

DAILY CURRENT AFFAIRS (DCA)

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INDIA'S CULTURAL DIPLOMACY

Context

- From **Kalamkari Mahabharata painting** to **Pochampally silk stole** to **Lakadong Turmeric to thekua** are among the list of items gifted by PM Modi to foreign dignitaries during his recent visit to France and Slovakia.

About the Items Gifted by PM Modi

- Kalamkari Mahabharata painting:** It is a hand-crafted painting from **Andhra Pradesh**, the painting was created using traditional pen-drawing techniques, and it depicts scenes from the Mahabharata.
- Pochampally silk stole:** It is a handwoven textile from **Telangana**, made using the traditional Ikat resist-dyeing technique. It is known for its intricate geometric and floral patterns, fine craftsmanship, and elegant design.
- Kashmiri silk carpet:** The handwoven carpet is made from high-quality natural silk and is known for its intricate floral, paisley, vine, and medallion designs.
- Brass Dokra Antelope set:** It is a handcrafted artwork that showcases India's ancient Dokra metal-casting tradition, practiced for centuries by tribal artisans in **Chhattisgarh, Odisha, Jharkhand, and West Bengal**.
 - The antelope figures symbolise gentleness, agility, and harmony with nature, drawing a cultural connection to the **Tatra Chamois of Slovakia**.
- Handcrafted Thewa motif cufflinks:** It showcases the traditional jewellery craft of **Rajasthan's Pratapgarh**, featuring finely engraved gold sheets fused onto coloured glass.
- The Prime Minister gifted a copy of **Charak Samhita, Susruta Samhita and Thekua**.
 - Charaka Samhita reflects India's rich scientific and intellectual heritage, Thekua is a **traditional sweet snack from Bihar**.
 - The Sushruta Samhita** is an ancient Sanskrit medical text and one of the foundational treatises of Ayurveda. Written around the **6th century BCE by the physician Sushruta**—often celebrated as the **"Father of Surgery"**.
- During the G7 Summit, the Prime Minister gifted **Rajasthan's Nagauri Ashwagandha**, **Meghalaya's Lakadong Turmeric**, **Ramban Honey** produced in the **Chenab Valley** of Jammu and Kashmir and Banarsi silk stoles.

What is Cultural Diplomacy?

- Cultural diplomacy is the **"exchange of ideas, information, art, language and other aspects of culture"** among nations and peoples in order to foster mutual understanding.
 - It functions as a soft but potent force for unity and coexistence.
- Following independence**, several countries centred their foreign policy around culture, or development policies around inter-state cooperation in culture.
- Examples of Soft Power: The formation of the EU** is an excellent example of the triumph of soft power to settle centuries of dispute and conflict in Europe.
 - Immediately after World War II, school children from France and Germany were sent on exchange programmes to learn about each other's culture, language and customs.

Pillars of India's Cultural Diplomacy

- Saman (Peace):** India's commitment to peace is reflected in its long history of **non-violence and diplomatic engagements**.
 - India has played a **proactive role in UN peacekeeping missions** contributing personnel to over 40 missions globally.
 - The country's peace-oriented foreign policy combined with its non-aligned status has bolstered its image as a **peaceful and stable power**.
 - India's advocacy for global South-South cooperation** has earned respect from developing nations which view India as a **model for economic development**.
- Samriddhi (Prosperity):** India's economic success through initiatives such as Make in India and Startup India has positioned it as an **emerging global economic powerhouse with an emerging global market**.
 - The country's growing trade relationships particularly with Africa, Southeast Asia and the Middle East showcase its economic influence.
- Suraksha (Security):** India's strategy for regional and global security is based on its alliances with significant powers like the **United States, Russia and Japan**.
 - India has established itself as a **crucial actor in Indo-Pacific security** balancing

its historical non-aligned stance with active involvement in security platforms like the QUAD.

- ♦ India's emphasis on **counterterrorism and humanitarian efforts** reflects its position as a **contributor to regional security**.
- **Sanskriti (Culture): Bollywood, classical arts, yoga and food** are among the most visible exports of Indian culture.
 - ♦ **The International Day of Yoga** which is observed all around the world exemplifies how India expanded its cultural history to reach out to global audiences.
 - ♦ **Indian diaspora** play a vital role in spreading Indian culture and values. Making its impact in an interconnected globalized world.

