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BIO-BASED CHEMICALS



- Bio-based chemicals are industrial chemicals **produced using biological feedstocks** like sugarcane, corn, starch or biomass residues.

- These are often produced through **fermentation or enzymatic processes**.
 - **Examples: Organic acids** (such as lactic acid), bio-alcohols, solvents, surfactants, and intermediates used in plastics, **cosmetics, and pharmaceuticals**.
 - Unlike conventional chemicals, for which the largely available supplies are obtained through sources of fossil fuel, bio-based alternatives **reflect a sustainable solution**.
 - **Ecological Benefits of the Bio-Based Chemicals:**
 - The bio-based industry **reduces reliance on fossil fuels** by applying renewable feedstocks.
 - **Low production of harmful byproducts:** Biobased methods generate **much lower amounts of hazardous waste** than the conventional petroleum-based methodologies.
 - **Reduced Carbon Footprint:** The production of biochemicals **generally requires less energy** than their corresponding petroleum-based equivalents.
 - **Waste Minimization and Circular Economy:** With bio-based chemicals mostly coming from organic waste resources, development of the circular economy will be based on recycling, efficiency in the use of resources.
 - **Challenges and Risks:**
 - **Cost Disadvantage:** Higher production cost compared to petrochemical alternative, which creates entry level barrier.
 - **Feedstock:** Availability of reliable feedstocks and supporting infrastructure required to produce different categories of bio-based chemicals at scale.
 - **Market Adoption:** Uncertainty about adapting bio-based chemicals as substitute over fossil fuel based chemicals.
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TUG OF WAR OVER REFURBISHED MEDICAL DEVICES MARKET IN INDIA

- Recently, the Department of Pharmaceuticals informed the Rajya Sabha that the Ministry of Health and Family Welfare (MoHFW) has constituted a committee to draft a policy on the regulation of refurbished medical devices.
- The panel will define their scope, establish methods to assess safety, performance, and remaining useful life, and recommend guidelines for disposal and waste management.
- The core debate now centres not on whether refurbished medical devices should be allowed, but on how they should be effectively regulated while **balancing healthcare access and industrial policy considerations**.

About Refurbished Medical Devices

- Refurbished medical devices are previously used equipment restored to original operating standards and resold at lower prices.
- These are typically capital-intensive technologies such as MRI machines, CT scanners, PET-CT systems, advanced endoscopy units, and robotic surgical systems.
- **Cost Advantage Over New Equipment**
 - Refurbished systems offer significant cost savings:
 - 1.5T MRI machine: New: ₹4–8 crore | Refurbished: ₹1–3.5 crore
 - PET-CT system: New: ₹20 crore+ | Refurbished: ₹60 lakh–3.5 crore
 - CT scanner: New: ₹2–4 crore | Refurbished: ₹20 lakh–2.5 crore
 - These price differences make advanced diagnostics more accessible, particularly for hospitals in Tier-2 and Tier-3 cities.

Current Government Policy on Refurbished Medical Devices

- India does **not** have a specific regulatory pathway for refurbished medical devices under the **Medical Devices Rules, 2017**.
- Although all medical devices were brought under phased regulation from 2017 and notified as “drugs” in 2020 under the Drugs and Cosmetics Act, no separate licensing mechanism exists for refurbished products.

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Refurbished Medical Devices: Industry Divide and Policy Debate

- The absence of a clear pathway under the Medical Devices Rules has created uncertainty for both industry and policymakers.
 - **International Manufacturers' Perspective**
 - The Medical Technology Association of India (MTAI), representing global manufacturers, argues against a blanket ban.
 - It maintains that refurbished devices are regulated globally rather than prohibited.
 - It contends that regulated imports can improve affordability, expand access, support healthcare training goals, and complement industrial initiatives such as Electronics Repair Services Outsourcing.
 - **Domestic Manufacturers' Concerns**
 - The Association of Indian Medical Device Industry (AiMeD) strongly opposes easing restrictions without robust regulatory standards aligned with global benchmarks.
 - Domestic players argue refurbished devices carry risks of **unclear usage history**, inconsistent performance, limited traceability, and shorter lifespan.
 - They warn that legalising such imports could undermine indigenous manufacturing, weaken emergency preparedness, and turn India into a destination for end-of-life equipment.
 - **Impact on Innovation and Industrial Policy**
 - Critics highlight that in developed countries, hospitals upgrade equipment after around 10 years, with older systems refurbished for resale.
 - When such systems compete at similar price points with new Indian-made products, they may discourage domestic investment in advanced medical technologies.
 - This raises broader questions about **balancing healthcare affordability with long-term industrial growth and innovation capacity**.
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VANDE MATARAM ROW: DEBATE OVER SINGING THE FULL NATIONAL SONG

The Union government's January 28 directive mandating the singing of all six stanzas of the National Song Vande Mataram at official functions has triggered objections from several organisations.

