
Prelims Exam Topics

RIBOCICLIB

Context

The **Kerala High Court** recently allowed a breast cancer patient to be impleaded in a case concerning the **high price of Ribociclib**, a life-saving breast cancer medicine.

About Ribociclib

- **Nature:** An anticancer medicine used with **hormone therapy** to treat certain types of breast cancer.
- **Drug Class:** Belongs to **CDK4/6 inhibitors**, which block enzymes involved in cell growth and division.
- **Uses:** Used in **locally advanced, advanced and metastatic breast cancer**.
- **Combination Therapy:** It is generally administered along with a **hormonal therapy** rather than used alone.

PERIYAR KULLAN

Context

The **ICAR-National Bureau of Animal Genetic Resources (ICAR-NBAGR)** has recognised **Periyar Kullan** as Kerala's **second indigenous cattle breed**, after Vechur.

About Periyar Kullan

- **Distribution:** Mainly found in **central Kerala**,
- **Management System:** Adapted to **semi-feral and silvopastoral conditions**, often grazing in plantations and forest-fringe areas.
- **Appearance:** Typically has a **dark-brown coat** and a wandering grazing habit.
- **Horns:** Some animals have horns that **curve downward around the ears**, a distinctive trait requiring further study.

INDIAN STAR TORTOISE

Context

216 rescued Indian Star Tortoises were recently rehabilitated in Tadoba-Andhari Tiger Reserve (TATR) after being rescued from Mumbai and Thane.

About Indian Star Tortoise

- **Habitat:** Found mainly in **dry regions and scrub forests**.
- **Distribution:** Native to parts of the **Indian subcontinent**, including western and southeastern India, and **Sri Lanka**.
- **Star Pattern:** Named for the **star-like patterns on its shell**, which help break its body outline and provide camouflage.
- **Size:** Can grow up to about **10 inches**; females are generally **larger than males**.
- **Activity:** Mainly **crepuscular**, becoming active during the early morning and late afternoon.
- **Behaviour:** Generally **solitary** and does not hibernate; may remain inactive during extreme heat, dryness or cold.
- **Conservation Status:**
 - **IUCN Red List:** Vulnerable,
 - **WPA:** Schedule I.

NILGIRI BIOSPHERE RESERVE

Context

Researchers have warned that **climate change is destabilising forest ecosystems** in the Nilgiri Biosphere Reserve of the Western Ghats.

About Nilgiri Biosphere Reserve

- **Location:** Spans the **Nilgiri Mountains of the Western Ghats** across **Tamil Nadu, Kerala and Karnataka**.
- **Establishment:** Established in **1986** as **India's first biosphere reserve**.
- **UNESCO Status:** India's first biosphere reserve under UNESCO's **Man and the Biosphere (MAB) Programme**.

- **Protected Areas:** Includes **Mudumalai, Wayanad, Bandipur, Nagarhole, Mukurthi and Silent Valley** protected areas.
- **Vegetation:** Includes **tropical evergreen, semi-evergreen, moist and dry deciduous forests, montane sholas, grasslands and thorn forests.**
- **Fauna:** Supports **Nilgiri tahr, lion-tailed macaque, elephant, tiger, gaur, sambar and chital.**
- **Tribal Communities:** Home to indigenous communities including **Todas, Kotas, Irulas, Kurumbas, Paniyas and Cholanaickens.**

SMEW

Context

The **Smew**, a rare migratory waterbird, was recorded for the first time in **Laokhowa Wildlife Sanctuary, Assam.**

About Smew

- **Classification:** Medium-sized duck belonging to the **Anatidae** family.
- **Breeding Range:** Breeds mainly in the **northern taiga of Europe and Asia.**
- **Winter Range:** Winters around the **Baltic and Black Seas, Caspian Sea, East Asia and Japan;** an occasional visitor to the **Indian subcontinent.**
- **Habitat:** Found in **freshwater lakes, reservoirs, flooded forests, ice-free rivers, estuaries, lagoons and sheltered coastal waters.**
- **Bill:** Narrow, hooked bill with **tooth-like edges**, adapted for catching fish.
- **Sexual Dimorphism:** Male is mainly **white with a black mask and back;** female is **grey with a reddish-brown head and white cheek.**
- **Feeding:** A diving duck that **pursues prey underwater**, mainly fish.
- **Conservation Status:** IUCN Red List: **Least Concern.**

Laokhowa Wildlife Sanctuary

- **Location:** Located in **Nagaon district, Assam**, on the southern bank of the **Brahmaputra River.**
- **Landscape:** Part of the **Laokhowa-Burachapori ecosystem** and a buffer of the **Kaziranga Tiger Reserve.**
- **Vegetation:** Includes **alluvial grasslands, alluvial forests, moist deciduous and tropical semi-evergreen forests.**

- **Fauna:** Supports **one-horned rhinoceros, elephants, tigers, Asiatic water buffalo** and over **225 bird species**.

