

# SAMADHAN PT TRICKS



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# PT TRICKS 2023 Environment Current-April

**Covering: Basic concepts- current- terms and application**

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## INTERNATIONAL PLANT BASED FOODS WORKING GROUP (IPBFWG)

- It is the new global body formed to support plantbased food sector.
- It has been formed by associations from seven regions/countries including India.
- Plant based foods are 'foods made from plants that contain no animal derived ingredients'.
- This includes fruit, vegetables, grains, pulses, legumes, nuts and meat substitutes such as soy nuggets etc

## BERNARDINELLI-BERSTEIN COMET

- NASA has confirmed that Bernardinelli-Bernstein comet is indeed the largest icy comet nucleus ever seen by astronomers
- Comets are large objects made of dust and ice that orbit the Sun.
- It is believed to have originated in the Oort cloud (only a theoretical concept), a distant region of the solar system that is predicted to be the source of most comets

## GEOMAGNETIC STORM

- GMS is a disturbance in the earth's magnetosphere, which is the area around the planet controlled by its magnetic field.
- When Coronal Mass Ejections (CME) collide with the Earth, it causes GMS.
- It is caused by massive exchange of energy from the solar wind into the space environment surrounding the Earth.
- GMS are categorised between G1 and G5, the latter being the strongest

## Impact of geomagnetic storms

- Disrupt high-frequency radio broadcasts and global positioning system (GPS) devices.
- Damage satellite electronics and expose astronauts and high-altitude pilots to increased levels of radiation.
- Voltage surges due to altered magnetic activity can affect power supply on earth and cause outages.
- CME is a large expulsion of plasma and magnetic field from the sun's corona, or upper atmosphere.
- Plasma is the highly ionised gas present on the sun, while corona is the outermost part of the sun's atmosphere.

## GLOBAL ASSESSMENT REPORT ON DISASTER RISK REDUCTION 2022

- UN has released the 'Global Assessment Report on Disaster Risk Reduction 2022 (GAR-DRR 2022)- Our World at Risk: Transforming Governance for a Resilient Future'.
- The GAR is published biennially by the UN Office for Disaster Risk Reduction (UNDRR)
- Increasing instances of displacement and migration due to floods and cyclones in West Bengal and Odisha makes people more vulnerable to trafficking.
- Disaster Risk Reduction aims to reduce the damage caused by natural hazards like earthquakes, floods, droughts and cyclones, through an ethic of prevention
- World bank aided Tamil Nadu and Puducherry Coastal Disaster Risk Reduction Project (CDRRP).
- India is a signatory to the Sendai Framework for DRR

## GREEN HYDROGEN

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- Oil India Limited (OIL) has commissioned India's first 99.999% pure green hydrogen plant in Assam
- Defined as hydrogen produced by splitting water into hydrogen and oxygen using renewable energy such as wind or solar power that does not entail greenhouse gas emissions.
- Hydrogen gas can be used as a fuel in transportation, power generation, and industrial activities.

## CLEAN ENERGY MINISTERIAL (CEM)

- India is hosting the Clean Energy Ministerial (CEM) senior officials meetings.
- CEM is a high-level global forum of 29 member countries to promote policies and programs that advance clean energy technology through sharing of knowledge and best practices.
- It brings together the world's leading economies, international organisations and companies to accelerate clean energy transitions.

## MISSION INTEGRATED BIOREFINERIES

- Minister of Science & Technology launched Mission Integrated Bio-refineries to accelerate Clean Energy solutions through Public -Private Alliances.
- It was launched, under Mission Innovation, with the goal of replacing 10% of fossil-based fuels, chemicals, and materials with bio-based alternatives by 2030.
- This is the sixth Mission launched by Mission Innovation.
- Other five missions launched are: Clean Hydrogen, Green Powered Future, Zero-Emission Shipping, Carbon Dioxide Removal and Urban Transitions.
- Integrated Bio-refineries Mission will support Development and commercialization of bio-based fuels, chemicals, and materials
- Mission Innovation (MI) is a global initiative to catalyze action and investment in research, development and demonstration to make clean energy affordable, attractive and accessible to all this decade.
- It consists of 22 countries and EU. India is a founding member.
- First phase of the mission was launched alongside the Paris Agreement in 2015. Mission Innovation 2.0 was launched in 2021.

## STEEL SLAG ROAD

- Surat has become the first city in the country to get a processed steel slag (industrial waste) road.
- Steel slag, a by - product of steel making, is produced during the separation of the molten steel from impurities in steel -making furnaces.
- Benefits of using steel slag: Construction cost is 30 per cent cheaper, less thicker, more durable and lower carbon footprint than roads built from natural aggregates.
- Other areas where steel slag can be used: agricultural sector due to its ability to correct soil acidity, as silicate fertilizer that can provide silicon to the plants, in manufacturing cement, to treat acidic water.