Challenges

- **Competition from Other Countries' Soft Power:** Countries like China, South Korea, and Japan invest heavily in promoting their culture abroad.
- **Limited Institutional and Financial Resources:** Organizations such as Indian Council for Cultural Relations often face budgetary and manpower constraints compared to similar institutions of major powers.
- **Underutilization of Cultural Assets:** India's vast cultural heritage, languages, literature, museums, and historical sites are not always effectively showcased internationally.
- **Digital and Language Barriers:** Indian cultural content is often less accessible globally due to limited translation and digital dissemination compared to competitors.

Way Ahead

- **Strengthening Cultural Diplomacy:** India should continue to promote its values through programs like International Yoga Day and expand cultural exchange programs particularly in regions where its soft power is still emerging.
- **Leveraging Digital Diplomacy:** India must invest more in digital platforms to reach younger global audiences. Initiatives like Digital India can be expanded to offer more opportunities for international collaboration and cultural engagement.
- **Educational Diplomacy:** India should increase the number of scholarships and educational exchange programs to attract international students, particularly from developing nations.

- **Regional Engagement:** India must continue to strengthen its influence in South Asia, Africa and Southeast Asia through diplomatic, economic and cultural ties.

Conclusion

- India's soft power capability has significantly increased in the age of globalization fueled by its cultural diplomacy, economic advancement and strategic alliances.
- As India maneuvers through the intricacies of international geopolitics its soft power will be an essential asset for cultivating relationships, encouraging mutual respect and promoting its interests globally.

Source: IE

ESSENTIAL UPGRADES TO INDIA'S STATISTICAL DATABASES

Context

- The Government of India has recently undertaken a **comprehensive overhaul of its statistical databases** by updating the methodologies, base years, and coverage of key economic indicators.

Need for Overhaul of Statistical Databases

- **International Concerns:** In 2025 the Indian government received a '**C**' grade, the second-lowest grade, by the **International Monetary Fund** for the quality of its national accounts statistics.
- **Representation of Current Scenario:** The databases were outdated and were becoming **less representative of reality** with each passing year.
 - ♦ An outdated base year weakens the overall measurements and makes them less representative of the current reality.
- **Outdated Base Years:** In the decade since **2011-12**, India's economy has transformed drastically, with new industries emerging (e.g. renewable energy, digital services) and changes in consumption patterns and investment behaviour.
 - ♦ Such structural changes necessitate rebasing so that **metrics capture true contribution of growing sectors** and changes in technology and productivity.

What are the Metrics that Have Been Updated?

- **National Accounts and GDP Reforms:** GDP is the **total monetary value of all final goods and services** produced within a **country's domestic territory** during a specific period.

- ♦ India has revised its GDP base year from **2011–12 to 2022–23**.
- ♦ The revised series applies the double deflation method in agriculture and manufacturing, which separately accounts for changes in **input prices and output prices**.
- **Consumer Price Index (CPI):** Price changes at the retail level, which is meant to capture the **consumer-end of the market**, are measured by the CPI.
 - ♦ The base year of the CPI was updated to **2024**, and the basket of items it measures as well as their relative weightages were pegged to the latest **Household Consumption Expenditure Survey of 2023-24**.
- **Wholesale Price Index (WPI):** Price changes at the wholesale level, which is ideally meant to capture the prices that producers get, are measured by the **WPI**.
 - ♦ The WPI base year has been updated to **2022-23 and the number of items expanded from 697 to 957**.
- **Index of Industrial Production (IIP):** IIP is a key indicator that measures how industrial production is changing over time.
 - ♦ It is a **monthly indicator** which reflects the monthly changes in the volume of production of a representative basket of industrial products, with reference to a specified base year.
 - ♦ The base year of the All India Index of Industrial Production (IIP) has been revised from 2011-12 to **2022-23**.
- **Adoption of Producer Price Index (PPI):** The PPI separately tracks the prices producers pay for inputs and the prices they receive for their outputs.
 - ♦ The PPI excludes additional costs such as transport and indirect taxes, which the WPI includes.
 - ♦ This makes the PPI a **more accurate representation of prices at the producer level**. It also incorporates both goods and services, which makes it more holistic.
- **Introduction of Quarterly Bulletins on Unincorporated Sector Enterprises (QBUSE):** Starting 2025, QBUSE has been introduced, providing interim results every quarter instead of waiting for an annual report.

