

NEWS TODAY

Tamil Nadu's Nagapattinam oil spill: NGT imposes ₹5 crore penalty

National Green Tribunal (NGT) ordered the Chennai Petroleum Corporation Limited (CPCL) to pay ₹5 crore as a 'no-fault liability' for the oil spill off the Nagapattinam coast, in March 2023.

- No-fault liability (or Strict liability) doctrine was invoked as the **pipeline leak** was caused by an external force and not by any negligence or error from CPCL.

Oil Spill

- **Definition:** An oil spill, a form of pollution, is the **release of a liquid petroleum hydrocarbon into the environment**, especially marine areas, **due to human activity**.

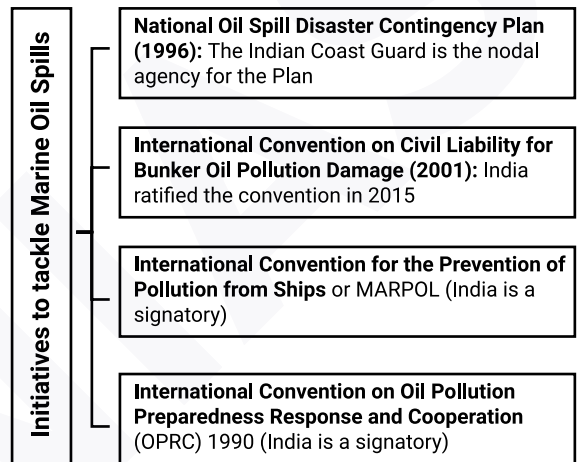
- **Causes:** Often caused by accidents involving tankers, barges, pipelines, refineries, etc.

Impact on marine ecosystem

- **Loss of biodiversity:** Due to loss of habitat, blocking of sunlight, etc.
 - ⊕ For example, **tar balls** which are remnants of oil spills **can disturb the habitat of turtles**.
- **Damage Food Chain:** Predators that consume contaminated prey can be exposed to oil through ingestion.
- **Coastal erosion:** Due to damage to vegetation on the coastline.

Technologies to tackle oil spills

- **Biological:** Oilzapper (contains bacteria feeding on oil), **Oilivorous-S** (similar to Oilzapper but more effective against oil with high sulphur content).
- **Floating booms:** Temporary floating barriers to contain marine spills.
- **Different sorbents** like straw, volcanic ash etc.



First global mangrove assessment for the International Union for Conservation of Nature (IUCN) Red List of Ecosystems

For the first time, an ecosystem group has been assessed entirely using the **IUCN Red List of Ecosystems (RLE)**.

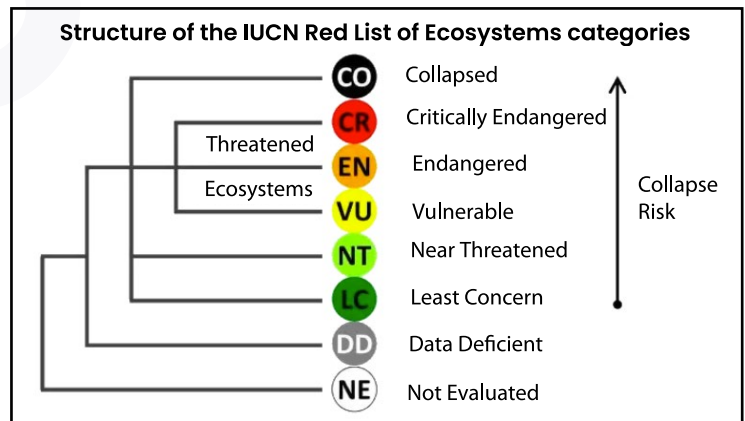
- IUCN's RLE is a **global standard for measuring the health of ecosystems**, assess threat levels and identifying most effective management pathways.

Key Findings of the assessment

- **50%** of mangrove ecosystems assessed **are at risk of collapse** with **nearly 20% at high risk** (classed as either Endangered or Critically Endangered).
- **Threats to mangroves:** Climate change, deforestation, development, pollution, dam construction and climate change.
 - ⊕ **Climate change threatens one third (33%)** of assessed mangrove ecosystems.
 - ⊕ **Due to sea-level rise, 25%** of global mangrove area is **predicted to be submerged** in the next 50 Years.
- Without significant changes by 2050, **climate change and sea level rise** will result in **loss of** around 1.8 billion tonnes of carbon stored and exposure of 2.1 million lives to coastal flooding.
- **Status of Indian Mangroves:** Andaman and Bay of Bengal (Least Concern), South India (Critically Endangered), West India (Vulnerable).