## FIRST CARBON-NEUTRAL PANCHAYAT

- Palli in Jammu becomes India's first carbon-neutral panchayat.
- Carbon neutrality means having a balance between emitting carbon and absorbing carbon from the atmosphere in carbon sinks.

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- Removing carbon oxide from the atmosphere and then storing it is known as carbon sequestration.

## TREM STAGE-IV EMISSION NORMS

- From April 2022, new TREM IV emission norms will be applicable to tractors with engines bigger than 50 HP, while big proportion of overall industry of less than 50 HP will continue to be governed by TREM III A norms.
- At present, TREM III A emission norms are applicable for tractors across various HP categories and were implemented in April 2010/2011.
- Bharat Stage (CEV/Trem) V standards, starting from April 1, 2024, cover a wider range of engines, including those smaller than 8 kW and those larger than 560 kW

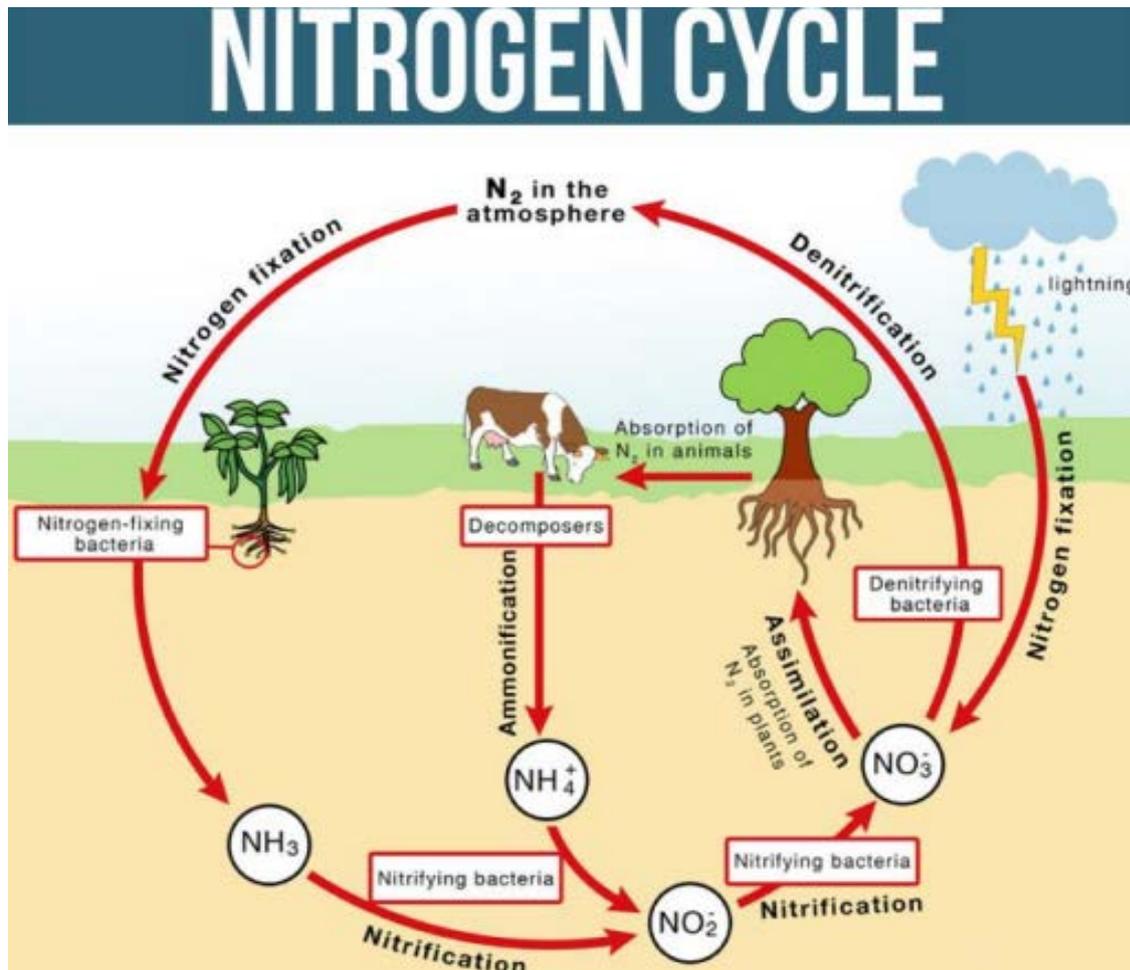
## WORLD BANK PUBLISHED “CARBON REVENUES FROM INTERNATIONAL SHIPPING” REPORT

- Report explores options for implementing carbon pricing in shipping industry and how carbon revenues could be used to enable energy transition in and beyond the sector.
- Maritime transport accounts for about 70% of global trade by value and about 80% by volume and is responsible for about 2.5% of global greenhouse gas (GHG) emissions.
- International Maritime Organization (IMO) is considering measures to meet targets of its Initial Greenhouse Gas Strategy that aims to cut absolute GHG emissions from ships by at least 50% from the 2008 level by 2050