- ♦ The quarterly data are intended to capture short-term movements in the sector.



Rationale for Selecting 2022-23

- The year 2022-23 was chosen as the new base because it is the most recent “normal” year after the disruptions of 2019-2021.
- The years 2019-20 and 2020-21 were significantly affected by the COVID-19 pandemic, which temporarily altered consumption patterns and industrial output.

Significance of the Statistical Reforms

- **Strengthen Evidence-Based Governance:** As the data is more reliable it enables governments to **formulate better policies** and monitor outcomes more effectively.
- **Improve Monetary Policy:** Accurate inflation estimates help the Reserve Bank of India calibrate interest rates more effectively. Also better inflation measurement supports **macroeconomic stability**.
- **Increase Growth Measurement:** The updated GDP, GVA, and IIP data will provide a realistic picture of the country's economic performance.
- **International Credibility:** The adoption of global best practices will improve India's standing in international statistical assessments. Also the reliable economic statistics will enhance investor confidence and policy credibility.

Concluding remarks

- The recent statistical reforms mark a **decisive shift** in **India's statistical system** towards greater relevance, responsiveness, and credibility.
- Sustained efforts to **improve data quality and ensure regular updates** will be critical for strengthening evidence-based policymaking and economic governance.

Source: TH, TH, PIB

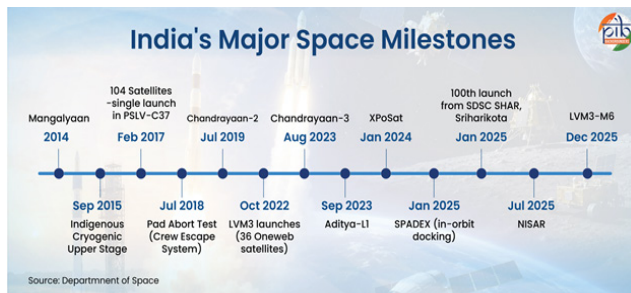
BUILDING INDIA'S SPACE FUTURE

Context

- Over the last twelve years, India's space programme has emerged as a symbol of national confidence, technological self-reliance, and global ambition.

The Rise of a Global Space Power

- India's space economy is currently valued at **\$8 billion** with a share of **2–3%** in the global space economy.
- It is projected to grow five-fold to **\$40–45 billion** over the next decade, with its global share targeted at **8% by 2030**.
- India has achieved self-reliance in space transportation systems to launch satellites up to **10 tons to Low Earth Orbit (LEO)** and **4.2 tons to Geo-Synchronous Transfer Orbit (GTO)** through the currently operational PSLV, GSLV and LVM3 launch vehicles.



Lunar Exploration - The Chandrayaan Programme

- The foundation of India's lunar journey was laid with **Chandrayaan-1 in 2008**, India's first mission to the Moon.
 - The mission discovered evidence of water molecules and hydroxyl on the Moon's surface. Further, **Chandrayaan-2, launched in 2019**, strengthened India's lunar programme.
 - On 23 August 2023**, Chandrayaan-3 made India the first country to achieve a soft landing near the Moon's south pole and the fourth nation after the **United States, Russia, and China** to successfully soft-land on the lunar surface.

The Mars Orbiter Mission (Mangalyaan)

- On 24 September 2014**, Mangalyaan successfully entered Martian orbit, making India the first country to reach Mars on its maiden attempt.
- With this achievement, ISRO became **only the fourth space agency** in the world to place a spacecraft in orbit around Mars after United

States' NASA, Russia's Roscosmos, and the European Space Agency (ESA).

