

Today's Prelims Topics

QS 2026 rankings

Context

QS World University Rankings 2026 are out, with **Indian institutions showing remarkable improvement** and rising global competitiveness.

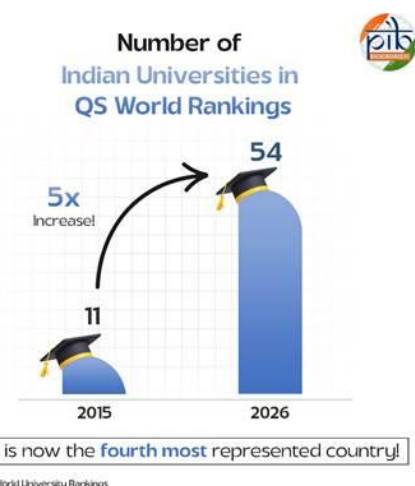
About QS Ranking

- An annual global ranking of universities that evaluates:
 - Academic performance
 - Employability
 - Sustainability
 - Global impact
- **Launched by:** Quacquarelli Symonds (QS), a UK-based global education services firm.
- **Objectives:**
 - Provide transparent insights into global university standings.
 - Guide students in selecting universities using multiple performance indicators.
 - Motivate universities to improve in research, teaching, internationalization, and impact.

India's Performance in QS Rankings 2026

- **54 Indian universities** featured in the QS Rankings 2026.
- **4th most represented country** after:
 - United States (192 universities)
 - United Kingdom (90 universities)
 - Mainland China (72 universities)
- **8 Indian universities** entered the rankings for the first time — the highest number of new entrants from any country this year.
- Indian universities in the QS rankings grew from **11 in 2015** to **54 in 2026** — a **five-fold increase** in just over a decade.
- **48% of India's ranked universities** improved their positions compared to the previous year.
- **Top-Ranked Indian Institutions:**
- **6 Indian institutions** are in the **global top 250**.
- **IIT Delhi** is the **highest ranked**, at **123rd globally** (up from 150th in 2025).
- **IIT Madras** showed a significant jump — **up 47 spots**, from 227 (2025) to 180 (2026).

Source: [TheHindu](https://www.thehindu.com)



NB.1.8.1 variant

Context

WHO monitors **NB.1.8.1 (Nimbus)** for rapid spread and severe sore throat cases.

More in News

- No confirmed cases in India yet.
- Subvariant XFG (Stratus) is also emerging.

About NB.1.8.1 (Nimbus)

- **Variant Name:** NB.1.8.1 (Nimbus)
- **Lineage:** Omicron descendant
- **First Detected:** January 2025
- **Main Symptom:** Extremely painful sore throat (“razor blade throat”)
- **Prevalence:** Made up 10.7% of global sequenced cases.
- **Symptoms (Omicron-like):** Cough, fever, fatigue, headache, congestion, muscle pain, nausea, loss of taste/smell, and in some—severe throat pain.
- **What Is “Razor Blade Throat”?**
 - Not a medical term—used to describe sharp, intense throat pain
 - Feels like swallowing glass shards
 - Seen in some viral and bacterial infections
- **Is Nimbus Dangerous?**
 - **WHO Risk:** Low
 - Mild to moderate illness
 - No major spike in hospitalizations or deaths
 - Vaccines still effective
- **Other Variant – XFG (Stratus):**
 - Fast-spreading Omicron subvariant
 - Not under WHO monitoring
 - Fewer cases than Nimbus

Source: [TheHindu](https://www.thehindu.com)

Energy Transition Index (ETI), 2025

Context

Recently, the Energy Transition Index (ETI) was released by the World Economic Forum.

Energy Transition Index (ETI)-2025

- **Purpose:** Assesses national energy systems and tracks progress in energy transition across 118 countries
- **Final Score:** Composite of two sub-indices:
 - **System Performance (60%)** – Measures equity, security, and sustainability
 - **Transition Readiness (40%)** – Includes:
 - **Core Enablers:** Regulation, political commitment, finance & investment
 - **Enabling Factors:** Innovation, infrastructure, education, and human capital
- **Top 5 Countries:**
 - Sweden
 - Finland
 - Denmark
 - Norway
 - Switzerland
- **Other Major Rankings:**
 - **China:** 12th
 - **USA:** 17th
 - **Pakistan:** 101st
 - **Congo:** Ranked lowest
- **India's Performance:** 71st
- **Progress in:**
 - Expanding energy access
 - Reducing energy intensity
 - Lowering methane (CH₄) emissions
 - Improving energy regulations
 - Attracting clean energy investments

Source: [TheWire](#)

Extreme Helium (EHe) stars

Context

Researchers have discovered a rare cosmic phenomenon in **star A980, an Extreme Helium (EHe) star**, which contains an unusually **high amount of germanium**—a metallic element never seen before in such stars.

