DAILY CURRENT AFFAIRS 24-04-2025

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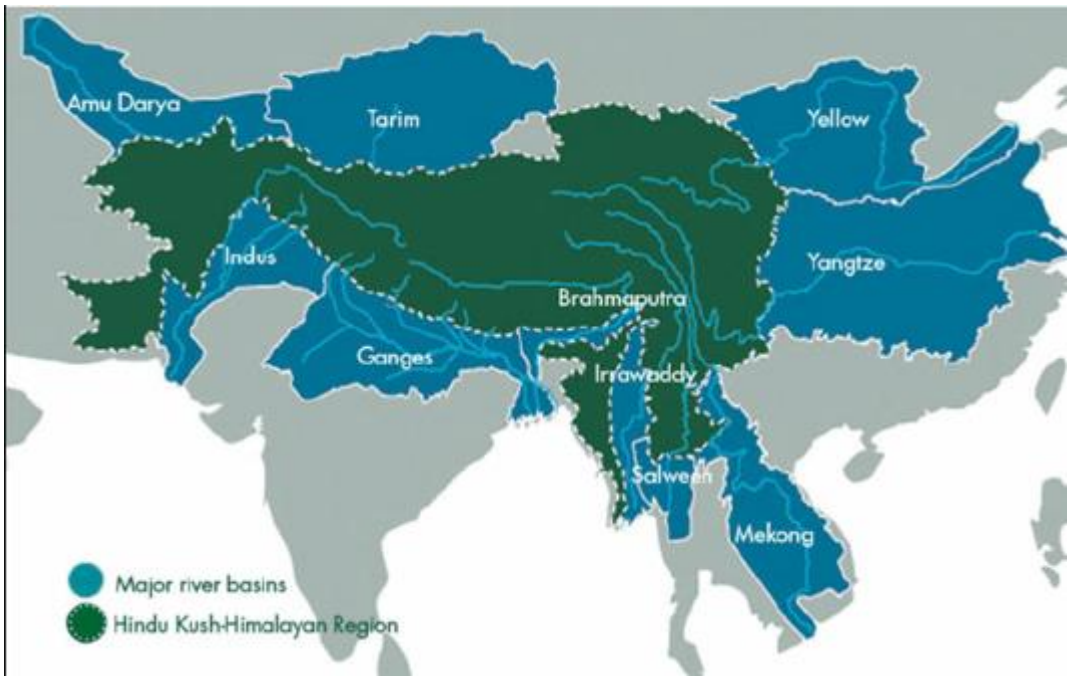
Hindu Kush Himalaya

Syllabus: GS-1; Geography

Context

- The HKH region recorded its **lowest snow persistence** in 23 years during the 2024–2025 winter, according to a recent scientific report.
- Snow persistence is critical for spring water flows, agriculture, hydropower, and disaster risk reduction.
- This decline highlights the urgent impact of climate change on **cryospheric systems**.



About

- The Hindu Kush Himalaya (HKH) region is a massive mountain system extending about 3,500 km across **8 countries: Afghanistan, Bangladesh, Bhutan, China, India, Nepal, Myanmar, and Pakistan.**
- It covers an area of approximately 4.2 million square kilometers.
- The region is often referred to as the **"Third Pole**" due to its vast ice reserves—the largest outside the Arctic and Antarctic.

Geographical Features

- **Orientation:** Runs northeast to southwest.

- **Northern Border**: Amu Darya (Oxus River) Valley.
- **Southern Border:** Indus River Valley.
- **Eastern Extent:** Connects to the Pamir Knot, where the borders of China, Afghanistan, and Pakistan meet.
- **Highest Peak:** Tirich Mir (7,708 meters or 25,289 feet), located in Chitral, Pakistan.
- **Subdivisions:** Eastern Hindu Kush, Central Hindu Kush, and Western Hindu Kush (also known as Bābā Mountains).
- **Inner Valleys:** Receive little rainfall and feature desert vegetation due to rain shadow effect.