Aditya-L1: India's First Solar Observatory

- Launched in 2023**, the spacecraft was successfully placed in a **halo orbit** around the **Sun-Earth L1 Lagrange Point**, nearly **1.5 million kilometres** from Earth.
 - The mission studies the **solar corona, solar winds, and space weather phenomena** that influence Earth's environment and technological systems.

Space Astronomy and Space Docking

- AstroSat, India's first multi-wavelength space observatory, completed a decade in orbit in September 2025 and has contributed several important scientific discoveries.
- XPoSat**, launched in **2024**, further expanded India's capabilities in X-ray astronomy.
- The Space Docking Experiment (SPADEX)** made India the fourth nation after the United States, Russia, and China to demonstrate autonomous docking and undocking in space.

Venus Orbiter Mission

- The Venus Orbiter Mission, approved by the Government of India, is targeted for launch in **2028**.
 - The mission will study Venus' geology, surface composition, atmosphere, ionosphere, and resurfacing processes.

Gaganyaan: India's First Human Spaceflight Programme

- The mission aims to send up to **three Indian astronauts into a 400-kilometre orbit** for up to **three days** before bringing them safely back to Earth. The programme includes two uncrewed missions and one crewed mission.
- India participated in the **ISRO-NASA supported Axiom-4 mission** to the International Space Station in 2025.
 - Group Captain Shubhanshu Shukla travelled aboard the SpaceX Dragon spacecraft launched by Falcon 9 in 2025.

National Space Station

- Bharatiya Antariksh Station (BAS)** is India's planned space station and a key pillar of Space Vision 2047.

- BAS will be a **five-module space station in Low Earth Orbit**, designed to support long-duration human space missions and advanced scientific research in microgravity.

Reusable Launch Vehicles (RLV)

- ISRO's **RLV-TD** programme marks a major step towards low-cost and reusable space transportation systems.
- ISRO successfully flight-tested **RLV-TD in 2016** from SDSC SHAR, Sriharikota, validating autonomous navigation, guidance and control systems, reusable thermal protection systems, and re-entry mission management technologies.

Indigenous Electronics and On-board Systems

- ISRO jointly with Semiconductor Laboratory (SCL), Chandigarh developed **VIKRAM3201**, India's first fully indigenous **32-bit space microprocessor**, along with **KALPANA32** for high-reliability space missions.
- This reduces dependence on foreign components and improves mission safety.

NavIC - India's Indigenous Navigation System

- It provides accurate positioning, navigation, and timing services across India and up to **1,500 kilometres** beyond its borders.
- The system operates through a constellation of satellites providing continuous regional coverage.

Private Sector Powering India's Space Transformation

- The opening of the space sector for **private players in 2020**, followed by the **Indian Space Policy 2023**, enabled greater private participation across the space value chain.
- In **2024**, the Government liberalised the Foreign Direct Investment (FDI) policy for the space sector, allowing up to **100% FDI** in selected activities.
 - Up to 74% FDI** is permitted under the **automatic route** for satellite manufacturing and operations, satellite data products, and ground/user segment services.
 - Up to 49% FDI** is allowed for launch vehicles, related systems, and spaceports, while **100% FDI** under the automatic route is permitted for manufacturing satellite and ground-segment components and subsystems.
- Companies** such as **Pixxel, Dhruva Space, Skyroot Aerospace, Agnikul Cosmos, and Bellatrix Aerospace** have emerged as pioneers of a new space era.



Expanding India's Space Economy

- India leads the **BIMSTEC Space Programme** as part of its **"Neighbourhood First"** policy.
 - The North Eastern Space Applications Centre (NESAC)** conducts specialised training programmes for BIMSTEC countries in space applications and satellite technologies.
 - IndThe initiative** strengthens regional cooperation through space technology, disaster management, and capacity building.
- India-Russia Partnership:** Building on decades of space cooperation, ISRO and ROSCOSMOS signed an MoU in 2018 to support the Gaganyaan mission.
- India's expanding global partnerships are also reflected in the **TRISHNA (Thermal InfraRed Imaging Satellite for High-resolution Natural Resource Assessment)** mission, being jointly developed by ISRO and the French space agency CNES.

