.
- RUCO sticker and a mobile phone application was launched for collection of used cooking oil (UCO) to ensure that it does not come back to ecosystem.

Way forward

- Biodiesel companies should set up a door to door collecting system in order to collect directly from the “producers” of UCO.
 - o Develop a mechanism where Individuals can also take their UCO to the collection centres and earn money.
- Biodiesel companies may supply the raw vegetable oils to the “producers” of UCO and collects them for recycling as well.
- All the UCO collecting agencies are expected to pay food business operators immediately at the time of collection of UCO, based on the quantity and quality.

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About Biodiesel

- It is an alternative fuel, similar to conventional or 'fossil' diesel.
- It can be produced from vegetable oil, animal oil/fats, tallow and waste cooking oil.
- The process used to convert these oils to Biodiesel is called Trans-esterification.
- It is 'carbon neutral'.ie the oilseed absorbs the same amount of CO₂ as is released when the fuel is combusted in a vehicle.
- It is rapidly biodegradable and completely non-toxic.

Issues with RUCO

- At present, there is no established chain of collection for UCO.
- Presence of impurities like free fatty acid and water in UCO.
- RUCO require large food business operators to store UCO separately, which they can then sell to authorised UCO aggregators or collection agencies.

6) TROPICAL CYCLONES IN INDIA

Why in News?

Recently, Indian coastal areas were struck by two cyclones in a short span of few weeks, leading to loss of life and property.

More on news

- The first cyclone to hit was Tauktae from Arabian Sea. It was named by Myanmar, meaning 'gecko', a highly vocal lizard.
- The second cyclone to hit was Yaas from Bay of Bengal, named by Oman, referring to a Jasminelike tree with a good fragrance.
- The names for cyclones are suggested by 13 member countries of WMO/ESCAP Panel on Tropical Cyclones from the regions: Bangladesh, India, Iran, Maldives, Myanmar, Oman, Pakistan, Qatar, Saudi Arabia, Sri Lanka, Thailand, United Arab Emirates and Yemen.
- This naming of cyclones in Arabian Sea and Bay of Bengal started in 2004, based on WMO/ESCAP Panel on Tropical Cyclones 2000 agreement to it, offering benefits likeo Removing confusion through easy identification of cyclones
 - o Easy remembrance for rapid and effective dissemination of warnings
 - o Create Awareness among people

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- The list of names on tropical cyclones is maintained by WMO with naming to be done by the regional specialised meteorological centres (RSMCs) and Tropical Cyclone Warning Centres (TCWCs) for the ocean basin.
- For Arabian Sea and Bay of Bengal, Indian Meteorological Department (IMD) acts as the RSMCs (one among six in the world).

Risks of Tropical Cyclone in India

- With a coastline of 7517 km, India is exposed to nearly 10 percent of the world's tropical cyclones.
 - This is evident from the fact that in the last 270 years, 21 out of 23 major cyclones have occurred in India and Bangladesh.
- The analysis of nearly 308 cyclones during 1891-2000 by National Cyclone Risk Management Project (NCRMP) shows that the Bay of Bengal (east coasts) is more vulnerable to cyclones as compared to Arabian Sea (West coasts), approximately 4:1.
 - The amalgamation of geographical conditions of Bay of Bengal such as High Sea Surface Temperatures (SSTs), shallow waters and high wind speeds makes it more susceptible to cyclones.

To cope with this risk, what is India's cyclone management framework?

- National Cyclone Risk Management Project from Ministry of Home Affairs, with financial aid from World bank, works as the holistic strategy by clubbing all of India's disaster management efforts under four components as
 - Component A: Improvement of early warning dissemination systems through improved cyclone forecasting, involving IMD and ISRO.
 - Component B: Cyclone risk mitigation investment through
 - ü Building cyclone shelters and infrastructure based on ISO standards,
 - ✓ Holistic coastal management and conservation of coastal wetlands through Coastal Regulation Zones (CRZ), Integrated Coastal Zone Management (ICZM) and protection of bioshields like Mangroves,
 - ✓ Building a community-based Disaster management system.
 - Component C: Technical assistance for hazard risk management and capacity building through Vulnerability Analysis and Risk Assessment and community capacity building.
 - Component D: Project management and institutional support through National, State and District level institutional mechanism and coordination.

What are the limitations of the current framework?

