Study finds presence of microplastics in testicles of humans & canines

Researchers quantified 12 types of microplastics and found **the presence of microplastics within both canine and human testes.**

Findings of study

- Humans and canines exhibited relatively similar proportions of **major polymer types in male reproductive system,** with **Polyethylene (PE) being dominant.**
- It highlights that microplastics can have **potential consequences on male fertility** with possible reduction in sperm count.

Microplastics

- Microplastics are **small plastic pieces less than five millimetres long,** harmful to living organisms. There are **two categories of microplastics:**
  - **Primary microplastics** are **tiny particles designed for commercial use,** such as cosmetics, clothing, etc. and microfibres shed from textiles.
  - **Secondary microplastics** are particles that result from **breakdown of larger plastic items.**

Impact of Microplastics

- **Human Health Risks:** Microplastics reaches humans through trophic transfer and biomagnification, linked to health issues such as **endocrine disruption, weight gain, insulin resistance, decreased reproductive health, and cancer.**
  - Microplastics have previously been found in human blood, lungs, breast milk and placentas.
- **Harm to Wildlife:** When ingested, it has both toxic and mechanical effects e.g., reduced food intake, suffocation, behavioural changes, and genetic alteration.
- **Environmental Pollution:** Causes disturbance to ecosystem and reduction in biological activity due to ubiquitous and non-biodegradable nature.

Steps taken to reduce microplastics

- **Indian:**
  - **Plastic Waste Management Rules, 2016** notified under Environment (Protection) Act, 1986.
  - **Project REPLAN (REducing PLAstic from Nature)** launched by Khadi and Village Industries Commission (KVIC).
  - **LiFE Mission** to preserve the environment.
- **Global:**
  - **CounterMEASURE II project**
  - **Global Partnership on Plastic Pollution and Marine Litter (GPML)**
  - **UNEP Plastics Initiative**

Chief of Defence Staff (CDS) emphasizes on developing Joint Culture in Armed Forces

While delivering a lecture, CDS called upon the three services to create a **Joint Culture** as they move towards forming **Joint Operational Structures** and termed it as Jointness 2.0.

- CDS also termed **Jointness & Integration as pre-requisites** to the creation of functional **Integrated Theatre Commands (ITCs).**

About ITCs

- **Theaterisation** involves **creating unified tri-service (Army, Navy, and Air Force) organisations** that would be responsible for combat operations (as well as internal security duties) in **specified geographic area.**
- Assets from **all three services would be placed under theatre commander** as required for executing the task to ensure j**ointness in the operational planning and greater synergy in battle.**
- Creation of such commands will **separate the 'operational' functions from the Raise-Train-Sustain (RTS)** and other administrative functions.

Current Structure of Armed Forces

- There are 19 existing commands –
  - **17 single-service oriented commands** (7 Army, 7 Air Force, and 3 Navy).
  - **Andaman and Nicobar Command** and the **Strategic Forces Command** (in charge of the country's nuclear stockpile) function as tri-services commands.

Challenges in creation of ITCs

- Lack of coherent **National Security Strategy;**
- **Issue of interoperability** between arms and equipment of different services;
- **Limited resources,** particularly with Air Force, to different land-based theatres, maritime theatre, etc.

Steps taken for Integration of Armed Forces

- **Institutional:** Appointment of CDS, creation of Department of Military Affairs under Ministry of Defence to promote jointness in procurement, training, and staffing for the Services, etc.
- **Legislative:** Enactment of **Inter-Services Organisations (Command, Control & Discipline) Act, 2023.**
- **Others:** Defence Space Agency under HQ Integrated Defence Staff (HQ IDS), etc.

Global Land Outlook Thematic Report on Rangelands and Pastoralists released

This report by **UN Convention to Combat Desertification (UNCCD)** focuses on relationship between rangelands and their human communities, **especially pastoralists,** to identify approaches for rangeland protection.
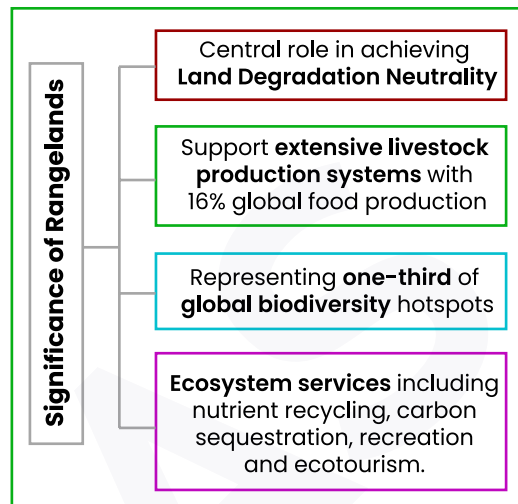
- Rangelands are **natural or semi-natural ecosystems grazed by livestock and/or wild animals.**
  - ⊖ They often comprise a **mosaic of ecosystems** such as grasslands, savannahs, shrublands, drylands, deserts, steppes, mountains, open forests, and agroforestry systems.