The notification requires the full **3-minute-10-second version** to be played before Jana Gana Mana when both are included in state events, with the audience standing in attention.

Traditionally, only the first two stanzas have been sung at public functions. The later four stanzas contain **explicit religious imagery**, which has historically been a source of controversy and discomfort for some communities.

The directive comes amid the government's commemoration of 150 years of Vande Mataram.

Origins and Evolution of Vande Mataram

- Vande Mataram ("Mother, I bow to thee") was composed in **1875** by **Bankim Chandra Chattopadhyay** in Sanskritised Bengali.
- It was later included in his **1882 novel Anandamath**, which depicted the late-18th century Sanyasi Rebellion against the rule of Mir Jafar and the East India Company.
- The song became a powerful nationalist slogan during the Swadeshi movement (1905–08), symbolising resistance to British rule.
- However, concerns about its religious undertones emerged early on.
- In 1937, Jawaharlal Nehru wrote to Subhas Chandra Bose acknowledging apprehensions among Muslims, though he described the controversy as being amplified by communal elements.
- **Congress Compromise on Stanzas**
 - In October 1937, the Congress Working Committee recommended that only the first two stanzas be sung at national gatherings.
 - In 1950, the first two stanzas were formally adopted as India's National Song.
 - The Constituent Assembly accorded it **equal honour** with the National Anthem but did not prescribe mandatory protocols regarding posture or recital.

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Religious and Constitutional Objections to Vande Mataram

- Objections from Muslim scholars centre on the portrayal of “Mother India” as a goddess, which conflicts with Islam’s core principle of strict monotheism.
- Worship of any entity other than Allah is considered impermissible in Islamic belief.
- **Controversy Over the Later Stanzas**
 - The latter four stanzas intensify the controversy.
 - The third stanza refers to “crores and crores” of arms ready for battle.
 - The fourth suggests the motherland’s image is present in shrines.
 - The fifth likens the nation to Hindu goddesses Durga, Lakshmi, and Saraswati.
 - Historians argue that in the context of Anandamath, these verses frame Muslims as adversaries and depict the motherland in explicitly Hindu religious imagery, alienating non-Hindu communities.
 - Various organizations have termed the move a “blatant attack” on religious freedom under Article 25 of the Constitution.
 - They clarified that Muslims do not object to others singing the song but oppose being compelled to recite verses that conflict with monotheistic beliefs.

Political Flashpoint Over Vande Mataram

- In December 2025, Parliament marked 150 years of Vande Mataram, triggering sharp political exchanges over its historical interpretation and contemporary relevance.
 - In the Lok Sabha, PM Modi accused Jawaharlal Nehru of truncating the song in 1937 under pressure from the Muslim League.
 - He cited Nehru’s correspondence with Subhas Chandra Bose, arguing that Nehru acknowledged Muslim League objections instead of firmly defending the song.
 - Opposition leaders responded by quoting additional portions of Nehru’s letter, where he described the opposition to Vande Mataram as largely “manufactured by communalists” and criticised what he termed the Muslim League’s “low type of communalism.”
 - Many contended that forcing citizens to sing the song violates constitutional principles.
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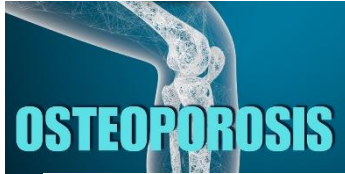
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WHAT IS OSTEOPOROSIS?



- It is a disease in which the bones become weak and are likely to fracture.

- **What Causes Osteoporosis?**

- Osteoporosis develops when more bone is broken down than replaced.
- It is accompanied by the **loss of bone mass**.

- **Symptoms:**

- It is called a "**silent**" disease because it **doesn't usually cause symptoms**.
- It is **most common** in the bones of hip, vertebrae in the spine, and wrist.
- **Once your bones have been weakened** by osteoporosis, signs and symptoms may include:
 - **Back pain**, caused by a broken or collapsed bone in the spine.
 - Loss of height over time.
 - A **stooped posture**.
 - A bone that breaks much more easily than expected.
- **Treatment:** Treatment for osteoporosis may involve:
 - Making **lifestyle changes**, such as changing diet and exercise routine
 - Taking **calcium and vitamin D supplements**.

YUVA AI FOR ALL INITIATIVE



- It is an initiative launched by the **Ministry of Electronics and Information Technology (MeitY)**, under the **IndiaAI Mission**.