## NITROGEN LEVELS ON A DECLINE

- As per a new study, an imbalance in nitrogen availability has been reported across the globe, with some places having an excess and others a shortage.
- Nitrogen (N) is one of the building blocks of life and is essential for all plants and animals to survive.
- Without nitrogen plants grow slowly and produce smaller flowers and fruits.
- Nitrogen is also a core component of amino acids (building blocks of proteins) and of nucleic acids (building blocks of genetic material RNA and DNA).
- When excessive nitrogen accumulates in the streams, inland lakes and coastal bodies of water, it could result in eutrophication, leading to harmful algal blooms, dead zones and fish kills.
- Movement of nitrogen between the atmosphere, biosphere, and geosphere in different forms is called the nitrogen cycle.
- Earth's atmosphere constitutes 78 percent of Nitrogen gas. In its gaseous form, nitrogen is colorless, odorless and generally considered as inert.

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**GLOBAL  
LAND**

## OUTLOOK 2: LAND RESTORATION FOR RECOVERY AND RESILIENCE

- The report titled “Global Land Outlook 2: land Restoration for recovery and resilience” is released by the United Nations Convention to Combat Desertification (UNCCD).
- Humans have transformed more than 70 % of the earth’s land area from its natural state causing environmental degradation.
- Modern agriculture is major factor for degradation land.
- Combating desertification, land degradation, and drought – and achieving Land Degradation Neutrality (LDN) – is an effective pathway.
- LDN is defined by the UNCCD as “a state whereby the amount and quality of land resources necessary to support ecosystem functions and services and enhance food security remain stable or increase within specified temporal and spatial scales and ecosystems.

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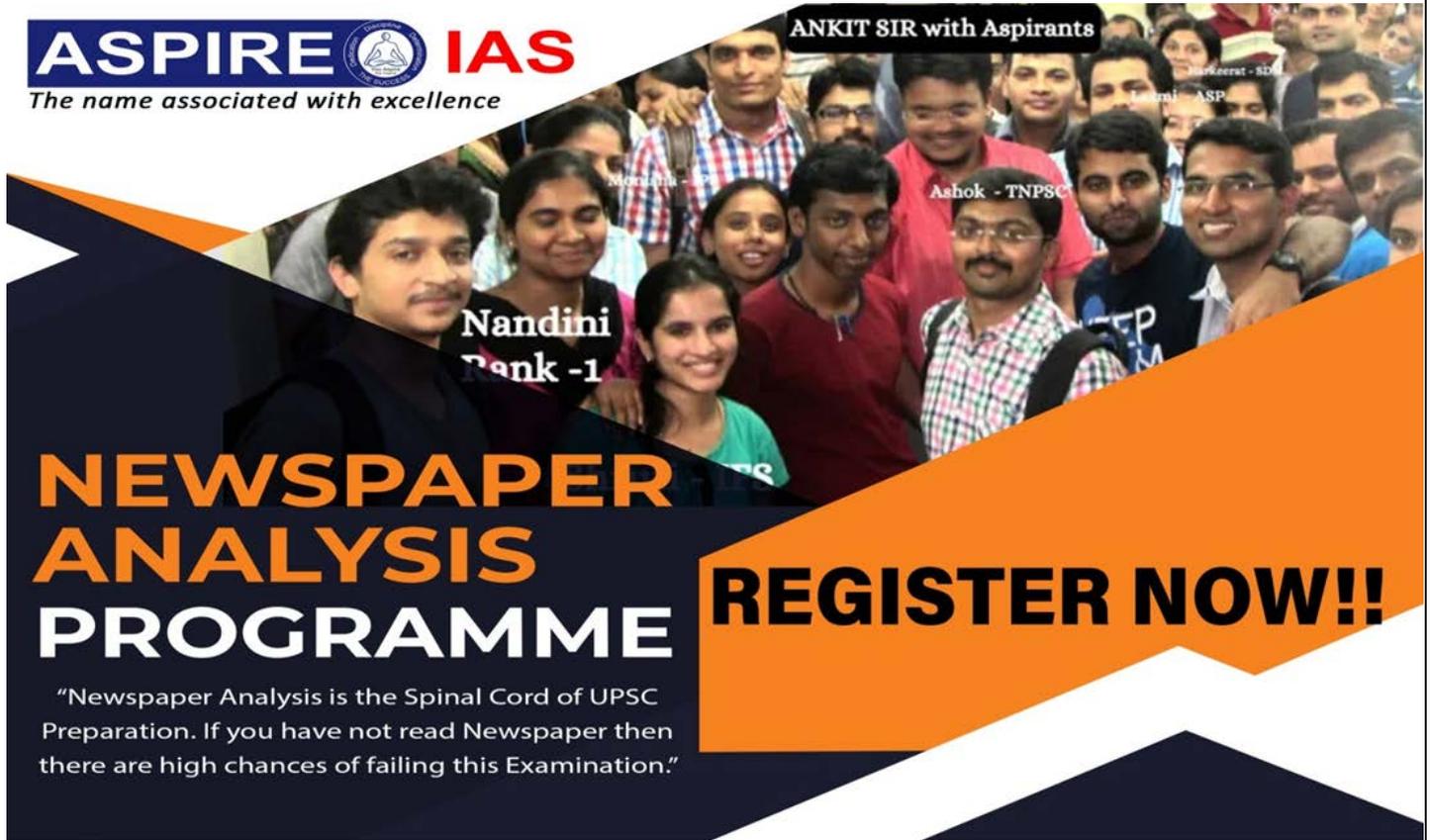
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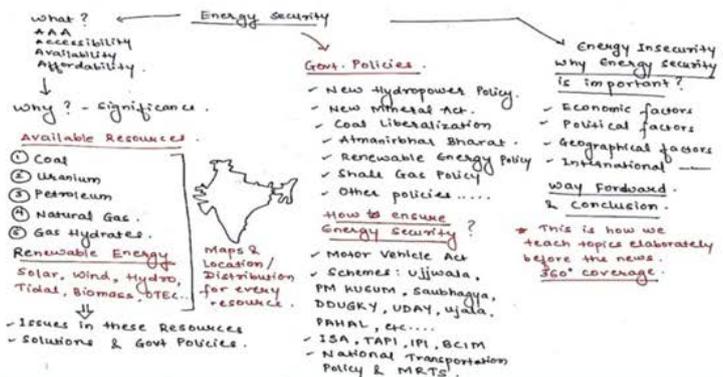