About Extreme Helium Star (EHe Star)

- **Definition:** A rare, low-mass supergiant star almost completely lacking hydrogen.
- **Composition:** Made primarily of helium (**unlike typical stars which are hydrogen-rich**).
- **Origin:** Believed to form from the merger of a **carbon-oxygen white dwarf** and a **less massive helium white dwarf**
- **Rarity:** Only **21 such stars** have been identified in our galaxy so far
- **Temperature Range:** Effective surface temperatures range between **8,000–35,000 K**
- **Discovery:** The first EHe star, **HD 124448**, was discovered in **1942** at **McDonald Observatory** by **Daniel M. Popper**

About Germanium

- **Element Name:** Germanium (Symbol: **Ge**, Atomic Number: **32**)
- **Group:** Lies in **Group 14 (IVa)** of the periodic table, between **silicon** and **tin**
- **Appearance:** Silvery-gray **metalloid**, with intermediate properties of metals and nonmetals
- **Structure:** Has a **diamond-like crystalline structure**, chemically similar to silicon
- **Stability:** Stable in air and water; unaffected by most acids and alkalis except **nitric acid**
- **China:** Produces around **60%** of the world's germanium
- **Others:** Canada, Finland, Russia, and the United States contribute the remaining production.

Source: [PIB](#)

Rapamycin

Context

Scientists may have found a way to extend lifespan using two existing drugs, Rapamycin and Metformin, which mimic calorie restriction. Human trials are yet to begin.

About Rapamycin

- Rapamycin (sirolimus) is an FDA-approved drug known for inhibiting the mTOR (mechanistic Target Of Rapamycin) pathway.
- **Mechanism of Action:** suppresses cell growth, promotes autophagy, delays aging.
- **Effect on Lifespan (Animal Models):**
 - Extends lifespan in mice by 20–60%, even when started late in life (e.g., 3-month or 6-week treatment in middle-aged mice).
 - Lifespan extension is observed across species: yeast, worms, flies, mice.
- **Mode of Lifespan Extension:**
 - Primarily delays cancer development (neoplastic disease) but also slows aging processes via mTOR inhibition.
- **Healthspan Benefits:**
 - Improves muscle strength, motor coordination, cognitive performance, and reduces age-related dysfunction in rodents.
- **Treatment Regimens:**
 - Both chronic and intermittent dosing effective; short-term mid-life treatment can yield effects similar to lifelong use .
- **Translational Prospects:**
 - Preclinical data show lifespan and healthspan enhancement; human trials in older adults are limited and focus on safety, immune response, and biomarkers.
- **Caveats & Concerns:**
 - Being an immunosuppressant, risks include infection susceptibility, mouth ulcers, hyperlipidemia, insulin resistance.
 - Optimal dosing and timing (especially to minimize side effects) are still under investigation.

Source: [IndianExpress](#)

ENSO

Context

Scientists from the **CLIVAR Pacific Region Panel Working Group** have proposed an improved model for understanding and predicting ENSO called the **Recharge Oscillator (RO)** model.