Ecological and Environmental Significance

- The region includes **four global biodiversity hotspots**.
- Ecosystems found in the HKH include glaciers, alpine meadows, forests, grasslands, and wetlands.
- The HKH is the source of ten major Asian rivers: **Amu Darya, Indus, Ganges, Brahmaputra, Irrawaddy, Salween, Mekong, Yangtze, Yellow River, and Tarim.**
- Supports the livelihoods of 240 million people in the mountains and provides water for 1.9 billion people downstream, which is about one-fourth of the global population.
- Critical for water security, agriculture, energy production, and biodiversity conservation.

Climate Change Concerns

- The HKH is warming faster than the global average.
- Rapid glacial retreat threatens long-term water availability and regional climate stability.
- Climate impacts include biodiversity shifts, increased frequency of extreme weather events such as floods and landslides, and higher risks of glacial lake outburst floods (GLOFs).

Key Institutions and Initiatives

- **ICIMOD (International Centre for Integrated Mountain Development):** Coordinates regional cooperation for sustainable development in the HKH.
- **HKH Call to Action:** Global campaign to protect the region's ecosystems.
- **South Asia Water Initiative (SAWI):** Promotes cross-border collaboration on water and climate.

Vice President of the United States

Syllabus: GS-2; Polity

Context

- U.S. Vice President JD Vance visits India

Constitutional Basis:

- **Article I, Section 3** and **Article II, Section 1** of the **U.S. Constitution** define the office.
- Also shaped by **12th and 25th Amendments**.

Election & Tenure:

- **Elected indirectly** along with the President through the **Electoral College**.
- Serves a **4-year term**; no term limit.
- Runs on a **joint ticket with the President** (since the 12th Amendment).
- **25th Amendment (1967)** allows the President to nominate a new VP if the office becomes vacant (with majority confirmation by both houses of Congress).

Eligibility:

- Must be:
  - A **natural-born citizen** of the U.S.
  - At least **35 years old**
  - Resident in the U.S. for at least **14 years**

Powers and Functions:

1. **President of the Senate:**
   - Presides over Senate proceedings.
   - **Casts tie-breaking vote** in the Senate (important legislative power).
2. **Succession to Presidency:**
   - First in the **line of succession** to the Presidency.
   - Becomes **Acting President** in case of President's death, resignation, or removal.
3. **Ceremonial Duties:**
   - Represents the U.S. in diplomatic events.
   - Performs other functions assigned by the President.
4. **Role in Executive Branch:**

- Member of the **National Security Council**.
- Often involved in key **policy discussions**, though actual influence varies by administration.

Comparison with India's Vice President:

Feature	India	U.S.
Election	Indirect, by electoral college (MPs only)	Indirect, via Electoral College (with President)
Term	5 years	4 years
Tie-breaking Vote	In Rajya Sabha	In Senate
Executive Role	No formal executive role	Member of National Security Council
Succession	Acts as President in absence	Becomes President permanently

SpaDeX Mission

Syllabus: GS-3; Space Technology

Context

- **ISRO successfully completed the second docking** of **SDX01 (Chaser)** and **SDX02 (Target)** satellites.
- **India becomes the 4th country** (after **USA, Russia, and China**) to demonstrate **autonomous docking** technology.

About

Mission Details

- **Mission Name**: **SpaDeX (Space Docking Experiment)**
- **Conducted by**: **ISRO**
- **Launch Vehicle**: **PSLV-C60**
- **Orbit**: 460 km **circular orbit** with **45° inclination**
- **Satellites**:
  - **SDX01 (Chaser)**: Approaches and docks with the target.
  - **SDX02 (Target)**: The spacecraft designed to be docked by the chaser.
  - Both satellites weigh approximately **220 kg** each.