Importance of Mangroves

- Provide **essential ecosystem services** and ecological support for fisheries and biodiversity.
- Acts as **carbon sinks** storing around 11 billion tons of carbon.
- **Improves water quality** through filtering pollutants and trapping sediments.
- **Protect coastal regions** from disasters such as floods, storms etc.



Initiatives for Mangroves

- **Global:**
 - ⊕ **Mangrove Breakthrough:** Launched at UNFCCC COP27 by UN High Level Climate Champions and Global Mangrove Alliance (GMA).
 - ◆ GMA was launched at World Ocean Summit in 2018.
 - ⊕ **Mangrove Alliance for Climate:** Spearheaded by UAE in partnership with Indonesia.
- **India:**
 - ⊕ Mangrove Initiative for Shoreline Habitats & Tangible Incomes (**MISHTI**).
 - ⊕ **Conservation and Management of Mangroves and Coral Reefs** under National Coastal Mission Programme.

Twelve countries and European Space Agency (ESA) signed the Zero Debris Charter (ZDC)

ZDC was signed at the 11th ESA/EU Space Council, which was first established in 2004 under the framework agreement between ESA and European Union (EU).

About Zero Debris Charter

- It is a world-leading effort to become **debris-neutral in space by 2030**.
- It contains both **high-level guiding principles and ambitious, jointly defined targets** to achieve Zero Debris goal.
- Signatory countries include **Austria, Belgium, Cyprus, Estonia, Germany, Lithuania, Poland, Portugal, Romania, Slovakia, Sweden and United Kingdom**.

Space Debris

- It refers to all **non-functional, man-made objects** in Earth orbit or re-entering into Earth atmosphere.
- It includes **decommissioned satellites, spent rocket bodies**, fragments from spacecraft breakups or collisions, debris from anti-satellite weapon tests, etc.
 - There are currently **more than one million pieces of space debris** larger than one cm in Earth's orbit.

Concerns with Space Debris

- Threat to space infrastructure:** Collisions with operational satellites **disrupt navigation and communications systems** on Earth.
- Kessler syndrome:** Uncontrolled growth of debris can lead to an escalating cascade of collisions.
- Risk on Earth:** Large space debris that re-enter the atmosphere uncontrollably creates risk to the population on the ground.
- Increased cost:** Costly collision avoidance manoeuvres are needed to be performed.

Initiatives for Space Debris Mitigation

- India:**
 - Debris Free Space Missions (DFSM) by 2030** being implemented by **ISRO System for Safe & Sustainable Space Operations Management (IS40M)**.
 - Project NETRA (NETwork for space object TRacking and Analysis)** for Space situational awareness.
- Global:**
 - Inter-Agency Space Debris Coordination Committee:** Worldwide coordination of space debris related activities.
 - Space Debris Mitigation Guidelines** of the Committee on the Peaceful Uses of Outer Space

SEBI Releases Consultation Paper for Changes in BRSR Framework

Changes in the Business Responsibility and Sustainability Reporting (BRSR) framework were **proposed by S.K. Mohanty committee to facilitate Ease of Doing Business** in BRSR framework.

- BRSR framework requires **top 1000 listed companies** to report their **ESG** (environmental, social and governance) performance in a standardized format, **based on the principles of NGRBC**.

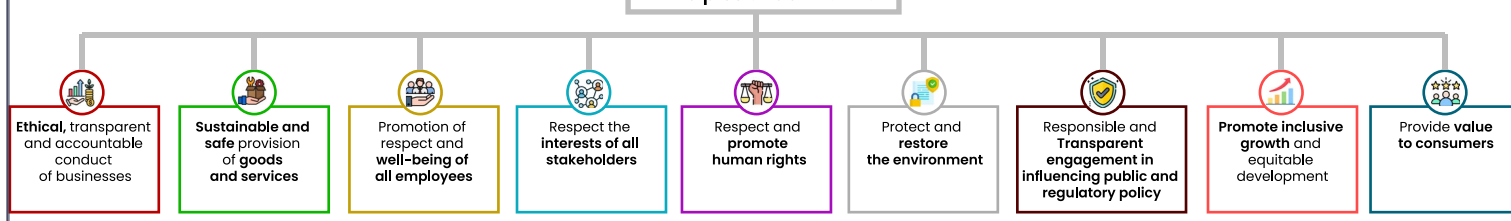
Key changes proposed

- Redefines value chain (VC) partners:** The proposed definition will cover **only significant partners**.
 - This will reduce compliance burden from smaller VC partners.
- More time to implement:** For the first year of reporting FY 2024-25, **reporting previous year numbers shall be voluntary**.
 - In the current framework, the **BRSR is mandatory** from FY 2022-23 onwards.
- Integrates Green Credit Programme (GCP):** Green Credits generated by company and its VC partners shall be an additional leadership indicator under BRSR.
 - This aligns with the **2024 MoEFCC notification** which allows Green Credits from tree planting to be reported as an ESG leadership indicator or under corporate social responsibility.
- Flexibility for BRSR core:** Companies should have the option to **choose 'assessment' instead of 'assurance'** for BRSR Core.
 - In 2023, SEBI introduced **BRSR Core for 'assurance' and ESG disclosures**.
 - 'Assurance' follows global/domestic standards that **go beyond data verification, adding extra costs**.

