DAILY CURRENT AFFAIRS 27-02-2026

Prelims Perspective

1. **Smew**
2. **RAMP Program**
3. **Peatlands**

Mains Perspective

4. **HPV vaccination Drive**
5. **Carbon Capture and Utilisation**

Smew

Syllabus: Prelims Bits – Species in news.

Context:

- **First-ever sighting** of the **Smew** recorded in the **Rowmari–Donduwabeels (Laokhowa)** buffer of the **Kaziranga Tiger Reserve**, Assam.
- Observation made during the **7th Waterbird Count**, indicating:
  - Possible **range extension**
  - Importance of **wetland conservation in Brahmaputra floodplains**
  - Role of Kaziranga beyond megafauna conservation

About Smew (Mergellusalbellus)

Basic Facts

- **Scientific name:***Mergellusalbellus*
- **Taxonomy:** Small **diving duck** belonging to the sawbill group (mergansers)
- **Described by:Carl Linnaeus** in **1758**

Habitat & Distribution

- **Breeding region:**
  - **Northern taiga forests** of **Europe and Palearctic Asia**
  - Requires **tree cavities** near freshwater bodies for nesting

- **Wintering region:**
  - **Baltic Sea**, **Black Sea**, northern Germany, Low Countries
  - Small populations reach **Great Britain**
  - Rare vagrant records in **South Asia**, hence Kaziranga sighting is significant
- **Preferred habitat:**
  - Fish-rich **lakes**, **slow rivers**, sheltered coastal waters

Key Identification Features

- **Size:** Small, compact diving duck with slender serrated bill
- **Male:**
  - Striking **white plumage** with black mask and black back
- **Female:**
  - Grey body with **rufous-brown head** and white cheek patch
- **Adaptation:**
  - Hooked, serrated bill helps in gripping fish during underwater pursuit

Conservation Status

- **IUCN Red List:** Least Concern
- However, threats include:
  - Wetland degradation
  - Loss of nesting trees
  - Climate-driven habitat shifts

RAMP Program

Syllabus: GS-3: Indian Economy – MSME sector.

Context:

- The **5th meeting of the National MSME Council** was recently held in **New Delhi** by the Ministry of MSME.
- Purpose: **Review progress of the World Bank-supported RAMP Programme** and strengthen Centre–State coordination.

About the Programme

- **Launched:** 2022

- **Ministry:** Ministry of Micro, Small & Medium Enterprises (MoMSME)
- **Duration:2022-23 to 2026-27 (5 years)**
- **Assistance:** Supported by the **World Bank**
- **Nature:** Central Sector reform programme aimed at **competitiveness and institutional strengthening of MSMEs**

Core Objectives

- Improve access to finance and markets for MSMEs
- Strengthen MSME institutions and governance at Centre & State levels
- Enhance Centre–State coordination and partnerships
- Address delayed payments faced by MSMEs
- Promote green and sustainable MSME transition

Institutional Mechanism

- **National MSME Council**
  - Administrative and functional apex body for RAMP implementation
- **Strategic Investment Plan (SIP)**
  - States receive **grants under RAMP** to prepare SIPs aligned with MSME reforms

Major Sub-Schemes

MSME GIFT Scheme

(Green Investment and Financing for Transformation)

- Supports **green technology adoption**
- Provides **interest subvention + credit guarantee support**
- Promotes **decarbonisation of MSMEs**

MSE SPICE Scheme

(Promotion and Investment in Circular Economy)

- Supports **circular economy projects**
- Provides **credit subsidy**
- Contributes to **Net-zero (2070) MSME transition**

MSE ODR Scheme

(Online Dispute Resolution for Delayed Payments)

- Uses **IT tools + AI-based dispute resolution**
- Addresses **payment delays to Micro & Small Enterprises**
- Improves **ease of doing business and liquidity**

Peatlands

Syllabus: GS-3: Ecosystem – Peatlands

Context:

- **Recent finding:** Researchers reported that **lakes Mai Ndombe and Tumba** in the **Democratic Republic of the Congo** are releasing **ancient carbon** stored in surrounding peatlands for thousands of years.
- **Concern:**
  - Drying and disturbance of peat deposits → microbial decomposition resumes → **CO_2 and methane emissions**.
  - Raises alarms about **climate feedback loops** and vulnerability of the **Congo Basin peat complex**, one of the world's largest tropical carbon sinks.