Challenges in India's Space Sector

- Competition and Global Market Share:** To achieve this ambitious goal of 8% of the global market share, Indian space companies must compete effectively on the international stage.
- Technology Development and Innovation:** Developing cutting-edge technologies, such as reusable launch vehicles, miniaturized satellites, and advanced propulsion systems, requires substantial investment and research.
- Regulatory Framework and Licensing:** Navigating licensing processes, export controls, and compliance can be complex.
- Infrastructure and Facilities:** Developing and maintaining such infrastructure requires significant capital.

Concluding remarks

- Over the last twelve years, India's space programme has evolved into a key driver of national development, supporting governance, economic growth, and public welfare through indigenous innovation.
- As the country moves towards Space Vision 2047, it seeks to further strengthen self-reliance, scientific progress, and societal development through space-led innovation.

Source: PIB

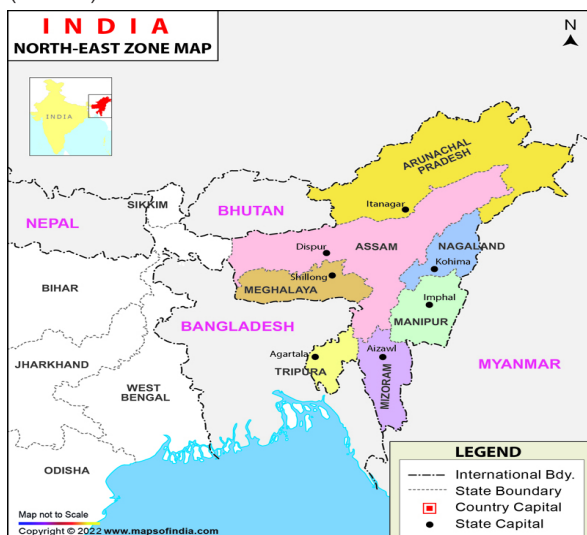
ASHTALAKSHMI – THE NORTH-EAST AT THE HEART OF INDIA'S GROWTH STORY

Context

- Recently, PM Modi described the **Northeast as India's "Ashtalakshmi"** and said the Centre has moved **beyond the "Act East" policy to an "Act Fast" approach** to accelerate development in the region.

North Eastern Region (NER)

- The NER comprises eight States viz. Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura.
- This region is **culturally and ethnically diverse** having **more than 200 ethnic groups** which have distinct languages, dialects and socio-cultural identities.
- The Region covers **7.97% of the country's geographical area** and **3.78%** of its population.
- It has **5,484 km of international border** viz. Bangladesh (1,880 km), Myanmar (1,643 km), China (1,346 km), Bhutan (516 km) and Nepal (99 km).



Significance of the North East Region

Geostrategic Significance:

- International Borders:** The NER shares borders with five countries i.e China, Bhutan, Myanmar, Bangladesh, and Nepal which make it strategically important.
- Gateway to ASEAN:** It is a critical link in India's Act East Policy, serving as a bridge to Southeast Asia.
 - Current India–ASEAN trade: ~\$125 billion, projected to exceed \$200 billion.
- Strategic Military Importance:** Due to proximity to China, the region holds significant defense value for national security.
- Economic and Trade Potential:**
 - Cross-Border Trade:** Projects like the Kaladan Multimodal Transit and India-Myanmar-Thailand Trilateral Highway boost trade with Southeast Asia.
 - Untapped markets and natural resources** make it ideal for early investors in sectors like energy, agriculture, tourism, and logistics.

- Health, Wellness & Tourism:** Offers clean air, organic food, serene landscapes, and rich tribal cultures.
 - Ideal for wellness tourism, eco-tourism, and adventure tourism.
 - Rich cultural diversity (dance, music, festivals) promotes cultural diplomacy and soft power.