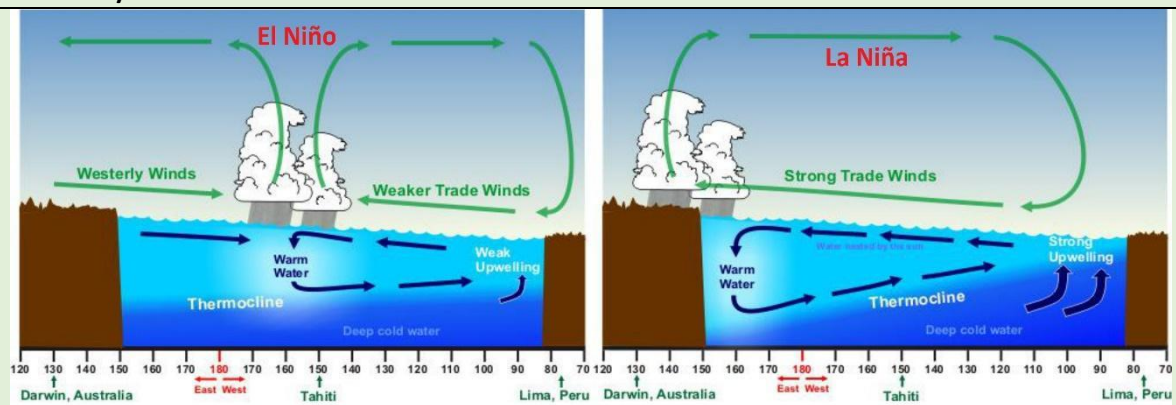
About the RO Model

- The **RO model** simplifies ENSO dynamics by focusing on **two key variables**:
 - Sea surface temperatures (SSTs)** in the central-eastern Pacific.
 - Subsurface warm water volume** in the western Pacific.
- The model suggests ENSO operates like a **see-saw** between these two factors — as **warm water "recharges" or accumulates** in the **west**, it sets up **conditions for a future El Niño**, and **vice versa for La Niña**.
- This approach may **improve predictability** by focusing on the **physical build-up and release cycles of ocean heat**, rather than more complex atmospheric interactions.

About El Niño–Southern Oscillation (ENSO)

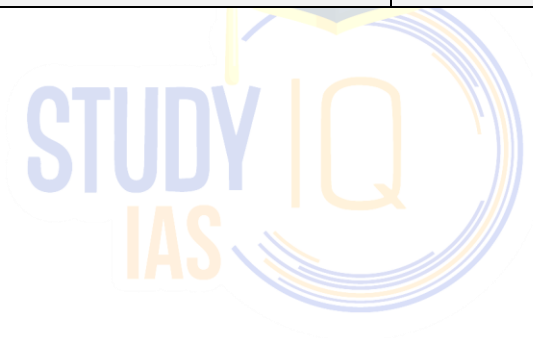
- The ENSO is a **recurring climate pattern** involving changes in the **temperature of waters** in the **central and eastern tropical Pacific Ocean**.
- On periods ranging from about **three to seven years**, the surface waters across a large swath of the tropical Pacific Ocean warm or cool by anywhere from **1°C to 3°C, compared to normal**.
- This oscillating **warming and cooling pattern**, referred to as the ENSO cycle, directly affects rainfall distribution in the tropics and can have a **strong influence on weather across the world**.
- ENSO has three phases**: El Niño, La Niña, and neutral, which are associated with **different temperature and atmospheric conditions**.
 - El Niño** occurs when the surface water temperature in the **eastern Pacific Ocean** becomes **warmer than usual**, and this warming can last for several months to a few years.
 - La Niña** occurs when the surface water temperature in the **eastern Pacific Ocean** becomes **cooler than usual**, and this cooling can also last for several months to a few years.
 - Neutral conditions** occur when the sea surface temperatures in the eastern Pacific Ocean are close to average, with **no significant warming or cooling**.

Difference between El Niño and La Niña

El Niño v/s La Niña		
		
Basis of comparison	El Niño	La Niña
Meaning	El Niño means Little Boy, or Christ Child in Spanish.	La Niña means Little Girl in Spanish.
Sea surface temperature	It represents the above-average sea-surface temperatures that periodically	It represents the periodic cooling of sea-surface temperatures across the

	develop across the east-central equatorial Pacific.	east-central equatorial Pacific.
Pressure	It is laden with high air surface pressure in the western Pacific .	It contain low air surface pressure in the eastern Pacific
Mechanism	During El Niño, trade winds weaken . Warm water is pushed back east, toward the west coast of the Americas, resulting in a weaker Walker cell.	During La Niña events, trade winds are even stronger than usual , pushing more warm water toward Asia, resulting in a stronger Walker cell.
Period of occurrence	Typically occur every 3-5 years and lasts 9-12 months .	Typically occur every 3-5 years and lasts 1-3 years .
Impacts	• Droughts in eastern Australia • Flooding in western South America • Weak upwelling over the west coast of South America.	• Excessive rainfall in the eastern Australia • Drought conditions prevail in the South America • Strong upwelling over the west coast of South America.
Impact on Indian Monsoon	The monsoon is affected so heavily that 70% reduction of the rainfall is expected. The winds doesn't carry the moisture towards Indian landmass during El Nino causing deficiency in rainfall.	La Nina causes high temperatures over the Indian Ocean, off the Somalian coast and a comparatively better monsoon rains in India .

Source: [The Hindu](#)



What happens if Iran chooses to leave the Nuclear Non-Proliferation Treaty?

Context

Amid the heightened military tensions between Iran and Israel, Iran stated that its Parliament was preparing a Bill to potentially leave the Treaty on the Non-Proliferation of Nuclear Weapons (NPT).