REGENERATIVE AGRICULTURE

Context

Regenerative agriculture is gaining policy attention in India amid declining **soil health, water stress and climate variability**.

About Regenerative Agriculture

- **Nature:** A farming approach that focuses on **restoring soil health, biodiversity and ecosystem functions**, rather than merely maintaining existing conditions.
- **Objective:** Improve **soil fertility, water retention, biodiversity and climate resilience** while supporting long-term farm productivity.

How Does It Work?

- **Bio-Inputs:** Uses farm-based inputs such as **Beejamrut, Jeevamrut, GhanJeevamrut and Neemastra** to support soil microbial activity and natural pest management.
- **Soil Cover:** Uses **cover crops, mulching and green manuring** to reduce erosion, retain moisture and add organic matter.
- **Farm Diversification:** Integrates **crops, livestock, agroforestry, horticulture, fisheries and apiculture** to diversify income and reduce crop-failure risks.
- **Water Management:** Promotes **drip and sprinkler irrigation** to improve water-use efficiency and reduce runoff.

Key Principles

- **Minimal Soil Disturbance:** Limits excessive tillage to preserve **soil structure and microbial life**.
- **Year-Round Soil Cover:** Maintains continuous vegetation or mulch to protect soil from **erosion and moisture loss**.
- **Crop-Livestock Integration:** Uses **livestock manure and biomass** as natural sources of soil nutrients.
- **Lower Chemical Dependence:** Reduces reliance on **synthetic fertilisers and pesticides** through biological and natural alternatives.

EXERCISE UDARA SHAKTI 2026

Context

The **Indian Air Force (IAF)** concluded its participation in **Exercise Udara Shakti 2026** in Malaysia after deployment at **Exercise Pitch Black 2026** in Australia.

About Exercise Udara Shakti

- **Nature:** Biennial bilateral air-combat exercise between the **Indian Air Force (IAF)** and **Royal Malaysian Air Force (RMAF)**.
- **Objective:** Strengthen defence cooperation, tactical interoperability and joint air-combat capabilities.
- **Dissimilar Air Combat Training:** IAF **Rafale** fighters train against Malaysian **Su-30MKM** and **F/A-18D Hornet** aircraft, enabling combat experience against different platforms.

NATIONWIDE CLOUD AND AI SKILLING INITIATIVE

Context

The **National Skill Development Corporation (NSDC)** and **Cultus Education**, with support from **Amazon Web Services (AWS)**, have launched a nationwide **Cloud and AI** skilling initiative.

About Nationwide Cloud and AI Skilling Initiative

- **Nature:** Fully online skilling programme focused on building **cloud and AI skills**, particularly among youth in **Tier-2 and Tier-3 towns**.
- **Nodal Agency:** NSDC under the **Ministry of Skill Development and Entrepreneurship (MSDE)**, with AWS as the technology partner.
- **Objective:** Provide industry-relevant skills, certifications and **access to technology-sector employment**.
- **Foundational Training:** **1.5 lakh learners** receive self-paced training in **cloud concepts and AI fundamentals** through AWS digital content.
- **Advanced Training:** **10,000 selected learners** undergo free, instructor-led **AWS re/Start** training.
- **Curriculum:** Covers **Linux, cloud architecture, networking, cybersecurity, Python, databases and AI fundamentals**.
- **Practical Learning:** Includes **scenario-based labs, capstone projects and mentorship**.

- **Certification & Jobs:** Supports AWS certification, followed by a national hackathon and employer interview opportunities.



Mains Exam Topics

MANUAL SCAVENGING

Context

The **Ministry of Social Justice and Empowerment** has proposed expanding the **NAMASTE Scheme** beyond urban areas to cover **rural regions** as well. The proposed expansion would also bring **drain cleaners and workers in sewage treatment plants (STPs) and faecal sludge treatment plants (FSTPs)** within the scheme, widening the focus from identified manual scavengers to a broader group of workers engaged in hazardous sanitation activities.

What explains the persistence of manual scavenging in India despite its legal prohibition?