- It is a first-of-its-kind **free course that introduces the world of Artificial Intelligence (AI)** to all Indians, especially the youth.
- It consists of a course designed to make students, professionals and other curious learners comfortable with the basics of Artificial intelligence.

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- **Aim:** To empower the citizens with **foundational AI skills**.
 - **Key Features of YUVA AI for ALL Initiative**
 - It is simple, practical, and filled with real-life examples to make learning relatable and fun.
 - It is available for free on leading learning platforms – **FutureSkills Prime, iGOT Karmayogi, and other popular ed-tech portals.**
 - Every learner who completes the course will get an official certificate from the Government of India.
 - It's **100% free and open to everyone**
 - It allows learning at one's own pace — anytime, anywhere.
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THE UAE-INDIA CORRIDOR IS SPARKING A GROWTH STORY

- India and the United Arab Emirates have significantly deepened their economic partnership under the **Comprehensive Economic Partnership Agreement (CEPA)** signed in 2022.
- The two countries achieved their initial target of \$100 billion in bilateral trade five years ahead of the 2030 deadline.
- Building on this momentum, leaders in January set a new and more ambitious goal of \$200 billion in trade by 2032, underscoring the rapid growth and strategic importance of the **India-UAE economic corridor**.

India-UAE Partnership: Built for the Long Term

- **Trust and Policy Foundations**
 - The deepening India-UAE economic relationship is anchored in decades of trust, strong diaspora ties, and a robust policy framework.
 - The CEPA removed tariffs on nearly 90% of tariff lines, while the 2024 Bilateral Investment Treaty and a new strategic defence partnership provide long-term certainty for businesses and investors.



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- **Expanding Into Third Markets**

- The upcoming **Bharat Mart** in the UAE will function as a wholesale hub for Indian goods targeting Africa, West Asia, and Eurasia, aiming to significantly boost exports.
- Both countries are also exploring joint digital infrastructure and capacity-building initiatives in Africa, transforming the corridor into a platform for global economic outreach.

- **AI as the Next Frontier**

- Artificial intelligence is emerging as the next major area of collaboration.
 - India's hosting of the AI Impact Summit 2026 in New Delhi signals its growing leadership in AI governance and innovation.
 - Both nations are exploring cooperation in advanced computing, data centres, and AI-driven innovation, recognising that future technological leadership will depend on strategic partnerships rather than isolated growth.
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BUILDING TRUSTED AI ECOSYSTEMS IN ASIA - FROM FRAGMENTATION TO SHARED GOVERNANCE

- AI systems, no matter how advanced, **risk** public rejection, governmental resistance, misuse or weaponisation, and cross-border regulatory friction.
- Trust becomes difficult because AI ecosystems are inherently **transnational**, marked by -
 - Global data flows
 - Semiconductor supply chain interdependence
 - Concentrated AI talent pools
 - Uneven cybersecurity standards
 - Dispersed cloud and compute infrastructure
- For developing nations in South and Southeast Asia, this often translates into becoming **passive consumers** of AI technologies developed elsewhere, with limited regulatory influence.

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Foundational Layers of a Trusted AI Ecosystem:

- A trusted AI ecosystem rests on interconnected layers.
 - **Trusted datasets:** High-quality, representative, real-time data. Inclusion of Asia's linguistic and cultural diversity. Anchoring within Digital Public Infrastructure (DPI).
 - **Resilient AI infrastructure:** Secure access to compute, energy, and cloud services. Protection against geopolitical and supply-side disruptions.
 - **AI skills and public awareness:** Advanced technical talent pipelines. AI literacy among citizens. Responsible adoption frameworks.
 - **Global value chain leverage:** Access to semiconductors and critical minerals. Building manufacturing capabilities, and predictable and stable supply chains.
 - **Proportionate AI governance:** Balancing innovation with accountability. Managing risks like misinformation, deepfakes, liability. Avoiding regulatory overreach that stifles data flows or deters investment.
 - **Cybersecurity backbone:** Safeguarding AI systems against AI-enabled attacks. Harmonised security protocols.
- Together, these dimensions enable measurement of trust and guide policy interventions.

India's Strategic Opportunity:

- India is uniquely positioned to bridge governance divides:
 - Strong DPI (Aadhaar, UPI model)
 - Large IT workforce and expanding AI talent base
 - Techno-legal regulatory approach that simplifies compliance
 - Growing influence in global digital governance debates

Conclusion:

- Asia stands at a **pivotal** AI's transformative potential can either deepen inequalities or drive inclusive growth. The determining factor is trust—institutional, technical, and societal.
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