Objectives of the SpaDeX Mission

Primary Objective:

- **Demonstrate autonomous rendezvous**, docking, and undocking in **Low Earth Orbit (LEO)**.

Secondary Objectives:

- **Power Transfer**: Demonstrate transfer of electric power between docked spacecraft, essential for **space stations** and **orbital refueling**.
- **Spacecraft Control Systems**: Develop and validate composite control systems for coordinating the operation of spacecraft during docking and undocking.
- **Payload Operations**: Test payload functionality and operations after undocking, crucial for future deep-space exploration missions.

Significance of the SpaDeX Mission

- **Strategic Milestone**: India joins the **elite group of spacefaring nations** (USA, Russia, China) with the ability to perform autonomous docking.
- **Support for Human Spaceflight**: Vital for **Gaganyaan** mission and future **Indian space stations**.
- **Indigenous Technology**: Fully developed by ISRO, demonstrating India's growing **self-reliance** in space technology.
- **Future Space Infrastructure**: Key enabler for **orbital refueling**, **orbital servicing**, and **space station assembly**.

Why SpaDeX Matters for India and Space Technology

- **Global Standing**: Puts India on par with leading space nations in terms of autonomous docking technology.
- **Critical for Future Missions**: Supports **Gaganyaan**, **space stations**, and technologies like **orbital refueling** and **spacecraft repair**.
- **Self-Reliance**: A demonstration of ISRO's **capabilities in space exploration** and a step toward more advanced space missions.

Yak

Syllabus: GS-3; Species in news

Context

- Nepal celebrated its first National Yak Day on April 20, 2025.

About

- Yaks are long-haired bovines native to the high-altitude Himalayan region and the Tibetan Plateau.
- They are a vital part of the socio-economic and cultural fabric of mountain communities and play a significant role in the ecology of alpine ecosystems.

Scientific Classification

- **Domesticated Yak**: *Bos grunniens*
- **Wild Yak**: *Bos mutus*

Habitat and Geographic Distribution

- **Altitude**: 5000 to 7000 meters
- **Habitat Types**: Alpine tundra, alpine meadows, alpine steppes, and desert steppes
- **Global Range**: Himalayan region, Tibetan Plateau, Mongolia, and parts of South-Central Asia
- **In India**: Found in Arunachal Pradesh, Sikkim, Himachal Pradesh, Uttarakhand, and the union territories of Jammu & Kashmir and Ladakh

Physical and Biological Adaptations

- Wild yaks stand about 2 meters tall at the shoulder; domesticated yaks are smaller

- Covered in long, shaggy hair for insulation against cold
- Possess curved horns, with males having larger horns
- Adapted to high-altitude environments:
  - Lung capacity nearly three times that of cattle
  - Smaller red blood cells for better oxygen transport
- Herbivorous, feeding primarily on alpine grasses and plants

Socio-Economic and Cultural Importance

- Yaks are central to the livelihoods of high-altitude pastoralists
- Used for:
  - **Milk** and **meat**
  - **Transport of goods** over mountain passes
  - **Trekking and climbing expeditions** (capable of reaching altitudes of 20,000 feet)
- Yak milk is rich in fat and used to produce butter and cheese (e.g., *chhurpi*)
- **Crossbreeding** with domestic cattle yields hybrids such as **dzo** or **chauri gai**, which are used in agropastoralism across altitudinal gradients
- Integral to the cultural identity of communities like the Brokpa, Changpa, and Dokpa tribes in India

Conservation Status

- **Wild Yak**: Listed as **Vulnerable** on the IUCN Red List
- Threats include:
  - Crossbreeding and genetic dilution
  - Shrinking alpine pastures
  - Climate change and rising temperatures
  - Changing livelihood patterns among pastoralists

Institutional Support and Research

- **National Research Centre on Yak (NRCY)**: Located in **Dirang, Arunachal Pradesh**
  - Works on genetic improvement, disease control, and conservation of yaks