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- Technological limitations vis-à-vis forecasting: The technical and observational limitation from limited number of Weather buoys to limited analytical capacity slows down the identification and dissemination process.
- Poor infrastructural development: Infrastructural measures such as embankments, cyclone shelters, cyclone resilient critical infrastructure have not been up to the mark.
- Low awareness and community engagement: The awareness among the local public with regard to the do's and don'ts as a first responder during a cyclone is extremely low as can be seen in the case of Tauktae as well as Yaas
- Absence of coordination among stakeholders: Multiple stakeholders such as local panchayat, NGOs, State Government, Central Government and coastal authorities do not act in consonance. This leads to duplication of effort at the ground level.
- Long response time: The immediate aftermath of Tauktae and Yaas have again highlighted the long response time that is required for the authorities to respond to a calamity.

What can be done overcome these challenges and further improve the Cyclone Management Framework?

- Establishing a state-of-the-art cyclone Early Warning System (EWS) involving observations, predictions, warnings and customized local-scale advice for decision makers for managing the impact of cyclones.
 - o Additionally, an Aircraft Probing of Cyclone Facility can be created for India to effectively fill the critical observational data gaps.
- Infrastructural measures like ensuring safety of critical infrastructure, development of multi-purpose cyclone shelters, all weather road links etc. o Idea of Public-Private Partnership can be explored to mobilize the finances.
- Steps in coastal areas including mapping and delineation of the coastal wetlands, mangrove areas etc. and adopting an eco-sensitive approach to development in the area. The coastal area defenses like mangroves, shelterbelts act as natural defenses.
- Developing an integrated hazard mitigation framework taking into account cyclone and associated storm surge, wind hazard, rainfall run-off etc.
- Establishing a comprehensive Cyclone Disaster Management Information System (CDMIS) covering all phases of Disaster Management.

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7) GLOBAL ELECTRIC VEHICLES (EV) OUTLOOK

Recently, International Energy Agency (IEA) and Electric Vehicles Initiative (EVI) released the annual Global EV Outlook 2021.

Major Findings of the Report

- The world had 10 million electric cars on roads at the end of 2020 (Close to 2.5% of the current market share).
- If governments accelerate towards Sustainable Development Scenario, the global EV fleet will reach to a market share of 12%.

Sustainable Development Scenario includes

- o Ensuring universal energy access for all by 2030.
 - o Efforts to bring about sharp reductions in emissions of air pollutants.
 - o Meeting global climate goals in line with the Paris Agreement.
- Factors supporting EVs sale:
 - o Supportive regulatory frameworks.
 - o Additional incentives to safeguard EV sales from the economic fluctuations.
 - o Expanding number of EV models with continuous fall in battery cost.
 - 5 major barriers to its adoption are
 - o Limitations of Charging Infrastructure.
 - o Current varieties do not satisfy the market demand.
 - o Initial Cost associated with EVs.
 - o Operational issues like long charging time.
 - o Uncertain/underdeveloped policy landscape.

About Electric Vehicles Initiative (EVI)

- It is a multi-governmental policy forum established in 2010 under the Clean Energy Ministerial (CEM).
- Fifteen countries are currently participating in EVI, including India, with IEA acting as the coordinator.

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- It works towards accelerating the introduction and adoption of electric vehicles worldwide. This includes campaigns and programmes like
 - o EV30@30- to have at least 30% new electric vehicle sales by 2030.
 - o EVI Global EV Pilot City Programme (EVI-PCP)- a platform for global cities to communicate and cooperate for increasing the uptake of electric mobility.

8) WORLD'S LARGEST ICEBERG BREAKS OFF IN ANTARCTICA

- Iceberg A-76, measures around 170 kilometers long and 25 kilometers wide, calved from the western side of the Ronne Ice Shelf in Antarctica and is now floating on the Weddell Sea.
- o Antarctica ice sheet is warming faster than the rest of the planet, causing melting of snow and ice covers as well as the retreat of glaciers, especially around the Weddell Sea.
- Also, A recent report published in journal Nature has predicted that Antarctica is headed for a climate tipping point by 2060 if emissions aren't curbed.
- o Tipping points are thresholds where a tiny change could push a system into a completely new state.
 - ✓ Globally, there are nine "tipping points" where a changing climate could push parts of the Earth system into abrupt or irreversible change.
 - ✓ Nine tipping points are Amazon rainforest; Arctic sea ice; Atlantic circulation; Boreal forests; Coral reefs; Greenland ice sheet; Permafrost; West Antarctic ice sheet; Part of East Antarctica
- Reasons for melting of Antarctica: Human-caused global warming; shifting wind patterns linked to climate change.
- Impact: Antarctic contains about 90 percent of the planet's ice, enough to raise global sea levels 200 feet.
- Action taken to address Antarctica climate change:
 - o Reduction of greenhouse gas emissions by deployment of energy efficiency and renewable energy systems at all Antarctic stations, coordination of transport and logistics strategic planning about new facilities can bring about regional and global environmental benefits as well as cost savings.