About Nuclear Non-Proliferation Treaty

- The **NPT**, signed in **1968** and in force from **1970**, is a **landmark international treaty** aimed at:
 - **Preventing the spread** of nuclear weapons and technology.
 - **Promoting peaceful uses** of nuclear energy through international cooperation.
 - Working towards **global nuclear disarmament**.
- **Key Provisions:**
 - Only five countries are recognized as **nuclear-weapon states (NWS)**: **USA, UK, France, Russia, and China** — defined as those that tested nuclear weapons before **1 January 1967**.
 - **Non-nuclear-weapon states (NNWS)** commit not to pursue nuclear weapons.
 - NNWS are entitled to **access nuclear technology for peaceful purposes**, under **IAEA safeguards**.
- Today, **191 countries** are parties to the treaty. Iran has been a signatory since 1970.
 - However, **India, Pakistan, and Israel** have never signed it. **North Korea** signed in 1985 but withdrew in 2003.

Article 10 of the Nuclear Non-Proliferation Treaty (NPT) – Withdrawal Clause

- **Right to Withdraw:** Any State Party has the right to **withdraw from the Treaty** if it decides that **extraordinary events related to the subject matter** of the Treaty have **jeopardized its supreme interests**.
- **Notice Requirement:** The withdrawing state must **give notice 3 months in advance** to all other Parties and to the **United Nations Security Council (UNSC)**.
- **Justification Required:** The withdrawal notice must include a **statement of the extraordinary events** that the state believes have jeopardized its supreme interests.

Consequences if Iran Exits the NPT

- **Loss of IAEA Oversight:** Iran would no longer be legally obligated to allow **IAEA inspections** of its nuclear facilities.
 - The average **1.4 daily inspections** (as of 2023) would stop, increasing opacity.
- **Increased Regional Tensions:** Iran's withdrawal could **escalate fears of a nuclear arms race** in the Middle East, especially among regional rivals like **Saudi Arabia and Israel**.
- **Undermining Global Non-Proliferation Regime:** Iran's exit might **weaken the credibility** of the NPT and set a **precedent for other states** to consider withdrawal, destabilizing the global nuclear order.
- **Potential for Weaponization:** Though Iran claims no intent to develop nuclear weapons, **exit from NPT** could allow it to pursue them without international legal constraints.
- **Geopolitical Fallout:** Likely **UNSC action, new sanctions**, and possibly **pre-emptive strikes or cyber operations** from rival states.
 - Could further isolate Iran diplomatically and economically.
- **Loss of Peaceful Nuclear Cooperation:** Withdrawal would cut off **international technical and economic support** for peaceful nuclear energy projects.

Source: [Indian Express](#)

Fourth International Conference on Financing for Development

Context

UN Member States have reached agreement on the outcome document for the **Fourth International Conference on Financing for Development**, to be formally adopted at an upcoming **summit in Sevilla, Spain**.

More in News

- Serves as a **foundation for a renewed global framework** to finance sustainable development goals (SDGs).
- The **United States opted out** of the FFD4 process entirely.

Key Dimensions of the FFD4 Outcome Document

- **Global Financing Framework:** Reaffirms commitments made under earlier FFD conferences to mobilize financing for sustainable development.
- **International Financial Architecture Reform:** Urges for **inclusive governance** reforms:
 - **IMF quota realignment**
 - **World Bank shareholding review**
- **Debt Sustainability:** UN to **lead a coalition** (with IMF and World Bank) to propose **voluntary principles for responsible sovereign debt management**.
- **Tax Reform:** Acknowledges implementation of **Pillar II** under the **OECD/G20 Inclusive Framework on Base Erosion and Profit Shifting (BEPS)**.
 - Emphasizes:
 - **Minimum global corporate tax** for multinationals in all jurisdictions.
 - **Country-specific technical support** to implement:
 - Global Anti-Base Erosion (GloBE) Model Rules
 - Subject to Tax Rule (STTR)
- **Closing the SDG Financing Gap:** Targets narrowing the **\$4 trillion annual shortfall** in SDG financing in developing countries.

About the FFD Process

- A **UN-led initiative** that builds on the outcomes of three earlier conferences:
 - **Monterrey Consensus (2002):** Marked the **first global agreement on development financing**.
 - Emphasized increasing **Official Development Assistance (ODA)**.
 - Stressed aid effectiveness, referencing the **Paris Declaration**.
 - Called for **IMF governance reforms** and **promoted innovative financing methods**.
 - **Doha Declaration (2008):** **Reaffirmed the commitments of Monterrey**, especially during the 2008 global financial crisis.
 - Introduced aspects like **gender-sensitive financing**.
 - Added emphasis on climate finance, including support for the **Green Climate Fund**.
 - **Addis Ababa Action Agenda (2015):** Closely aligned with the **Sustainable Development Goals (SDGs)**.
 - Introduced **Integrated National Financing Frameworks (INFFs)**.
 - INFFs are country-led and country-owned tools.
 - Help governments plan, implement, and align financing with sustainable development priorities.