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## SEAWEED PARK WITH SPECIAL ECONOMIC ZONE STATUS IN TAMIL NADU

- For the first time in country, a seaweed IAS park will be set up in Tamil Nadu to improve the livelihood of fishermen.
- It will be implemented under the Prime Minister's Matsya Sampada Yojana.
- Seaweeds, the primitive, marine non-flowering marine algae without root, stem, and leaves, plays a major role in marine ecosystems.
- Large seaweeds form dense underwater forests known as kelp forests, which act as underwater nurseries for fish, snails and sea urchins.
- Found mostly in intertidal region (Southern Gulf of Mannar), shallow and deep waters of the sea and estuaries and backwaters.

### Significance of seaweeds

- also runs a Seaweed Mission, launched by Technology Information Storehouse of nutrients like iron, zinc, magnesium, riboflavin, thiamine, vitamin A, B, C & K etc.
- Act as a bio-indicator and balance out the ecosystem.
- Mitigating climate change. o Used as fertilizers and to increase fish production.
- Can be buried in beach dunes to combat beach erosion.
- Used as an ingredient in preparing toothpaste, cosmetics and paints.
- Government, Forecasting and Assessment Council (TIFAC), for commercial farming of seaweeds and its processing

## INDIAN TENT TURTLE

- Indian Tent Turtle (Pangshura Tentoria) is a Schedule – I species in India under the Wild Life (Protection) Act, 1972.
- IUCN Status: Least Concern; o CITES: Appendix II.
- It is native to India, Nepal and Bangladesh and found in freshwater rivers, Swamps and ponds.
- The common habitats in India include- Orissa, Maharashtra, Andhra Pradesh, Assam, Madhya Pradesh etc. E.g. the Narmada River in Madhya Pradesh.
- They are active swimmers and mainly herbivorous.

## OLIVE RIDLEY TURTLE

- Tamil Nadu will set up an international olive ridley turtle protection and rehabilitation centre in Chennai.
- Smallest and most abundant of all sea turtles. o Inhabits warm waters of the Pacific, Atlantic and Indian oceans.
- Diet: Carnivores, feed on jellyfish, shrimp, snails, crabs etc.
- Threats: Unintended capture in fishing gear, Direct Harvest of Turtles and Eggs, loss and degradation of habitat, marine debris, climate change etc.
- IUCN status: Vulnerable

## 'TREE CITY OF THE WORLD' (TCW) TAG

- Mumbai and Hyderabad have been jointly recognised as '2021 TCW'.
- TCW programme started by United Nations' Food and Agriculture Organisation and American non-profit organisation Arbor Day Foundation.
- It provides direction, assistance, and worldwide recognition for a community's dedication to its urban forest.