- **Caste-Based Occupation:** Caste discrimination can restrict access to other jobs and push particular communities towards sanitation work across generations.
- **Weak Enforcement:** The law cannot eliminate the practice when local authorities fail to identify violations, monitor sanitation work and hold offenders accountable.
 - e.g., The Government reported **123 FIRs for hazardous sewer and septic-tank cleaning between January 2023 and June 2026**. The continued registration of such cases shows that prohibited hazardous cleaning still occurs despite the 2013 law.
- **Contractual Diffusion:** Outsourcing sanitation work can make it unclear who is responsible for unsafe practices, allowing municipalities and contractors to shift responsibility to each other.
- **Different Definitions:** Manual scavenging and hazardous sewer/septic-tank cleaning are separate legal categories, so focusing on only one can understate the wider sanitation-safety problem.
 - e.g., The 2024-25 survey found **zero manual scavengers**, while NAMASTE separately validated **89,915 sewer and septic-tank workers**. The two figures measure different categories and therefore cannot be treated as evidence that all hazardous sanitation work has disappeared.
- **Sanitation-Infrastructure Deficit:** Poorly designed or poorly maintained sanitation systems can continue to create situations where workers are asked to perform hazardous tasks despite the legal ban.

What are the limitations of mechanisation in eliminating hazardous sanitation work in India?

- **Limited Machine Availability:** Mechanisation cannot eliminate hazardous work where suitable machines are not available at the location and scale required.

- **Poor Infrastructure:** Machines are less effective where local sewer and septic infrastructure is not designed or accessible for mechanised cleaning.
- **Lack of Skills:** Machines require trained workers who can operate them safely; equipment by itself does not eliminate occupational risk.
- **Poor Maintenance:** Mechanisation cannot remain effective if equipment is not maintained and sanitation operations are not continuously supported.
- **Weak Local Capacity:** Mechanisation does not prevent hazardous work when local authorities fail to organise and regulate sanitation operations properly.

Why has rehabilitation failed to consistently break the intergenerational cycle of sanitation work in India?

- **Low Alternative Income:** Workers may return to sanitation work when alternative jobs do not provide a stable and sufficient income to support the family.
- **Skills Without Jobs:** Training alone does not help workers leave sanitation work unless it leads to an actual job or a viable business.
 - e.g., Between 2023-24 and 2025-26, **5,632 manual scavengers and dependants received skill training, but only 483 received capital subsidy for alternative self-employment**, showing that training does not automatically translate into livelihood opportunities.
- **Limited Market Access:** Starting a new business is difficult when workers lack customers, credit and local business networks.
 - e.g., NAMASTE supports **Self-Help Groups and entrepreneurship along with capital assistance**, showing that financial support alone may not be enough to make alternative businesses sustainable.
- **Caste Discrimination:** Caste stigma can make it difficult for rehabilitated workers to enter other occupations and be accepted in society.
- **Family-Level Poverty:** Rehabilitating one worker may not break the cycle if the entire family remains economically vulnerable.
 - e.g., NAMASTE extends **skill and livelihood support to dependants**, showing that rehabilitation must cover the family rather than only the identified worker.
- **Fragmented Support:** Rehabilitation becomes weak when cash, skills, health care and livelihood support are given separately without ensuring that the worker actually moves into a stable alternative occupation.

- e.g., NAMASTE combines **profiling, health insurance, skill training, capital subsidy and entrepreneurship support**, reflecting the need for a complete rehabilitation pathway rather than isolated benefits.

Way Forward

- **Measure Real Elimination:** Use **zero hazardous human entry and zero sanitation deaths** as the ultimate indicators of success, rather than relying only on the number of identified manual scavengers.
- **Expand Mechanisation:** Provide ULBs with suitable machines, trained operators, maintenance support and Emergency Response Sanitation Units.
- **Fix Public Accountability:** Keep the responsible municipality or public authority accountable even when sanitation work is outsourced.
- **Upgrade Infrastructure:** Improve sewer systems, septic-tank design and faecal-sludge management so that hazardous human intervention is not required.
- **Link Skills to Livelihoods:** Combine training with productive assets, employment and market support, and track whether beneficiaries achieve sustained occupational exit.
- **Break the Caste–Occupation Link:** Combine rehabilitation with education, anti-discrimination measures and access to mainstream employment.
- **Integrate Data:** Maintain separate but linked data on **manual scavengers, sewer/septic-tank workers, hazardous cleaning incidents and deaths**.
- **Treat Deaths as Governance Failures:** Ensure compensation, accountability and corrective action after preventable sewer deaths.
 - e.g., The Supreme Court fixed **₹30 lakh compensation for sewer deaths** and directed rehabilitation of affected families, including employment, education and skill support.