Peatlands — Concept

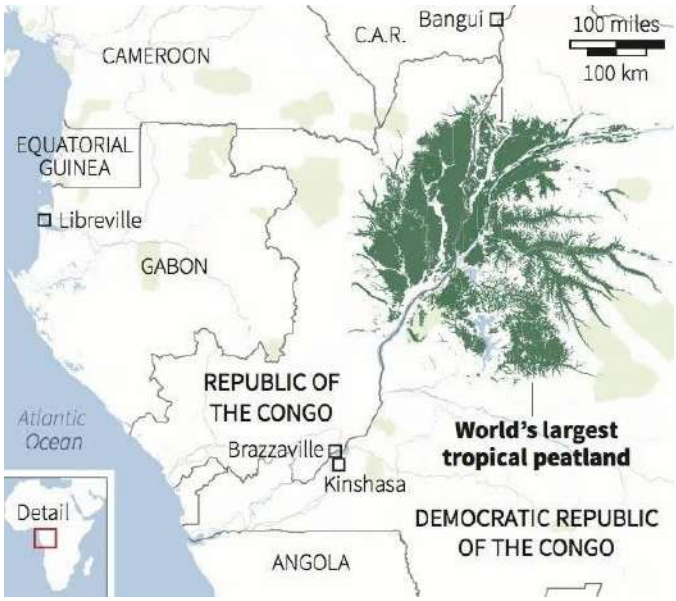
- **Definition:**
  - Peatlands are **terrestrial wetland ecosystems** where **waterlogged, anaerobic conditions** slow decomposition of plant material.
  - This leads to **net accumulation of partially decomposed organic matter (peat)**.
- **Peat formation mechanism:**
  - Organic production > decomposition
  - Oxygen deficiency inhibits microbial activity → carbon remains locked for millennia.

Vegetation Characteristics

- **Cool climates:**
  - Dominated by **Sphagnum mosses, sedges, shrubs** → major peat builders.
- **Warm (tropical) climates:**
  - **Graminoids and woody vegetation** supply most organic matter.

Distribution

- Majority located in **boreal and temperate Northern Hemisphere**.
- **Congo Basin peatlands:**
  - Cover only **~0.3% of global land area**
  - Yet store **≈ one-third of carbon in tropical peatlands** → extremely high carbon density.



Types of Peatlands

Northern / Temperate Peatlands

- Regions: **Europe, North America, Russia**
- Formation conditions: **High precipitation + low temperature**

Tropical Peatlands

- Regions: **Southeast Asia, Congo Basin (Africa), Central & South America, Caribbean, Australasia, Pacific islands**
- Often associated with **peat swamp forests**

Environmental Significance

- **Major carbon sink** — more carbon than all world forests combined (per unit area).
- **Climate regulation** and methane dynamics.
- **Hydrological regulation** — flood buffering and groundwater recharge.
- **Biodiversity hotspots** with many endemic species.

Threats

- Drainage for agriculture & plantations
- Peat fires (especially in Southeast Asia)
- Mining and infrastructure
- Climate-induced drying → carbon release (as highlighted in latest news)

Prelims Trap Points

- Peat is **partially decomposed plant material**, not fully humified soil.
- **Waterlogging preserves carbon; drying releases it.**
- Tropical peatlands are **smaller in area but extremely carbon-rich.**

HPV vaccination Drive

Syllabus: GS-2: Social Justice – Health Sector.

Context:

- In **February 2026**, the Union Government announced a nationwide HPV (Human Papillomavirus) vaccination drive to eliminate cervical cancer.
- **Target Group:** Initially focuses on **14-year-old girls** (approx. 1.15 crore girls annually).
- **Nodal Platform:** Managed via the **U-Win** digital platform (modelled after Co-Win).
- **Global Commitment:** Aligns with the WHO's **"90-70-90" Global Strategy** to eliminate cervical cancer by 2030 (90% girls vaccinated, 70% women screened, 90% patients treated).

The Disease Burden: Cervical Cancer in India

- **Statistics:** * **2nd** most common cancer among Indian women.
    - India contributes nearly **1/5th (20%)** of the global cervical cancer burden.
    - Approximately **1.25 lakh cases** and **75,000 deaths** are reported annually in the country.
- **The Cause:** Over 90% of cases are caused by persistent infection with **high-risk HPV strains** (primarily Types 16 and 18).
- **Prevention:** Unlike most cancers, cervical cancer is almost entirely **preventable** through vaccination and early screening (Pap smear/HPV DNA tests).

The Vaccine Profile

Feature	Details
Vaccine Type	**Quadrivalent** (protects against 4 strains: 6, 11, 16, and 18).
Current Choice	**Gardasil** (Manufactured by MSD/Merck).
Indigenous Option	**Cervavac** (Serum Institute of India) – India's first indigenous qHPV vaccine. Currently awaiting WHO pre-qualification and further ICMR data for single-dose efficacy.
Schedule	**Single-dose** (as per 2022 WHO SAGE recommendations for 9–20 year olds).
Supply	Supported by **GAVI (The Vaccine Alliance)** with a supply of 2.6 crore doses.