Key highlights of report

- Rangelands cover over **54% of terrestrial surface,** with around 78% occurring in drylands.
- **Up to 50% rangelands are estimated to be degraded** showing signs of diminished soil fertility and nutrients, erosion, salinization, alkalinization, and soil compaction inhibiting plant growth.
- **Drivers of degradation** include land use changes due to population growth and urban expansion, rapidly rising food, fibre and fuel demands, excessive grazing, abandonment, and policies that incentivise overexploitation.

Rangeland status in India:

- Indian rangelands occupy about **121 million hectares,** and around 100 million hectares is considered **underutilized.**
- Pastoralists have been widely marginalized in Indian public policies, resulting in **insecure tenure rights and access to their pool of common resources.**
  - ⊖ In many states, pastoralists have been **banned from forests and protected areas.**
  - ⊖ **Mining and energy projects** also prevent their access to critical rangeland resources.

Significance of Rangelands
- Central role in achieving **Land Degradation Neutrality**
- Support **extensive livestock production systems** with 16% global food production
- Representing **one-third** of **global biodiversity** hotspots
- **Ecosystem services** including nutrient recycling, carbon sequestration, recreation and ecotourism.

Key Recommendations

- **Integrated climate change mitigation and adaptation strategies** boosting resilience of pastoralist communities.
- **Reduce rangeland conversion** and other land use changes that diminish the diversity and multifunctionality of rangelands
- **Adopt and support pastoralism-based strategies** and practices that help mitigate harms to rangeland health

International Labour Organization (ILO) released working paper on "Financing gap for universal social protection"

It **estimates financing gap** to attain Universal Social Protection (USP) in 133 Low and Middle-Income Countries (LMICs).

Universal Social Protection (USP)

- USP refers to set of policies designed to **ensure social security to all.**
  - ⊖ **Social Security** is the protection that a society provides to individuals and households to ensure access to healthcare and to guarantee income security, particularly in cases of old age, unemployment, sickness, maternity etc.
- It includes **five key social protection guarantees** (for children, persons with severe disabilities, mothers of newborns, older persons and the unemployed) along with healthcare.

Key highlights

- For LMICs, **financing gap** to achieve USP is **3.3% of GDP annually,** requiring an additional US$1.4 trillion per year.
- In 2024, **additional government spending** needed to achieve USP represents 10.6% of their annual government expenditure.
- **India requires US$135.3 billion** to ensure universal social protection and has a **financing gap of 3.3% of GDP and 11.8% of government expenditure.**

Strategies to close financing gap

- **Domestic resource mobilization** including increasing tax revenue and social security contributions.
- **Removing explicit and implicit fuel subsidies,** and introducing carbon pricing schemes.
- **Eliminating illicit financing flows** such as money laundering, tax evasion and financial corruption.
- **Managing sovereign debt effectively** and creation of new international financing mechanism.

Measures taken for Universal Social Protection in India

- **Code on Social Security 2020** for progressive realization of social security coverage.
- **Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA)** for rural employment.
- **Ayushman Bharat - Pradhan Mantri Jan Arogya Yojana (AB-PMJAY)** to provide universal Health Coverage.
- **National Social Assistance Programme (NSAP)**

Competition Commission of India (CCI) celebrated its 15th Foundation Day

About CCI

- **Established:** In 2009 under the **Competition Act, 2002.**
  - Was initially **created in 2003,** but **got its enforcement and regulatory powers** after substantive provisions of Act relating to **anti-trust enforcement and regulation of combinations came into force on May 20, 2009.**
- **Composition:** Chairperson and 6 Members appointed by the Central Government.
- **Functions**
  - Preventing **practices having adverse effect on competition.**
    - **e.g., Imposition of penalty on Google,** in 2022, for abusing its dominant position in Android Mobile device ecosystem.
  - Promoting and sustaining **competition in markets.**
    - **e.g., CCI's probe against Apple** for forcing 'app developers' to use its in-app payment solution.
  - Protecting the **interest of consumers.**
  - **Ensuring freedom of trade** carried on by other participants in markets in India.
- It is also required to give **opinion on competition issues** on a **reference received from a statutory authority** established under any law.