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- City was evaluated based on five standards i.e. Establish Responsibility, Set the Rules, Know What You Have, Allocate the Resources, and Celebrate the Achievements

## DISTRICT GANGA COMMITTEES (DGCS)

- DGCs were constituted in districts on Ganga River basin to ensure people's participation in management and pollution abatement in Ganga and its tributaries.
- DGCs are mandated to Ensure proper utilization of assets created under Namami Gange, Monitor drains/sewage falling in Ganga and its tributaries, Create strong connect of people with Ganga rejuvenation.
- District Collector is the Chairperson of DGC.

## PRAKRITI

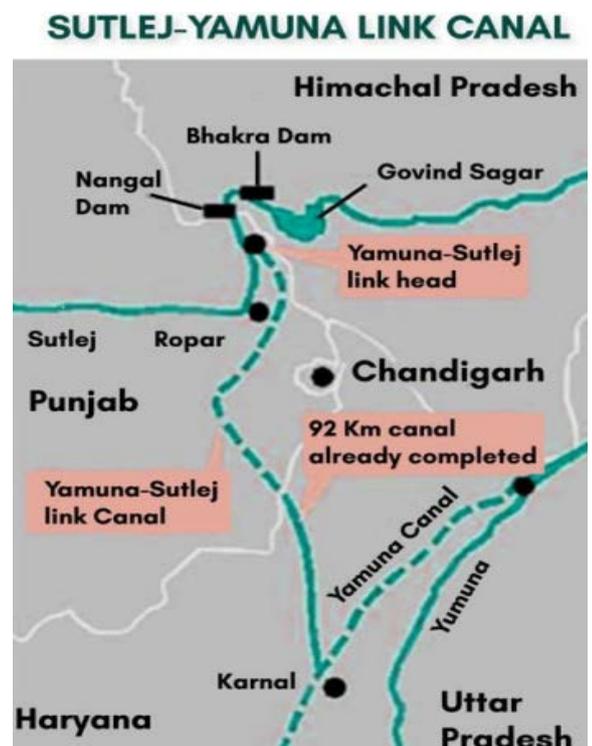
- Union Minister of Environment, Forest & Climate Change (MoEFCC) launched Prakriti mascot to spread awareness among masses about small changes that can be sustainably adopted for a better environment

## MOTHER NATURE' A 'LIVING BEING' WITH LEGAL ENTITY: MADRAS HIGH COURT (HC)

- Invoking 'parens patriae jurisdiction', the HC bestowed 'legal entity' status upon nature and directed the State and Central governments to protect it.
- Parens Patriae in Latin means "parent of the nation". It allows the guardianship of the State of the rights of entities that are unable to fight for their own rights.
- Earlier, in 2017 Uttarakhand HC, granted the Ganga and Yamuna rivers had the same legal status as human beings, however Supreme Court overruled this order.
- Also, in 2018, Uttarakhand HC declared the "entire animal kingdom including avian and aquatic" as legal entities.
- The court ruled that Mother Nature will have rights, duties and liabilities enjoyed by a living person.
- The court further observed that natural environment is part of basic human rights, of 'right to life' itself.

## PUNJAB-HARYANA DISPUTE OVER RIVERS WATERS

- Haryana Vidhan Sabha has passed a resolution seeking completion of SYL Canal connecting Sutlej and Yamuna rivers.
- It seeks to provide Haryana its average annual share of surplus Ravi-Beas water.
- Article 262 enables Parliament to provide for adjudication of dispute with respect to use, distribution or control of waters of inter-State river or river valley.