National Guidelines on Responsible Business Conduct (NGRBC)

- In 2019, the Ministry of Corporate Affairs formulated the **NGRBC**.
- Outlines 9 Principles to be followed by Businesses.

Principles under NGRBC



Study reveals mechanisms that can lead to sympatric speciation

A new study conducted by scientists from IIT Bombay has shed light on the **conditions and mechanisms that can lead to Sympatric Speciation**.

- Speciation is a lineage-splitting event that produces two or more separate species. This process **generates biodiversity**. Following are the **two primary types**:
 - ⊕ **Allopatric Speciation**: Occurs when populations are physically separated by **geographic barriers** like mountains or rivers.
 - ⊕ **Sympatric Speciation**: It can happen even **when populations live in the same area** without geographical barriers.
 - ◆ Although ecological evidence exists to support this hypothesis, **experimental evidence was absent in its support**.

Key findings

- **Disruptive Selection: Non-uniform resources** present in the environment, cause populations to adapt to **distinct traits**.
 - ⊕ Disruptive selection is a process by which **individuals with extreme traits have a higher fitness** than those with intermediate traits.
 - ⊕ For instance, **birds with smaller beaks are better at eating nuts**, while those with larger beaks are better suited for accessing nectar.
- **Role of sexual selection**: Preference for mates based on a **relevant trait that helps in utilising the environmental resources** better was the driving force behind speciation
- **Genetic architecture has a key role**: For example, if the genetic architecture allowed changes in beak size, then a speciation could occur **even with a weak role of disruptive selection**.

First light for Square Kilometre Array (SKA) prototype telescope

SKAMPI, a prototype telescope of SKA Observatory (SKAO) constructed in South Africa achieved first light, demonstrating its potential.

- First light is a **new astronomical instrument's first use** that results in an image.

Square Kilometre Array Observatory (SKAO)

- It is an **intergovernmental organization** composed of member states and partners from five continents and is **headquartered in United Kingdom**.
 - ⊕ **9 Member Countries**: Australia, China, Italy, Netherlands, Portugal, South Africa, Spain, Switzerland and UK.
 - ⊕ **Prospective Members (In process)**: Canada, France, Germany, India, Japan, South Korea, and Sweden.
- It aims to build and operate cutting-edge **radio telescopes** and its **two telescopes** are currently under construction in **Australia's Murchison Shire and South Africa's Karoo**.
 - ⊕ These will cover **two different frequency ranges** and are located in **radio quiet zones**, protecting them from interference from the ground.
- Both SKA telescopes have been designed to work as a **single enormous virtual telescope** using **interferometry**.
 - ⊕ Interferometry uses **large numbers of smaller antennas connected together** by optical fibre networks.
- Its **science goals** include exploring evolution of universe, tracking gravitational waves, and studying cosmic magnetism.

India and SKAO

- India is in process to **become a member** of SKAO and is providing **funding support** of around ₹1250 crores for its construction phase.
 - ⊕ This will be jointly funded by Department of Atomic Energy (Lead Agency) and Department of Science and Technology.
- India has **contributed actively to the pre-construction phase** of the SKA telescopes.
- India's participation will **open up possibilities for development of niche skills** in Indian industry and research organizations in **next-generation technologies** like modern antenna design, high performance super-computing technologies etc.

Also in News



Radiation processing

- Government is planning radiation processing of onions to prevent shortages.

Radiation Processing

- Incorporates **controlled application of ionizing radiations** (gamma rays, accelerated electrons and X-rays).
- **Delays ripening**, enhances shelf life by **destruction of spoilage microbes, etc.**
 - ⊕ However, it cannot be used to **destroy microbial toxins and pathogen viruses**.
- Produces **very little chemical changes**.
- **Nutritional value is least affected** in comparison to other processing methods.

Regulation

- **Prevention of Food Adulteration (Fifth Amendment) Rules, 1994**, mandates all packages of irradiated foods to display the **green irradiation logo** endorsed by Codex Alimentarius Commission, along with the words '**Processed by Irradiation method**'.



Heat Index

Recently, the Heat Index reached 50°C in Delhi.