Source: [UN News](#)

Editorial Summary

Lighting the spark in U.K.-India cultural relations

Context

In May 2024, India and the U.K. achieved two landmark developments — a long-awaited Free Trade Agreement and a cultural cooperation programme, marking a new phase of deep cultural and economic engagement.

What Are the Developments?

- **Free Trade Agreement (FTA) Ratified:** Both nations ratified the FTA, enhancing bilateral trade and opening new sectors including the creative economy.
 - It sets the stage for deeper investment and people-to-people ties.
- **Signing of Programme of Cultural Cooperation (POCC):** Signed on May 2, 2024, by U.K. Culture Secretary Lisa Nandy and India's Culture Minister Gajendra Singh Shekhawat.
 - It is a formal roadmap to strengthen cultural exchanges between the two nations.
- **Five Focus Areas Under POCC:**
 - **Digital technologies for culture:** Using AI, AR/VR to share heritage and art.
 - **Exhibitions and collections:** Collaborations between museums and galleries.
 - **Performances and events:** Joint cultural festivals, theatre, and music.
 - **Cultural property:** Heritage conservation and responsible cultural exchange.
 - **Sustainability:** Supporting eco-friendly cultural practices and artisanship.
- **High-Level Engagement at WAVES Summit**
 - Lisa Nandy, the highest international delegate, participated in the World Audio Visual & Entertainment Summit in Mumbai.
 - She emphasized how India-U.K. cooperation can transform global creative industries.
- **Partnerships with British Institutions:** British Library, British Museum, Natural History Museum, and others are exploring digital and curatorial partnerships with Indian counterparts.
 - Over 1,700 U.K. museums offer vast scope for bilateral collaboration.
- **Corporate Participation in Cultural Preservation**
 - Example: Royal Enfield and UNESCO's **Himalayan Knot** project preserves Himalayan textile traditions and supports 580+ artisans.
 - Business-led storytelling is emerging as a powerful mode of cultural engagement.

What Is the Significance?

- **Strengthening the Creative Economy:** The global creative sector is projected to contribute **10% to global GDP by 2030**.
 - India's creative economy is valued at **\$35 billion**, employing **8% of the workforce**, second only to agriculture.
- **Deepening India-U.K. Cultural Ties:** Moves beyond trade and politics to shared values, traditions, and creativity.
 - Programmes like **Wales in India**, culminating in the 2024 **Hornbill Festival**, show commitment to long-term cultural exchange.
- **Empowering Non-Metro Creative Hubs:** 6 of India's top 10 creative hubs (e.g., Badgam, Tiruppur) are in non-metros, according to ADB.
 - Cultural cooperation ensures visibility and support for these regions.
- **Tapping Youth Potential:** With over **300 universities and 3,000 colleges** offering arts/design courses, India is grooming a global creative workforce.
 - The POCC can offer them global exposure and skills.

- **Technology-Driven Culture:** AI, AR/VR, and gaming are reshaping how culture is produced and consumed.
 - Integration into India's education and creative industries is crucial for future competitiveness.

What Is the Way Ahead?

- **Invest in Creative Education and Training:** Establish skill development and vocational training for youth in creative fields.
 - International collaborations can introduce best practices and global standards.
- **Integrate Emerging Technologies:** Embed **AI, AR/VR, immersive tech** into cultural education and exhibitions.
 - Enable museums and institutions to digitally archive and share experiences globally.
- **Promote Inclusive and Regional Growth:** Ensure support to non-metro and tribal creative hubs.
 - Provide funding and infrastructure for local artisans to access global markets.
- **Foster Public-Private Partnerships:** Encourage companies like Royal Enfield to lead cultural sustainability projects.
 - Incentivize CSR funding for heritage and creative economy ventures.
- **Strengthen Tripartite Collaboration:** Governments, academic institutions, and industries must jointly design policies and programmes.
 - Multilateral platforms (e.g., G-20) should institutionalize creative economy discussions.
- **Institutionalize Cultural Diplomacy:** Expand the POCC model with other partner countries.
 - Establish long-term exchange programmes, co-productions, artist residencies, and academic tie-ups.

Source: [The Hindu](#)