Challenges with CCI

- **Jurisdictional issues:** Regulatory **overlap with sectoral regulators** like TRAI for Telecom, SEBI for Securities market, etc.
- **Ensuring competition in Digital space:** Traditional methods of assessing market power based on market shares may not be sufficient in the digital space due to network effects, cross border issues, etc.

Way Forward

There is a need to **clearly delineate roles, responsibilities and jurisdictions of CCI** w.r.t. other sectoral regulators, improve **understanding of unique dynamics and business models in digital space,** etc., to improve effectiveness of CCI.

European Council gives final approval to the rules on Artificial Intelligence (AI)

Rules, first of its kind in the world, aim to foster the **development and uptake of safe and trustworthy AI systems** across the European Union (EU) and ensure **respect of fundamental rights** of EU citizens.

Key highlights of the legislation

- **Follows a 'risk-based' approach,** which means higher the risk of causing harm to society, stricter the rules.
- **Defines 4 levels of risk for AI systems**
  - **Unacceptable risk (Prohibition):** Violation of EU Fundamental Rights.
  - **High-risk (Require conformity assessment and monitoring):** Impact on health, safety Fundamental Rights, etc.
  - **Specific Transparency risk (Require Information and transparency obligations):** Risk of manipulation, impersonation, etc.
  - **Minimal risk (No specific regulations):** Common AI systems like spam filters.
- **General Purpose AI (GPAI):** GPAI models not posing systemic risks will be subject to limited requirements but those with systemic risks will have to comply with stricter rules.
- **Tackling racial and gender bias:** High-risk systems need to be trained with sufficiently representative datasets to minimize risk of biases.
- **Banned applications of AI:** Biometric categorization systems based on sensitive characteristics, scraping of facial images from the internet to create facial recognition databases, emotion recognition in the workplace and educational institutions, etc.

Other measures for regulation of AI (Globally)

- **Bletchley Declaration, 2023 (India is a signatory):** To comprehensively and collaboratively address the risks and responsibilities involved in AI by concentrating more on fostering scientific cooperation.
- **Global Partnership on AI Ministerial Declaration (New Delhi Declaration), 2023:** Built consensus among GPAI members on advancing safe, secure, and trustworthy AI.
- **Hiroshima AI Process** by G7 nations to determine way forward on regulation of AI.

Also in News

Arab League

At a recently held Arab League Summit, UN chief appealed for the Gaza ceasefire and regional unity.

About Arab League (League of Arab States):

- It is an **intergovernmental organization** encompassing all Arab states in Middle East and North Africa.
- **Genesis:** Established in Cairo, Egypt, in **1945** following adoption of **Alexandria Protocol in 1944.**
- **HQ:** Cairo, Egypt.
- **Mandate:** Strengthening relations between member states, coordination of policies, and cooperation on political, security, economic and legal issues.
- **Members:** 22 member states **(India has observer status).**

Copernicus EMS

European Union (EU) activated its **Copernicus Emergency Management Service (EMS)** to locate the helicopter carrying Iranian President.

About Copernicus EMS

- It is being implemented by the European Commission since 2012 as part of the **Copernicus Programme.**
  - Copernicus is EU's Earth observation programme.
- It supports all actors involved in **management of natural or man-made disasters** by providing geospatial information.
- **It has two components:**
  - **On-demand Mapping –** Rapid Mapping (provides geospatial information within hours or days of service request), and Risk and Recovery Mapping.
  - **Early Warning and Monitoring –** Floods, Forest Fires and Droughts.

Project Udbhav

An event was held in New Delhi under Project Udbhav.

About Project Udbhav

- Launched in **2023**, it is collaboration between the **Indian Army** and the **United Service Institution of India** (USI).
- It aims to **effectively integrate** ancient wisdom with contemporary military practices, forging a unique and holistic approach to address modern security challenges.
- It aims to facilitate in-depth **understanding of Indian knowledge systems and philosophies** and comprehend their enduring connect, relevance and applicability in modern day.
  - ⊖ For instance, Literature like **Chanakya's Arthashastra** underscores the importance of **strategic partnerships, alliances and diplomacy,** aligning with modern military practices.