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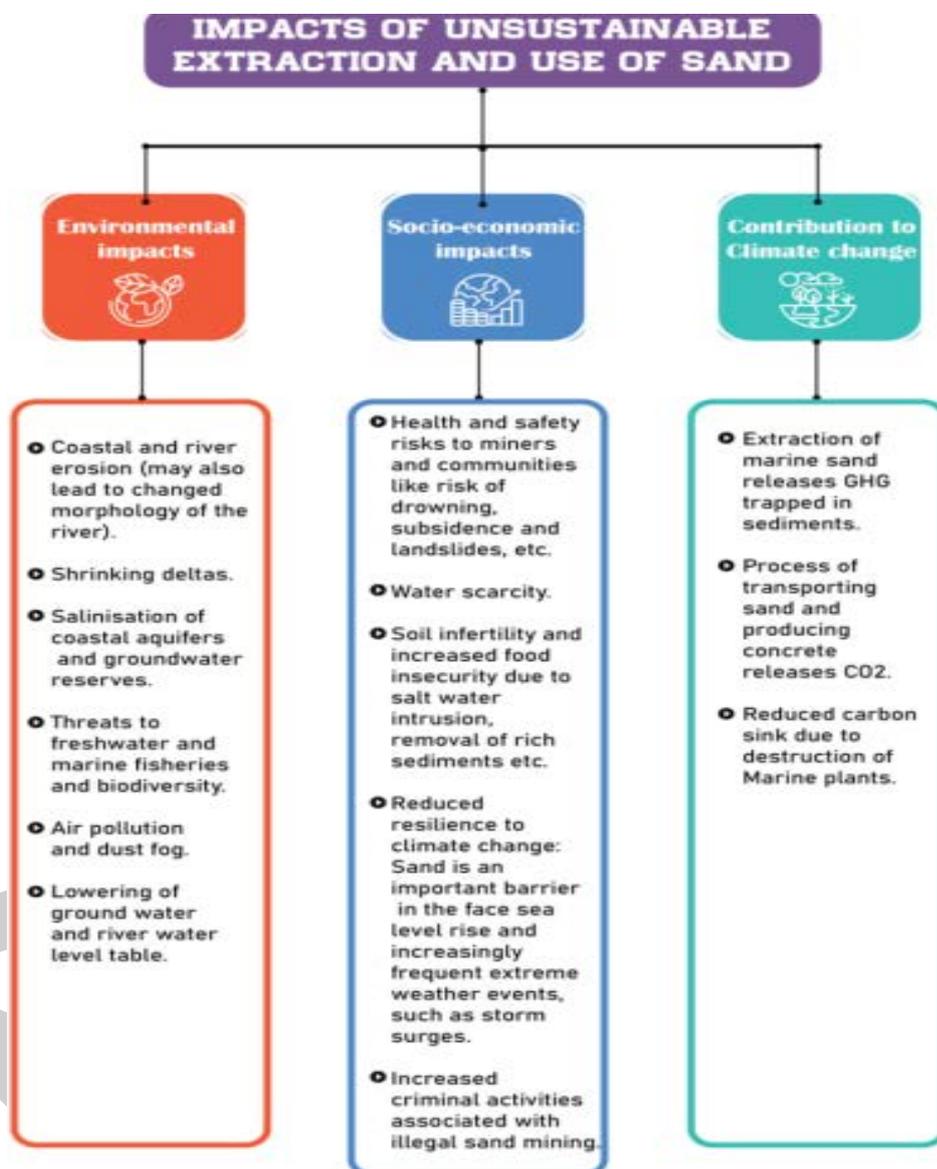
- Under Inter-State River Water Disputes Act (ISWD), 1956 provides for setting up of tribunals for adjudication of an inter-state river dispute.

## MINISTRY OF ENVIRONMENT EXTENDS TENURE OF GREEN PERMITS

- The tenure of Environmental Clearances (EC) given has been extended for the following projects –
- River valley projects to have 13-year validity
- Nuclear power projects or those involving the processing of nuclear fuel to have 15 years validity
- For projects and activities other than mining and river valley projects will valid for 10 years
- EC was first made mandatory under the Environmental (Protection) Act 1986 for expansion or modernisation of any activity or for setting up new projects listed in Schedule 1 of the notification
- The EIA legislation of 2006, made it mandatory for projects such as mining, thermal power plants, river valley, infrastructure and industries to get environment clearance

## SUSTAINABLE SAND MANAGEMENT

- A report titled 'Sand and Sustainability: 10 strategic recommendations to avert a crisis' was recently released by United Nations Environment Programme (UNEP).



### Sand management in India

- Sand is a **minor mineral** defined under Mines and Minerals (Development and Regulation) Act, 1957 (MMDR Act).
- The act empowers **state governments** to frame rules to prevent illegal mining, transportation, and storage of minerals (both major minerals and minor minerals) and for purposes connected therewith.

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- Sand, gravel, crushed stone and aggregates (sand resources) are the second most exploited natural resource in the world after water.
- Current extraction exceeds the replenishment rates of naturally occurring sand.