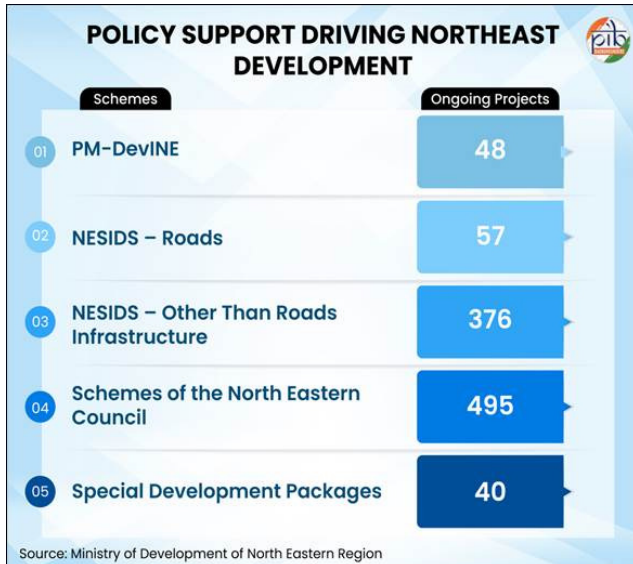
Challenges Faced by the Region

- Poor connectivity:** Difficult terrain and underdeveloped road, rail, and air networks.
- Limited digital infrastructure:** Though improving, internet and telecom connectivity are weaker compared to other parts of India.
- Insurgency and Internal Security Issues:** Presence of militant groups and separatist movements in some areas.
 - Cross-border infiltration and arms smuggling due to porous borders with Myanmar and Bangladesh.
 - Although security has improved, periodic unrest still affects peace and progress.
- Geographic and Environmental Constraints:** Hilly and forested terrain makes development of infrastructure and industries difficult and costly.
- Ethnic Tensions and Migration Issues :** Inter-community tensions and demands for autonomy or separate states lead to uncertainty in the region.

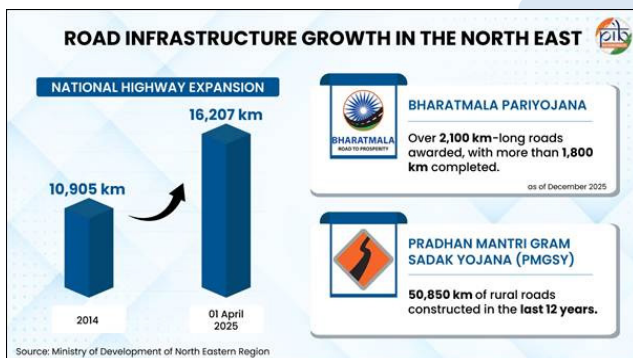
- ♦ Illegal immigration from neighboring countries has altered demographics in some areas, creating social unrest.

Government Initiatives

• Policy Support:



• Connectivity:



- ♦ **Bogibeel Bridge (2018):** It is a combined road and rail bridge across the Brahmaputra River.
- ♦ **Dhola-Sadiya Bridge (2017):** It provides the first permanent road connection between northern Assam and eastern Arunachal Pradesh. It spans the Lohit River, a major tributary of the Brahmaputra.
- ♦ **Noney Bridge:** The Noney Bridge in Manipur, part of the 111-km Jiribam–Imphal railway project. Constructed across the Aling River, it is the world's tallest railway pier bridge.
- ♦ **Sela Tunnel:** It ensures all-weather connectivity in a strategically important border region.
- ♦ **GI Tags:** As of March 2026, the NER accounted for 89 Geographical Indication (GI)-registered

products. The region is known for several GI-tagged fruits and spices, including Queen Pineapple, Lakadong Turmeric, King Chilli, and Large Cardamom.

- **Waterways:** National Waterways in the Northeast increased from 1 to 20. There has been the development of Brahmaputra and Barak river transport systems.
- **Energy and Green Growth:** Dibang Multipurpose Hydropower Project (2,880 MW), Subansiri Lower Hydroelectric Project (2,000 MW).
 - ♦ North East Gas Grid connecting all eight states.

Source: PIB

NEWS IN SHORT

RAKHIGARHI

Context

- The Archaeological Survey of India (ASI) has sent nearly 5,000-year-old skeletons unearthed at Haryana's Rakhigarhi, for scientific examination and facial reconstruction.