About Heat Index (HI)

- Launched by **India Meteorological Department (IMD)** on experimental basis.
- HI, also known as **Apparent Temperature**, is what the **temperature feels like to the human body** when relative humidity is combined with the air temperature.
- It provides information about **impact of humidity on high temperatures** and can be used as an indication for human discomfort.
- **Colour codes used for HI**
 - ⊕ **Green**: HI less than 35 °C
 - ⊕ **Yellow**: HI between 36-45 °C
 - ⊕ **Orange**: HI between 46-55 °C
 - ⊕ **Red**: HI greater than 55 °C



Form 17C

Election Commission told the Supreme Court the rules do not permit sharing Form 17C data with any entity apart from polling officials.

Form 17 C

- It is associated with the directions under Conduct of Election Rules, 1961.
- Its 1st part provides information related to the number of:
 - ⊕ Eligible voters assigned to the booth, electors in the register of voters,
 - ⊕ Voters who decided not to exercise their franchise,
 - ⊕ Voters not allowed to vote
- Its 2nd part contains information like the name of the candidate and the total votes they received.



Pre-Packaged Insolvency Resolution Process (PPIRP)

PPIRP has resulted in the full settlement of operational creditors' claims in five cases.

About PPIRP

- It provides for the resolution of stress of corporate MSMEs.
- It was introduced in the Insolvency and Bankruptcy Code, 2016 through an amendment in 2021.
- Prepackaged insolvency process is initiated voluntarily by the debtor and is available for defaults of at least ₹ 10 lakh.
- PPIRP envisages a hybrid process, where pre-initiation phase is largely informal and post-initiation stage is formal.
- PPIRP is required to be completed within a period of 120 days.



AI agents

'AI agents' like GPT-4o by OpenAI and Project Astra by Google are believed to be far superior to conventional voice assistants such as Alexa, Siri, and Google Assistant.

AI agents

- Unlike conventional language models, which solely work on text-based inputs and outputs, AI agents can engage in real-time, multi-modal (text, image, or voice) interactions with humans.
- They perceive their environment via sensors, then process the information using algorithms or AI models, and subsequently, take actions.
- They can understand and learn from the context of interactions, allowing them to provide more relevant and personalised responses.



Zero-Carbon Cement

Researchers from University of Cambridge have developed a method for producing Zero-Carbon Cement.

- Producing cement is highly polluting, responsible for around 8% of total greenhouse gas emissions.
- Making cement requires "clinker", made by heating raw materials, including limestone and clay, to 1450°C.
 - ⊕ Clinker production accounts for 90% of cement's carbon footprint.
- Newly developed process to make clinker involves reusing cement paste from demolished buildings and utilizing electric arc furnace which is used to recycle steel.



Mrugavani National Park (MNP)

Telangana Forest Department Informed the National Green Tribunal (NGT) that area of MNP in Chilkur has been reduced by 80 hectares on paper.

- NGT was hearing a case about extra high-tension electrical lines being laid through the eco-sensitive zone of the park.

About MNP

- Location: Hyderabad, Telangana
- Vegetation: Tropical waterless deciduous forest of degraded nature
- Flora: Teak, Bamboo, Sandal, Picus, Palas, Rela
- Fauna: Spotted deers, Indian hare, forest cat, civet, Indian rat snake, Russell's viper, cheetal and the flowerpecker (a bird).



eVTOL aircraft

IIT Madras-incubated ePlane Company is expected to launch electric Vertical Take-Off and Landing (eVTOL) aircraft in Bengaluru.

About eVTOL aircraft

- They can take off and land vertically, enabling them to operate in congested urban areas.
- They fly through electric propulsion and vertical lift.
 - ⊕ Electric motors drive rotors or propellers arranged in different configurations for lift and control in all directions.
 - ⊕ Batteries, typically lithium-ion, or other energy storage systems store and provide energy required to lift off and fly.
- Benefits: Reduction in traffic congestion, addressing air pollution, improving accessibility and connectivity, emergency medical services, etc.

Personality in news



Kartar Singh Sarabha (1896 – 1915)

Birth anniversary of Kartar Singh Sarabha is observed on 24th May.

About Kartar Singh Sarabha (1896 – 1915)

- He was an Indian revolutionary born in the village of Sarabha (Punjab).

Key Contributions

- He became a member of Ghadar Party (founded in Oregon in 1913 to overthrow British rule) and was one of its most active members.
 - ⊕ He put together the Punjabi issue of the Ghadar newspaper.
- On returning to India, he focused on mobilising Indian soldiers to revolt and simultaneously setup a small scale arms manufacturing unit in Ludhiana.
- He was charged with sedition in Lahore Conspiracy Case and was executed in 1915 along with his compatriot Vishnu Ganesh Pingle.

Values: Bravery, Courage, Activism, Commitment.