## STATE ENERGY & CLIMATE INDEX

- NITI Aayog has recently launched the State Energy & Climate Index (SECI)
- It is the first index that aims to track the efforts made by states and union territories (UTs) in the climate and energy sector
- Parameters: SECI rank states and UTs on six parameters which include a total of 27 indicators
  - Discoms' Performance;
  - Access, Affordability and Reliability of Energy;
  - Clean Energy Initiatives;
  - Energy Efficiency;
  - Environmental Sustainability; and
  - New Initiatives
- Top 3 performers based on classification - Larger States: Gujarat, Kerala, and Punjab & Smaller States: Goa, Tripura, and Manipur

Alternative sand or manufactured sand	
It is the sand made from other than natural sources, by processing materials, using thermal or other processes such as separation, washing, crushing and scrubbing. It is mainly classified into-	
 <p>Co- and by products of industrial &amp; extractive processes</p>	<ul style="list-style-type: none"> <li>■ They are a group of secondary materials, derived from the manufacturing or synthesising of another material, and could be used to replace sand and/or grave.</li> <li>■ E.g., blast furnace slag, waste foundry sand, coal bottom ash, cement kiln dust, wood ash, Ore-sand (O-sand) etc.</li> <li>■ O-sand is a type of processed sand sourced as a co-product or by-product of mineral ores.</li> </ul>
 <p>Crushed Rock Sand</p>	<ul style="list-style-type: none"> <li>■ It is produced by crushing virgin rocks, is generally more angular and has a rougher surface texture than naturally weathered sand particles.</li> <li>■ Diorite, metamorphic siltstone, granite, limestone, sandstone, feldspathic quartzite etc. are some of the parent rocks used for its production.</li> </ul>
 <p>Recycled Fine Aggregate</p>	It is produced from the re-processing of mineral waste materials with the largest source from Construction & Demolition waste.

## Other Energy Indexes across the globe and India's performance

Index	World Energy Trilemma Index (WETI)	Energy Transition Index (ETI)	Renewable Energy Country Attractiveness Index (RECAI)	Climate Change Performance Index (CCPI)
Publishing Agency	World Energy Council	World Economic Forum (WEF)	Ernst & Young (EY)	Germanwatch eV.
What it measures	Measures energy system performance in terms of Energy Security, Energy Equity, Environmental Sustainability in Country context	Checks nation's energy system information	Ranks performance of economies based on the investment made in the renewable energy sector -energy supply, renewable technologies, & ease of doing business	Measures country's progress towards the NDC 2030 targets and compares climate protection performance of countries
India's Rank	75/127 (2021)	87/115 (2021)	3/40 (2021)	10/63 (2022)
Best performing countries	Top 3: Sweden, Switzerland, Denmark	Top 3: Sweden, Norway, Denmark	Top 2: USA & Mainland China	Top 6: Denmark (4 <sup>th</sup> ), Sweden (5 <sup>th</sup> ), Norway (6 <sup>th</sup> )

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## Wild Life (Protection) Amendment Bill, 2021

- Wild Life (Protection) Act, 1972 provides a legal framework for the protection of various species of wild animals and plants, the management of their habitats, and the regulation and control of trade in wild animals, plants and products made from them.
  - The Bill seeks to implement provisions of Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The Bill provides for the central government to designate a:
    - Management Authority, which grants export or import permits for trade of specimens.
    - Every person engaging in trade of a scheduled specimen must report the details of the transaction to the Management Authority.
    - As per CITES, the Management Authority may use an identification mark for a specimen.
- The Bill prohibits any person from modifying or removing the identification mark of the specimen.
- Additionally, every person possessing live specimens of scheduled animals must obtain a registration certificate from the Management Authority.
- Scientific Authority, which gives advice on aspects related to impact on the survival of the specimens being traded.
- The Bill reduces the total number of schedules to four by:
- Schedule I for species that will enjoy the highest level of protection,  Schedule II for species that will be subject to a lesser degree of protection and Schedule III that covers plants.
- It removes the schedule for vermin species.
- It inserts a new schedule for specimens listed in the Appendices under CITES (scheduled specimens).
- The Bills empowers the central government to regulate or prohibit the import, trade, possession or proliferation of invasive alien species.
- The central government may authorize an officer to seize and dispose the invasive species.
- The Act entrusts the Chief Wild Life Warden to control, manage and maintain all sanctuaries in a state. 
  - The Chief Wild Life Warden is appointed by the state government.
  - The Bill specifies that the actions of the Chief Warden must be in accordance with the management plans for the sanctuary.
- For sanctuaries falling under special areas, the management plan must be prepared after due consultation with the Gram Sabha concerned. 
  - Under the Act, state governments may declare areas adjacent to national parks and sanctuaries as a conservation reserve, for protecting flora and fauna, and their habitat.
  - The Bill empowers the central government to also notify a conservation reserve.
- The Bill provides for any person to voluntarily surrender any captive animals or animal products to the Chief Wild Life Warden.
- No compensation will be paid to the person for surrendering such items. The surrendered items become property of the state government.
- The Act prescribes imprisonment terms and fines for violating the provisions of the Act. The Bill increases these fines.