Implementation Framework (U-Win & Digital Health)

- **U-Win Platform:** A digital registry to track immunization status for every pregnant woman and child.
    - Ensures "Anywhere" access to vaccination services.
    - Generates **Digital Certificates** and automated reminders for beneficiaries.
- **Phased Rollout:** * **Phase 1:** 90-day intensive campaign targeting 14-year-olds.
    - **Phase 2:** Integration into the **Universal Immunisation Programme (UIP)** for routine delivery at Ayushman Arogya Mandirs (Health & Wellness Centres).

Why the Single-Dose Strategy?

- **Scientific Evidence:** WHO's Strategic Advisory Group of Experts (SAGE) found that a single dose offers comparable efficacy to the two-dose schedule in younger adolescents.
- **Logistic Ease:** Reduces the burden of tracking drop-outs for the second dose, making it easier to achieve 90% coverage in rural/remote areas.
- **Cost-Effectiveness:** Halves the procurement cost and doubles the available supply.

Challenges and Way Forward

- **Vaccine Hesitancy:** Misconceptions regarding reproductive health and vaccines can hinder uptake.
- **Consent Model:** Unlike other routine vaccines, the HPV drive follows an **"Opt-in" (Mandatory Consent)** model, requiring proactive parental approval.

- **Supply Security:** Shifting to the indigenous **Cervavac** is crucial for long-term sustainability and reduced dependency on GAVI/MSD.
- **Gender Neutrality:** While currently for girls, experts suggest extending it to boys (as done in Australia) to build **herd immunity** and prevent penile/anal/throat cancers.

Carbon Capture and Utilisation

Syllabus: GS-3: Environment – Climate Change

Context:

- **Definition:** CCU refers to the process of capturing Carbon Dioxide (CO_2) from industrial sources (power plants, cement, steel) or directly from the air and converting it into commercially viable products.
- **CCU vs. CCS (Carbon Capture & Storage):**
    - **CCS:** Focuses on permanent underground sequestration (storage) of CO_2. It is a "waste management" approach.
    - **CCU:** Reuses CO_2 as a raw material for fuels, chemicals, construction materials, or polymers. It is a **"Circular Economy"** approach.

Significance for India

- **Net-Zero Target:** Essential for India to achieve its **2070 Net-Zero** goal.
- **Decarbonizing "Hard-to-Abate" Sectors:** While renewables work for the power sector, industries like **Cement, Steel, and Chemicals** have process-related emissions that cannot be replaced by electricity alone.
- **Economic Value:** Converts a liability (emissions) into an asset (fuels/chemicals), creating new industrial value chains.
- **Energy Security:** Producing synthetic fuels from captured CO_2 can reduce India's dependence on crude oil imports.

Key Recent Developments in India

- **Policy Roadmap:** * **Department of Science & Technology (DST):** Developed a dedicated R&D roadmap for CCU.
    - **Ministry of Petroleum and Natural Gas:** Released the **2030 CCUS Roadmap** identifying potential project sites and clusters.
- **Pioneering Pilot Projects:**
    1. **Ambuja Cements (Adani Group):** Collaborating with IIT Bombay and Sweden to convert captured CO_2 into fuels.

2. **JK Cement:** Developing a testbed for using CO_2 in lightweight concrete and olefins.
3. **Organic Recycling Systems Ltd (ORSL):** India's first pilot **Bio-CCU platform**, converting CO_2 from biogas into bio-alcohols and specialty chemicals.

Global Perspectives

- **European Union:** Integrates CCU into its *Circular Economy Action Plan*.
- **USA:** Provides massive incentives through **tax credits** (e.g., Section 45Q) and public funding for CO_2-derived products.
- **UAE:** The **Al Reyadah project** is a global benchmark, integrating CCU with Green Hydrogen to decarbonize heavy industry.
- **China:** Focusing on large-scale coal-to-chemical CCU projects.

Challenges and Risks

- **High Costs:** The technology is energy-intensive. Without a high **Carbon Tax** or subsidies, CCU products are more expensive than fossil-fuel-based products.
- **Energy Penalty:** The process of capturing and converting CO_2 requires significant energy, which, if not sourced from renewables, can lead to more emissions.
- **Infrastructure Gaps:** Need for specialized CO_2 transport pipelines and industrial clusters where capture and utilization happen in proximity.
- **Regulatory Void:** Lack of standardized certification for "Green CO_2" products makes market adoption difficult.

Way Forward

- **Financial Incentives:** Government should introduce Production Linked Incentives (PLI) for CCU-based products.
- **Hub and Spoke Model:** Developing **Industrial Clusters** (e.g., in Gujarat or Odisha) where multiple factories share CO_2 transport and utilization infrastructure.
- **Public-Private Partnership (PPP):** Collaborative R&D between institutions like IITs and private giants (Reliance, Tata, Adani) to bring down costs.
- **Standardization:** Establishing clear carbon accounting rules to verify the emissions reduced through CCU.

Practice Qs:

Q. "CCU turns a climate threat into an economic opportunity." Discuss this statement in the context of India's industrial growth and climate commitments. (150 words)