Rakhigarhi

- The present-day Rakhigarhi is located **27 km** from the **Ghaggar river**, in the **Ghaggar-Hakra river plain** in Haryana.
- The archaeological site, dating back to **2600-1900 BCE**.
- It is the **largest Harappans site** in the Indian Subcontinent.
- The site was first excavated by **Amarendra Nath of Archaeological Survey of India (ASI)**.
- **Findings**
 - ♦ **Granary:** A granary belonging to the mature Harappan phase (2600 BCE to 2000 BCE) has been found here. It has 7 rectangular or square chambers.
 - ♦ **Culture, clothing and worship:** Fire altars and apsidal structures were revealed in Rakhigarhi.
 - ♦ **Cemetery and burial sites:** A cemetery of Mature Harappan period is discovered at Rakhigarhi, with eight graves found.



Harappan Civilization

- The Harappan civilization is believed to be **one of the oldest world civilizations** together with Egypt and Mesopotamia.
- It was developed along the **river Indus** and for that reason it is also known as the **Indus Valley Civilization**.
- The Harappan civilization is identified as a **Bronze-age civilization** because many objects have been found that are made up of **copper based alloys**.

Source: IE

FIRST AMENDMENT

Context

- On **June 18, 1951**, the First Amendment to the Indian Constitution came into force.

About

- The amendment altered the **scope of three fundamental rights: freedom of speech, equality and property rights**.
 - It also created a new **constitutional mechanism** through which certain laws could be protected from challenge on the ground that they violated fundamental rights.
- These changes were enacted **before independent India's first general elections**.

Key Provisions

- Reasonable Restrictions on Fundamental Rights:** It amended Article 19(2) to allow the State to **impose reasonable restrictions on the freedom of speech and expression in the interests of:** Public order, friendly relations with foreign states, incitement to an offence, security of the State, etc.

- Protection of Land Reform Laws: Added Article 31A and Article 31B** to protect laws related to agrarian reforms from being challenged on the grounds of violating Fundamental Rights.
- Creation of the Ninth Schedule:** Established the Ninth Schedule under Article 31B. Laws placed in the Ninth Schedule were **initially protected from judicial review on grounds of violation of Fundamental Rights**.
 - The scope of protection given to the Ninth Schedule was **later examined by the Supreme Court in the landmark I.R. Coelho v. State of Tamil Nadu case**.
- Special Provisions for Socially and Educationally Backward Classes:** Inserted **Article 15(4)**, enabling the State to make special provisions for the advancement of socially and educationally backward classes, and for Scheduled Castes and Scheduled Tribes.

Source: IE

UN FOOD AGENCIES WARN ACUTE HUNGER IN 13 HOT SPOTS

Context

- United Nations' food agencies have warned that acute hunger is expected to worsen across **13 global hotspots** in the coming months due to conflict, climate shocks and funding shortages.

About

- The Food and Agriculture Organisation (FAO) and World Food Programme (WFP)**, in a joint report, said that around **266 million** people are already facing high levels of acute food insecurity.
- Sudan, South Sudan, Yemen and Palestine** remain the countries of greatest concern, while **Nigeria and Somalia** have been added to the high-risk list as famine threats grow.
- The report noted that funding for food assistance has fallen by nearly **60 per cent since 2022**, even as humanitarian needs continue to rise.
- The UN agencies also warned that spillover effects from the **Middle East conflict and an Ebola outbreak in eastern Congo** are further disrupting livelihoods and aid access.

What is Food Security?

- Food security exists when people have access to **enough safe and nutritious food for normal growth and development**, and an active and healthy life.

- By contrast, **food insecurity** refers to when the aforementioned conditions don't exist.
 - ♦ **Acute food insecurity** is any type that threatens people's lives or livelihoods.
- The global standard for measuring acute food insecurity is the **Integrated Food Security Phase Classification, or IPC for short**. It describes **five levels**, from "no/minimal food insecurity" (IPC Phase 1) to "**catastrophe**" or "**famine**" (IPC Phase 5).

Source: AIR, WFP

AMMONIA GAS

In Context

- An ammonia gas leak at a private seafood processing and export facility in Tiruvallur district of Tamil Nadu has hospitalized many working people.