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## Earth Day

- On 22nd April 2022 Earth Day was celebrated. It is an international event celebrated around the world to pledge support for environmental protection.
- The theme for Earth Day 2022 is “Invest In our Planet”
- Earth Day is globally coordinated by EARTHDAY.ORG, which is a non-profit organization. It was formerly known as Earth Day Network
- Earth Hour is the World Wildlife Fund for Nature (WWF)’s annual initiative that began in 2007. It is held every year on the last Saturday of March.
- It encourages people from more than 180 countries to switch off the lights from 8.30 pm to 9.30 pm as per their local time.

## Blue Blob

- According to a Research, a region of cooling water in the North Atlantic Ocean near Iceland, nicknamed the “Blue blob” is temporarily stalling the melting of Arctic sea ice.
- Little is known about it
- The cold patch was most prominent during the winter of 2014-2015 when the sea surface temperature was about 1.4 degrees Celsius colder than normal.

## Forest Fires Reducing Solar Power Production

- A new study has found that Forest Fires can reduce solar power production in India.
- Several factors like clouds, aerosols, and pollution generated from various sources limit the solar irradiance causing performance issues in the photovoltaic and concentrated solar power plant installations.
- Apart from clouds and aerosols, forest fires play a very crucial role in reducing solar energy production.

## Imbalance in Nitrogen Availability

- According to a report, an imbalance in nitrogen availability is reported across the globe, with some places having an excess and others a shortage.
- Rising carbon dioxide levels and other global changes have increased demand for nitrogen by plants and microbes. □
- Plants grow quickly when exposed to high carbon dioxide (CO<sub>2</sub>) concentrations. □
- The presence of high CO<sub>2</sub> levels dilutes the availability of nitrogen in Plants, thus, their demand for nitrogen goes up.
- Declining nitrogen availability can be linked to insect apocalypse.
- When excessive nitrogen accumulates in the streams, inland lakes and coastal bodies of water, it could sometimes result in eutrophication, leading to harmful algal blooms, dead zones and fish kills.
- In humans, high levels of nitrogen in the groundwater are linked to intestinal cancers and miscarriages and can be fatal for infants
- Only when nitrogen is converted from Nitrogen gas into ammonia (NH<sub>3</sub>) does it become available to primary producers, such as plants.
- The major transformations of nitrogen gas are through the process of: □ Nitrogen fixation (nitrogen gas to ammonia), □ Nitrification (ammonia to nitrite and nitrate), □ Denitrification (nitrate to nitrogen gases)

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- The process of converting Nitrogen gas (N<sub>2</sub>) into biologically available nitrogen, that is ammonia, by nitrogen fixing microorganisms, is called nitrogen fixation.
- They all have a similar enzyme complex called nitrogenase that catalyzes the reduction of N<sub>2</sub> to NH<sub>3</sub> (ammonia).

## UNEP Report on Noise Pollution

- United Nations Environment Programme released report titled Annual Frontiers Report 2022
- The Frontiers report identifies and offers solutions to three environmental issues: urban noise pollution, wildfires and phenological shifts that merit attention and action from governments.
- Moradabad is ranked second noisiest after Dhaka.
- Noise pollution is regulated separately under the Noise Pollution (Regulation and Control) Rules, 2000. □
- Earlier, noise pollution and its sources were addressed under the Air (Prevention and Control of Pollution) Act, 1981
- The Central Pollution Control Board (CPCB) is mandated to track noise levels, set standards as well as ensure, via their State units, that sources of excessive noise are controlled.

## Draft Indian Antarctic Bill 2022

- The bill has listed strict guidelines and a system of permits, which will be issued by a government-appointed committee, without which any expedition or individual will not be allowed to enter Antarctica
- The bill has provision to establish a committee on Antarctic governance and environmental protection to monitor, implement and ensure compliance with the relevant international laws, emissions standards and rules of protection.
- The Bill further prohibits drilling, dredging, excavation or collection of mineral resources or even doing anything to identify where such mineral deposits occur.
- The only exception is for scientific research with a permit
- There will be strict prohibition on damaging native plants; flying or landing helicopters or operating vessels that could disturb birds and seals; using firearms that could disturb the birds and animals; remove soil or any biological material native to Antarctica.
- Introduction of animals, birds, plants or microscopic organisms that are not native to Antarctica are also prohibited.
- The Bill also provides for Indian tour operators to be able to operate in Antarctica after acquiring a permit.
- India maintains two research stations on the continent: 'Maitri' (commissioned in 1989) at Schirmacher Hills and 'Bharati' (2012) at Larsemann Hills.
- India officially acceded to the Antarctic Treaty System in August 1983

## Global Wind Report 2022

- Global Wind Report for 2022 was published by the Global Wind Energy Council (GWEC).
- The Government has set a target of installing 5 GW of offshore capacity by 2022 and 30 GW by 2030.

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