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- ✓ Under the environmental protocol of the Antarctic Treaty (1959), India has set up three research stations -Dakshin Gangotri (1983-84); Maitri (1988); Bharati (2015) - up till now.

o Antarctic Treaty Parties should lead by example in the global effort in addressing climate change.

o Implementation of climate adaptation strategies include establishing protecting areas which are less likely to change such as the Ross Sea, biosecurity measures etc. through expansion and improvement of **CCAMLR's** (Commission for the Conservation of Antarctic Marine Living Resources) Ecosystem Monitoring Program (CEMP) and the establishment of a Southern Ocean Sentinel program.

9) FIVE DEEPS EXPEDITION

- The Five Deeps Expedition is the first manned expedition to reach the deepest points in each of the world's five oceans.
- The Expedition is led by explorer and private equity investor Victor Vescovo.

10) AIM-ICDK WATER INNOVATION CHALLENGE

- Atal Innovation Mission (AIM), NITI Aayog in partnership with Innovation Center Denmark (ICDK) concluded the global finals of the Next Generation Water Action (NGWA) Water Innovation Challenge.
- Innovative ideas were invited in following challenge areas:
 - o Digital water management solutions,
 - o Solutions for monitoring and prevention of leakage in city water supply,
 - o Waste water management across rural belts and urban settlements,
 - o Rainwater harvesting in rural and urban settlements, and
 - o Safe and sustained drinking water.

11) BANNI GRASSLAND RESERVE

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- Banni Grassland Reserve is in the Kutch district of Gujarat. o Banni region emerged from the sea as a result of tectonic activities, received soils from the rivers flown from Bhuj mainland which made the land of Banni richer to generate diverse grass species
- **Maldhari tribe** lives in the Banni Grasslands Reserve area, for the past thousand years.
- o Maldhari community is a tribe of herdsmen in Gujarat. They live in settlements called ness and make their living by selling milk from their water buffaloes.

12) TRIBES IN NEWS

Tribes	Details
Van Gujjars Nomadic Tribe	<ul style="list-style-type: none"> • The Uttarakhand High Court passed an order upholding the right of Van Gujjars to migrate to their summer homesteads in the bugyals (Himalayan alpine meadows) located within the Govind Pashu Vihar National Park. • The Van Gujjars are nomadic pastoral community in Uttarakhand Himalayas that pursue transhumance from the Terai-Bhabar and Siwalik region to the higher bugyals in summer and vice versa in winter to enable their livestock to feed on the meadows/pastures.
Hakki Pikki Tribe	<ul style="list-style-type: none"> • Hakki Pikki are a nomadic tribe which migrated from Northern India and now mainly settled in Karnataka region and other South Indian states • They are known as Bird Catcher

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	<p>(Hakki means Bird and Pikki means catcher in Kannada language)</p> <ul style="list-style-type: none"> • They speak Indo Aryan language named as 'Vaagri' by scholars ○ UNESCO has listed Hakki Pikki is one of the endangered languages. • Today, they are mainly engaged in selling of herbal products like herbal oils
Dard	<ul style="list-style-type: none"> • It is a Buddhist tribal group in Ladakh. ○ The Dard Aryans inhabit Dha, Hanu, Beema, Darchik and Garkone villages in Leh and Kargil districts. The 5 villages are together called the Aryan valley. ○ Their culture is the Aryan Culture. ○ Dard Aryan' is not among the list of notified Schedule Tribes.

13) GHOLVAD SAPOTA (CHIKOO)

- Gholvad Sapota from Palghar district of Maharashtra is a Geographical Indication (GI) certified product which began its export to UK.
- GI is a sign used on products that have a specific geographical origin and possess qualities or a reputation that are due to that origin.
 - A geographical indication right enables those who have the right to use the indication to prevent its use by a third party whose product does not conform to the applicable standards.

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14) Xylophis Deepaki

In news

- Herpetologist Deepak Veerappan has a snake named after him.