What Is Ammonia (NH₃)?

- Ammonia (NH₃) is a **colourless gas with a strong, pungent smell**. It is a simple inorganic compound made up of nitrogen and hydrogen.
- Although it occurs naturally in **small quantities during the decomposition of organic matter**, it is also produced on a large scale because of its wide industrial and agricultural applications.
- Industrial ammonia is commercially produced through the **Haber-Bosch process**, in which atmospheric nitrogen reacts with hydrogen under high temperature and pressure in the presence of an iron catalyst.
- It is majorly **used in fertilizers industries, chemical industries and in food processing** due to its excellent cooling efficiency.

Source: TH

BIOCHAR

Context

- Biochar is emerging as a sustainable solution to convert agricultural waste into a valuable resource for improving soil health and mitigating climate change.

What is Biochar?

- Biochar** is a charcoal-like substance that's made by burning organic material from agricultural and forestry wastes (also called biomass) in a controlled process called **pyrolysis**.

- Unlike ordinary organic matter, biochar decomposes very slowly and can remain in the soil for hundreds of years.
- It is highly porous, enabling it to store water, nutrients, and beneficial microorganisms.

Benefits of Biochar

- Agricultural Productivity:** Studies indicate that biochar can improve crop yields by **10–30%**, particularly in nutrient-deficient soils.
- Carbon Credits:** Biochar can generate carbon credits because it removes carbon from the atmosphere and stores it in soil.
 - ♦ Under internationally accepted standards, one tonne of certified biochar can generate approximately **2–2.8 tonnes** of carbon dioxide-equivalent credits.
- Water Retention:** Biochar acts like a sponge and stores water within its porous structure. Research shows that it can increase the water-holding capacity of soils by **10–25%**.

Source: TH

GOVT PREPARES TO NOTIFY WESTERN GHATS ECO SENSITIVE AREAS

Context

- The Western Ghats may soon receive stronger legal protection in **at least three states** through the **notification of Ecologically Sensitive Areas (ESAs)**.
 - ♦ Once notified, these areas will face stricter curbs on mining, polluting industries, and large construction projects.

What are Ecologically Sensitive Areas?

- ESAs are designated regions identified for **special environmental protection** because of their rich **biodiversity, fragile ecosystems or critical ecological functions**.
- They are notified under the **Environment (Protection) Act, 1986**.
- The Supreme Court in 2022**, directed that **every protected forest, national park and wildlife sanctuary** should have a **mandatory eco-sensitive zone** of at least **one kilometre** from its demarcated boundary.
- Restrictions:** Certain activities are prohibited, some are tightly regulated, while others are encouraged to ensure development does not come at the cost of ecological damage.

- ♦ Getting an ESA status also means that **any development project in the area will be subject to stricter environmental scrutiny.**

Western Ghats

- The Western Ghats, also known as the **Sahyadri Hills**, are a mountain range that runs parallel to the **western coast of India.**
- **Location:** The Western Ghats extend for about 1,600 kilometers from Gujarat in the north to Tamil Nadu in the south.
- **It stretches across six states:** Gujarat, Maharashtra, Goa, Karnataka, Kerala, and Tamil Nadu.



- **Biodiversity:** The Western Ghats are considered one of the 8 “hottest hotspots” of biological diversity in the world.
 - ♦ Covering an area just under 6% of India, the Western Ghats contain more than 30% of all plant, fish, herpeto-fauna, bird, and mammal species found in India.
 - ♦ Many species are endemic, such as the Nilgiri tahr (*Hemitragus hylocrius*) and the lion-tailed macaque (*Macaca silenus*).
 - ♦ 50% of India’s amphibians and 67% of fish species are endemic to this region.
- **Threats:** The region faces threats from deforestation, mining, agricultural expansion, and infrastructure development.
- **Conservation:** In 2012, the Western Ghats were inscribed as a UNESCO World Heritage Site.
- **Major Peaks in the Western Ghats:** Anamudi is the highest peak in the Western Ghats, located in Kerala.
 - ♦ Doddabetta is the highest point in Tamil Nadu.

Source: IE