Ferroptosis

A new study by researchers at Columbia found that Ferroptosis is major cell death mechanism that underlies COVID-19 lung disease.

About Ferroptosis

- It is an **intracellular iron-dependent** form of cell death which is usually **accompanied by a large amount of iron accumulation** and **lipid peroxidation** during the cell death process.
- Studies have shown that ferroptosis is **closely related to pathophysiological processes of many diseases,** such as tumors, nervous system diseases, kidney injury, etc.

Other forms of cell death include **apoptosis (**process of programmed cell death), **necrosis** (death of tissue due disease or injury), **and autophagy** (eukaryotic cellular recycling process).

Naegleria Fowleri

A girl from Malappuram in Kerala has recently died of infection from Naegleria Fowleri.

About Naegleria Fowleri

- It is an **amoeba (a type of unicellular organism)** that thrives in **soil, warm freshwater lakes, rivers, and hot springs.**
- If amoeba reaches the nose and brain, it can result in infection called **Primary Amoebic Meningoencephalitis (PAM).**
- It is often called the "**brain-eating amoeba**" because it **can infect the brain and destroy brain tissue.**
  - ⊖ **Brain infections** caused by Naegleria Fowleri are r**are but nearly always fatal.**

Travel & Tourism Development Index, 2024

Travel & Tourism Development Index (TTDI), 2024 was released by the **World Economic Forum (WEF).**

About TTDI, 2024

- TTDI **measures the set of factors and policies** that enable the **sustainable and resilient development of Travel and Tourism.**
- It is the second edition of an index that evolved from the Travel & Tourism Competitiveness Index (TTCI) series.
  - ⊖ **TTCI is flagship index of WEF** that has been in production since 2007.
- **India's rank** improved to **39 in 2024** from **54 in 2021.**

R21/Matrix-M

Serum Institute of India (SII) has started exporting **R21/Matrix-M malaria vaccine to Africa.**

- Malaria is a **life-threatening disease** caused by a **single-cell parasite of genus Plasmodium** spread to humans by some types of mosquitoes.

About R21/Matrix-M

- Developed by University of Oxford and the SII, leveraging Novavax's **adjuvant technology** (used with **vaccines to augment** the immune response.)
- It is the **second malaria vaccine** recommended by WHO in 2023, after RTS,S/AS01 vaccine.
- It acts against **P. falciparum,** the deadliest malaria parasite and the most prevalent on the African continent.

Sovereign Artificial Intelligence (AI)

India is aiming to develop its own sovereign AI.

About Sovereign AI

- Sovereign AI embodies a **nation's ability to independently develop, deploy, and govern AI technologies.**
- It aims at bolstering a nation's ability to protect and advance its interests through the **strategic use of AI.**
- It is based on **digital sovereignty framework.**
  - ⊖ Digital sovereignty refers to ability to **have control over own digital technologies.**
- **Six strategic pillars** guiding development of sovereign AI include digital infrastructure, workforce development, research, development and innovation, regulatory and ethical framework, stimulating AI industry and international cooperation.

Personality in news   📰 Bipin Chandra Pal (1858-1932)

Eminent freedom fighter and nationalist leader Bipin Chandra Pal was remembered on his death anniversary.

About Bipin Chandra Pal

- Born in **Sylhet** district (now in Bangladesh).
- He was one of the **triumvirates** of the three great **extremist nationalist freedom fighters,** popularly known as "**Lal Bal Pal".**

Key Contributions

- He popularized the concepts of **Swadeshi** and **Swaraj** (complete independence).
- Preached '**composite patriotism**' as against Bal Gangadhar Tilak's Hindu nationalism.
- Was **imprisoned for 6 months** in the Bande Mataram sedition case.
- Wrote on the **philosophy of Bengal Vaishnavism.**
- **Important publications: Bande Mataram** (daily), **New India** (Weekly Journal), **Hindu Review** (Monthly)

Values: Nationalism, Patriotism, Secularism, Rationalism, etc.

AHMEDABAD   BENGALURU   BHOPAL   CHANDIGARH   DELHI   GUWAHATI   HYDERABAD   JAIPUR   JODHPUR   LUCKNOW   PRAYAGRAJ   PUNE   RANCHI