Key takeaways

- In the first four months of 2021, the Western Ghats presented new butterflies, frogs, fruit flies, and even a freshwater crab.
- Joining the list is a tiny snake of just 20 cm length with iridescent scales - Xylophis Deepaki.
- It was first stumbled upon in a coconut plantation in Kanyakumari.
- The species is named in honour of Indian herpetologist Deepak Veerappan for his contribution in erecting a new subfamily Xylophiinae to accommodate wood snakes.

Do you know?

- Wood snakes are harmless, sub-fossorial and often found while digging soil in farms and under the logs in the Western Ghat forests.
- Interestingly, their close relatives are found in northeast India and Southeast Asia and are known to be arboreal.

15) Climate change causing a shift in Earth's axis

Context: Rising sea levels, heatwaves, melting glaciers and storms are some of the well-known consequences of climate change. New research has added yet another impact to this list – marked shifts in the axis along which the Earth rotates.

How the Earth's axis shifts?

- The Earth's axis of rotation is the line along which it spins around itself as it revolves around the Sun. The points on which the axis intersects the planet's surface are the geographical north and south poles.
- The location of the poles is not fixed, however, as the axis moves due to changes in how the Earth's mass is distributed around the planet. Thus, the poles move when the axis moves, and the movement is called "polar motion".

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- According to NASA, data from the 20th century shows that the spin axis drifted about 10 centimetres per year. Meaning over a century, polar motion exceeds 10 metres.
- Generally, polar motion is caused by changes in the hydrosphere, atmosphere, oceans, or solid Earth. But now, climate change is adding to the degree with which the poles wander.

What the new study says?

- Since the 1990s, climate change has caused billions of tonnes of glacial ice to melt into oceans. This has caused the Earth's poles to move in new directions.
- As per the study, the north pole has shifted in a new eastward direction since the 1990s, because of changes in the hydrosphere (meaning the way in which water is stored on Earth).
- From 1995 to 2020, the average speed of drift was 17 times faster than from 1981 to 1995. Also, in the last four decades, the poles moved by about 4 metres in distance.
- While ice melting is the major factor behind increased polar motion, groundwater depletion also adds to the phenomenon. As millions of tonnes of water from below the land is pumped out every year for drinking, industries or agriculture, most of it eventually joins the sea, thus redistributing the planet's mass.

16) NITI Aayog's Project for Great Nicobar Island

In news

- The Environment Appraisal Committee (EAC) - Infrastructure I of the Ministry of Environment, Forest and Climate Change (MoEFCC) has flagged serious concerns about NITI Aayog's ambitious project for Great Nicobar Island.

Key takeaways

- The committee has, however, removed the first hurdle faced by the project.
- It has "recommended" it "for grant of terms of reference (TOR)" for Environmental Impact Assessment (EIA) studies, which in the first instance will include baseline studies over three months.

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Important value additions

Galathea Bay

- Galathea Bay is the site of the port and the centrepiece of the NITI Aayog proposal.
- It is an iconic nesting site in India of the enigmatic Giant Leatherback, the world's largest marine turtle.
- A number of species are restricted to just the Galathea region.
- These include the critically endangered Nicobar shrew, the Great Nicobar crake, the Nicobar frog, the Nicobar cat snake, a new skink (*Lipinia* sp), a new lizard (*Dibamus* sp,) and a snake of the *Lycodon* species that is yet to be described.

17) Range of all of the invasive whiteflies increasing

In news

- Researchers have found that the host range of all of the invasive whiteflies was increasing due to their polyphagous nature (ability to feed on various kinds of food) and prolific breeding.

Important value additions

- Whiteflies are Hemipterans that typically feed on the undersides of plant leaves.
- They comprise the family Aleyrodidae, the only family in the superfamily Aleyrodoidea.
- In warm or tropical climates and especially in greenhouses, whiteflies present major problems in crop protection.
- Also, Bt. cotton is not resistant against white flies.
- They were also found to expand their host range on valuable plants species, such as coconut, banana, mango, sapota, guava, cashew, oil palm, and ornamental plants and important medicinal plants.
- The whiteflies are difficult to control by using synthetic insecticides.
- Currently naturally occurring insect predators, parasitoids and entomopathogenic fungi (fungi that can kill insects) are being used.

18) Creation of a Lakshadweep Development Authority (LDA)

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In news

- People of Lakshadweep are Discontent over the creation of a Lakshadweep Development Authority (LDA) by the new administrator Praful Khoda Patel.

Key takeaways

- Mr Patel is the first political appointee as Administrator, a post mostly held by retired civil servants.
- Islanders have pointed out that the legislation is out of sync with the social and environmental realities of the archipelago.
- The creation of the Lakshadweep Development Authority (LDA) with extensive powers includes eviction of land owners.
- It is widely seen as being pushed by the real estate lobby and against the interest of the islanders.
- Hundreds of islanders have written to the administrator demanding the withdrawal of the proposed Regulation.
- It includes provisions such as:
 1. orderly and progressive development of land in both urban and rural areas and to preserve and improve the amenities thereof;
 2. grant of permission to develop land and for other powers of control over the use of land;
 3. conferring additional powers in respect of the acquisition and development of land for planning.

19) Asiatic lions test positive for SARS-CoV2 virus in Hyderabad zoo

In news

- Based on reports by CCMB-LaCONES, it has now been confirmed that eight Asiatic lions housed in Nehru Zoological Park (NZP), Hyderabad have tested positive for SARS-CoV2 virus.

Important value additions

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- LaCONES or Laboratory for the Conservation of Endangered Species, is a Council of Scientific and Industrial Research lab located in Hyderabad.
- It is a part of CCMB (centre for cellular and molecular biology).
- It was conceptualised by Lalji Singh.
- It is India's only research facility engaged in conservation and preservation of wildlife and its resources.
- It was dedicated to the nation in 2007 by then President of India APJ Abdul Kalam.

Asiatic Lion

- It is a *Panthera leo* population in India.
- Its current range is restricted to the Gir National Park and environs in the Indian state of Gujarat.

- It is one of five pantherine cats inhabiting India.

Others are:

- o Bengal tiger
- o Indian leopard
- o Snow leopard
- o Clouded leopard

- It is also known as the “Indian lion” and the “Persian lion”.

- Status: o Listed in Schedule I of Wildlife (Protection) Act 1972

- o Appendix I of CITES

- o Endangered on IUCN Red List.

- It is slightly smaller than African lions.

- The most striking morphological character is a longitudinal fold of skin running along the belly of Asiatic Lions.

20) Indian Researchers sequence pangolin scales

In news

- Indian Researchers have sequenced 624 pangolin scales, thereby categorising the Indian and Chinese pangolins.

Key takeaways

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- Pangolins, despite being listed in Schedule I of Wildlife (Protection) Act, 1972 continue to be the world's most trafficked mammal.
- The primary demand for its scales in the making of traditional East Asian medicines has led to an estimated illegal trade worth \$2.5 billion every year.
- To enforce the appropriate national and international laws and to track the decline of the species, researchers of Zoological Survey of India (ZSI), Kolkata, have now developed tools to tell apart the scales of Indian pangolin (*Manis crassicaudata*) and Chinese pangolin (*Manis pentadactyla*).
- Though the Chinese pangolin is distributed mostly in Vietnam, Thailand, Cambodia, the northeastern part of India is also its home.

21) Red-Eared Slider

In news

- A American turtle popular as a pet is threatening to invade the natural water bodies across Northeast India.
- Northeast India is home to 21 of the 29 vulnerable native Indian species of freshwater turtles and tortoises.

Key takeaways

- Between August 2018 and June 2019, a team of herpetologists from the NGO 'Help Earth' found red-eared sliders in the Deepor Beel Wildlife Sanctuary and the Ugratara temple pond — both in Guwahati, Assam
- The red-eared slider (*Trachemys scripta elegans*) derives its name from red stripes around the part where its ears would be and from its ability to slide quickly off any surface into the water.
- It is native to the U.S. and northern Mexico.
- This turtle is an extremely popular pet.
- They grow fast and virtually leave nothing for the native species to eat.
- It has already affected States such as Karnataka and Gujarat, where it has been found in 33 natural water bodies.
- Preventing this invasive species from overtaking the Brahmaputra and other river ecosystems in the Northeast is crucial because the Northeast is home to more than 72% of the turtle and tortoise species in the country, all of them very rare.

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22) Subdoluseps Nilgiriensis

In news

- Researchers have discovered an Asian gracile skink species from Western Ghats.

Key takeaways

- It is named Subdoluseps nilgiriensis.
- It has a slender body (7 cm)
- It is sandy brown in colour.
- It is closely related to Subdoluseps pruthi found in parts of the Eastern Ghats.
- This species is only the third skink species discovered from mainland India in the last millennium.

Do you know?

- Skinks are non-venomous.
- They resemble snakes because of the often-inconspicuous limbs and the way they move on land.
- Threats: Seasonal forest fires, housing constructions and brick kiln industries in the area.

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